



# Federal Register

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Thursday,  
December 6, 2007

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## Part III

# Department of the Interior

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Fish and Wildlife Service

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50 CFR Part 17

**Endangered and Threatened Wildlife and  
Plants; Review of Native Species That Are  
Candidates for Listing as Endangered or  
Threatened; Annual Notice of Findings on  
Resubmitted Petitions; Annual Description  
of Progress on Listing Actions; Proposed  
Rule**

**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17****Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Notice of review.

**SUMMARY:** In this Candidate Notice of Review (CNOR), we, the U.S. Fish and Wildlife Service (Service), present an updated list of plant and animal species native to the United States that we regard as candidates for or have proposed for addition to the Lists of Endangered and Threatened Wildlife and Plants under the Endangered Species Act of 1973, as amended. Identification of candidate species can assist environmental planning efforts by providing advance notice of potential listings, allowing landowners and resource managers to alleviate threats and thereby possibly remove the need to list species as endangered or threatened. Even if we subsequently list a candidate species, the early notice provided here could result in more options for species management and recovery by prompting candidate conservation measures to alleviate threats to the species.

The CNOR summarizes the status and threats that we evaluated in order to determine that species qualify as candidates and to assign a listing priority number (LPN) to each species, or to remove species from candidate status. Additional material that we relied on is available in the Species Assessment and Listing Priority Assignment Forms (species assessment forms, previously called candidate forms) for each candidate species.

Overall, this CNOR recognizes 5 new candidates, changes the LPN for 29 candidates, and removes 4 species from candidate status. Combined with other decisions for individual species that were published separately from this CNOR, the new number of species that are candidates for listing is 280.

We request additional status information that may be available for the 280 candidate species identified in this CNOR. We will consider this information in preparing listing documents and future revisions to the notice of review, as it will help us in monitoring changes in the status of

candidate species and in management for conserving them. We also request information on additional species that we should consider including as candidates as we prepare future updates of this notice.

This document also includes our findings on resubmitted petitions and describes our progress in revising the Lists of Endangered and Threatened Wildlife and Plants during the period September 26, 2006, through September 30, 2007.

**DATES:** We will accept comments on the most recent Candidate Notice of Review at any time.

**ADDRESSES:** Submit your comments regarding a particular species to the Regional Director of the Region identified in **SUPPLEMENTARY INFORMATION** as having the lead responsibility for that species. You may mail or fax comments of a more general nature to the Chief, Division of Conservation and Classification, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Room 420, Arlington, VA 22203 (facsimile 703/358-2171). Written comments and materials we receive in response to this notice will be available for public inspection by appointment at the Division of Conservation and Classification (for comments of a general nature only) or at the appropriate Regional Office listed in **SUPPLEMENTARY INFORMATION**.

Species assessment forms with information and references on a particular candidate species' range, status, habitat needs, and listing priority assignment are available for review at the appropriate Regional Office listed below in **SUPPLEMENTARY INFORMATION** or at the Division of Conservation and Classification, Arlington, Virginia (see address above), or on our Internet Web site (<http://endangered.fws.gov/candidates/index.html>).

**FOR FURTHER INFORMATION CONTACT:** The Endangered Species Coordinator(s) in the appropriate Regional Office(s) or Chris Nolin, Chief, Division of Conservation and Classification (telephone 703-358-2171; facsimile 703-358-1735). Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800-877-8339.

**SUPPLEMENTARY INFORMATION:****Candidate Notice of Review***Background*

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), requires that we identify species of wildlife and plants that are endangered or threatened, based on the

best available scientific and commercial information. As defined in section 3 of the Act, an endangered species is any species which is in danger of extinction throughout all or a significant portion of its range, and a threatened species is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Through the Federal rulemaking process, we add species that meet these definitions to the List of Endangered and Threatened Wildlife at 50 CFR 17.11 or the List of Endangered and Threatened Plants at 50 CFR 17.12. As part of this program, we maintain a list of species that we regard as candidates for listing. A candidate species is one for which we have on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened, but for which preparation and publication of a proposal is precluded by higher-priority listing actions.

We maintain this list of candidates for a variety of reasons: to notify the public that these species are facing threats to their survival; to provide advance knowledge of potential listings that could affect decisions of environmental planners and developers; to provide information that may stimulate and guide conservation efforts that will remove or reduce threats to these species and possibly make listing unnecessary; to solicit input from interested parties to help us identify those candidate species that may not require protection under the Act or additional species that may require the Act's protections; and to solicit necessary information for setting priorities for preparing listing proposals. We strongly encourage collaborative conservation efforts for candidate species and offer technical and financial assistance to facilitate such efforts. For additional information regarding such assistance, please contact the appropriate Regional Office listed in **SUPPLEMENTARY INFORMATION** or visit our Internet Web site, <http://endangered.fws.gov/candidates/index.html>.

*Previous Notices of Review*

We have been publishing candidate notices of review (CNOR) since 1975. The most recent CNOR (prior to this CNOR) was published on September 12, 2006 (71 FR 53755). CNORs published since 1994 are available on our Internet Web site, <http://www.fws.gov/endangered/candidates/index.html>. For copies of CNORs published prior to 1994, please contact the Division of

Conservation and Classification (see **ADDRESSES** section above).

On September 21, 1983, we published guidance for assigning an LPN for each candidate species (48 FR 43098). Using this guidance, we assign each candidate an LPN of 1 to 12, depending on the magnitude of threats, imminence of threats, and taxonomic status; the lower the LPN, the higher the listing priority (that is, a species with an LPN of 1 would have the highest listing priority). Such a priority ranking guidance system is required under section 4(h)(3) of the Act (15 U.S.C. 1533(h)(3)). As explained below, in using this system we first categorize based on the magnitude of the threat(s), then by the immediacy of the threat(s), and finally by taxonomic status.

Under this priority ranking guidance system, magnitude of threat can be either "high" or "moderate to low." This criterion helps ensure that the species facing the greatest threats to their continued existence receive the highest listing priority. It is important to recognize that all candidate species face threats to their continued existence, so the magnitude of threats is in relative terms. When evaluating the magnitude of the threat(s) facing the species, we consider information such as: the number of populations and/or extent of range of the species affected by the threat(s); the biological significance of the affected population(s), taking into consideration the life history characteristics of the species and its current abundance and distribution; whether the threats affect the species in only a portion of its range, and if so the likelihood of persistence of the species in the unaffected portions; and whether the effects are likely to be permanent.

As used in our priority ranking system, immediacy of threat is categorized as either "imminent" or "nonimminent" and is not a measure of how quickly the species is likely to become extinct if the threats are not addressed; rather, immediacy is based on when the threats will begin. If a threat is currently occurring or likely to occur in the very near future, we classify the threat as imminent. Determining the immediacy of threats helps ensure that species facing actual, identifiable threats are given priority for listing proposals over those for which threats are only potential or species intrinsically vulnerable to certain types of threats but not known to be presently facing such threats.

Our priority ranking system has three categories for taxonomic status: Species that are the sole members of a genus; full species (in a genus that has more than one species); and subspecies,

distinct population segments of vertebrate species, and species for which listing is appropriate in a significant portion of their range.

The result of the ranking system is that we assign each candidate a listing priority number of 1 to 12. For example, if the threat(s) is of high magnitude, with immediacy classified as imminent, the listable entity is assigned an LPN of 1, 2, or 3 based on its taxonomic status (e.g., if the species is the only member of a genus, it would be assigned to the LPN 1 category, a full species to LPN 2, and a subspecies, DPS, or significant portion of the range to LPN 3). In summary, the LPN ranking system provides a basis for making decisions about the relative priority for preparing a proposed rule to list a given species. No matter which LPN we assign to a species, each species included in this notice as a candidate is one for which we have sufficient information to prepare a proposed rule to list it because it is in danger of extinction or likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

For more information on the process and standards used in assigning LPNs, a copy of the guidance is available on our Web site at: <http://www.fws.gov/angered/policy/index.html>. For more information on the LPN assigned to a particular species, the species assessment for each candidate contains the LPN chart and a detailed explanation of the rationale for the determination of the magnitude and imminence of threat(s) and assignment of the LPN; that information is summarized in this CNOR.

This revised notice supersedes all previous animal, plant, and combined candidate notices of review.

#### *Summary of This CNOR*

Since publication of the CNOR on September 12, 2006 (71 FR 53756), we reviewed the available information on candidate species to ensure that a proposed listing is justified for each species, and reevaluated the relative LPN assigned to each species. We also evaluated the need to emergency-list any of these species, particularly species with high priorities (i.e., species with LPNs of 1, 2, or 3). This review and reevaluation ensures that we focus conservation efforts on those species at greatest risk first. (In addition to reviewing candidate species, we have worked on numerous findings in response to petitions to list species, and on proposed and final determinations for rules to list species under the Act; some of these findings and determinations have been completed

and published in the **Federal Register**, while work on others is still under way. See the discussions of Preclusion and Expeditious Progress, below, for details.)

Based on our review of the best available scientific and commercial information, with this CNOR we identify 5 new candidate species (see *New Candidates*, below), change the LPN for 28 candidates (see *Listing Priority Changes in Candidates*, below) and determine that listing proposals are not warranted for 4 species and thus remove them from candidate status (see *Candidate Removals*, below). Combined with the other decisions published separately from this CNOR for individual species that previously were candidates, a total of 280 species (including 139 plant and 141 animal species) are now candidates awaiting preparation of rules proposing their listing. These 280 species, along with the 2 species currently proposed for listing, are included in Table 1. (Note, regarding the two species currently proposed for listing, we proposed one since the last CNOR and we proposed the other prior to the last CNOR.)

Table 2 includes 8 species identified in the previous CNOR as either proposed for listing or classified as candidates that are no longer in those categories. This includes four species for which we published separate findings that listing is not warranted, plus the four species that we have determined do not warrant preparation of a rule to propose listing and therefore have removed from candidate status in this CNOR.

#### **New Candidates**

Below we present brief summaries of five new candidates that we are recognizing in this CNOR, including one species of mammal, one amphibian, one fish, one snail, and one plant. Complete information, including references, can be found in the species assessment forms. You may obtain a copy of these forms from the Regional Office having the lead for the species, or from our Internet Web site (<http://angered.fws.gov/candidates/index.html>). For each of these five species, we find that we have on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened, but that preparation and publication of a proposal is precluded by higher-priority listing actions (i.e., these meet our definition of a candidate species). We also note below that one other species, Casey's June beetle (an insect), was identified as a candidate

earlier this year in a separate finding published in the **Federal Register**.

#### Mammals

New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)—The following summary is based on information contained in our files. The New Mexico meadow jumping mouse (jumping mouse) is endemic to New Mexico, Arizona, and a small area of southern Colorado. The jumping mouse nests in dry soils but uses moist, streamside, dense riparian/wetland vegetation. Recent genetic studies confirm that the New Mexico meadow jumping mouse is a distinct subspecies from other *Zapus hudsonius* subspecies, confirming the currently accepted subspecies designation.

The threats that have been identified are excessive grazing pressure, water use and management, highway reconstruction, development, and recreation. Surveys conducted in 2005 and 2006 documented a drastic decline in the number of occupied localities and suitable habitat across the range of the species in New Mexico and Arizona. Of the original 98 known historical localities, there are now only 10 known extant localities in New Mexico, 1 in Arizona, and an additional 8 localities that have not been surveyed since the early to mid 1990s. Moreover, the highly fragmented nature of its distribution is also a major contributor to the vulnerability of this species and increases the likelihood of very small, isolated populations being extirpated. The paucity of secure populations, and the destruction, modification, or curtailment of its habitat, poses the most immediate threats to this species. Because the threats affect the jumping mouse in all but two of the extant localities, the threats are of a high magnitude. These threats are currently occurring and, therefore, are imminent. Thus, we assigned an LPN of 3 to this subspecies.

#### Amphibians

Arizona treefrog, Huachuca/Canelo Distinct Population Segment (DPS) (*Hyla wrightorum*)—The following summary is based on information in our files. The population is known from three general localities at Rancho Los Fresnos, northern Sonora, Mexico, and 13–15 verified localities and one unverified locality in the Huachuca Mountains and Canelo Hills of Arizona. The population is both discrete and significant in accordance with our February 7, 1996, DPS policy (61 FR 4721). Evidence exists that the DPS persists in an ecological setting that is unique for the taxon, that loss of the

population segment would result in a significant gap in the range of the taxon, and that the population segment differs markedly from other populations of the species in its genetic characteristics. The population is discrete from the Mogollon Rim population of Arizona and New Mexico based on a physical separation of 130 miles, and from the Sierra Madre Occidental population in Sonora and Chihuahua, Mexico by 145 miles.

The most significant threats to the existence of the Huachuca/Canelo population of the Arizona treefrog are, in order of importance, habitat loss or degradation and direct mortality due to catastrophic fire; loss of populations due to drought or floods, which may be exacerbated by climatic extremes; predation by introduced species; and habitat degradation caused by livestock grazing, off-highway vehicles, and environmental contamination. The effects of these threats are exacerbated by small population sizes and low genetic diversity, as the Huachuca/Canelo Hills population has less than 20 known localities, each with observed breeding populations of 2–30 individuals. Taken together, these threats are of high magnitude, particularly in Arizona. The threats are also imminent or ongoing, particularly the threat of catastrophic wildfire; there have been several recent catastrophic fires in the Huachuca Mountains. Therefore, we have assigned an LPN of 3 to this population.

#### Fish

Laurel dace (*Phoxinus saylora*)—The laurel dace is a rare minnow known only from three independent systems on the Walden Ridge section of the Cumberland Plateau, including Soddy Creek, Sale Creek, and Piney River. The primary threats to the laurel dace stem from impacts to riparian and instream habitat resulting from incompatible land uses. The riparian habitats associated with some streams occupied by laurel dace have been affected by extensive timber removal activities on Walden Ridge in their vicinity; these activities often do not employ adequate streamside management zones or best management practices for road construction. Proposed projects, including installation of a water line that would cross occupied streams and construction of an impoundment on a tributary to an occupied stream, present additional direct and indirect threats to laurel dace habitat in the headwaters of Sale and Soddy creeks. We believe that the threat of habitat degradation from siltation across the range of laurel dace and the localized threats facing

populations in Sale and Soddy creeks combined with vulnerable status of the populations in Soddy and Sale creeks constitute threats collectively of high magnitude, but are nonimminent. Therefore, we assigned the laurel dace an LPN of 5.

#### Snails

San Bernardino springsnail (*Pyrgulopsis bernardina*)—This species is endemic to one natural spring, Snail Spring, on private lands, and one artificial spring, Tule Spring, on National Wildlife Refuge lands, in the Rio Yaqui basin of Cochise County, Arizona. The species was formerly known from six to eight springs. Known threats include water diversion, spring modification, and contaminants, while suspected threats include livestock grazing and groundwater depletion. The San Bernardino National Wildlife Refuge is actively managing Tule Spring and is attempting to acquire the property containing Snail Spring. However, the Refuge cannot address the potential threat from groundwater depletion without assistance from local stakeholders. The magnitude of threats is high because the limited distribution of this narrow endemic makes any catastrophic event likely to result in extinction of the species. The threats are ongoing and therefore imminent. Thus, we have assigned an LPN of 2 for the San Bernardino springsnail.

#### Insects

Casey's June beetle (*Dinacoma caseyi*)—We previously announced candidate status for this species in a separate warranted but precluded 12-month petition finding published on July 5, 2007 (72 FR 36635).

#### Plants

*Eriogonum corymbosum* var. *nilesii* (Las Vegas buckwheat)—The following information is based on information contained in our files. The Las Vegas buckwheat is a woody perennial shrub up to 4 feet high with a mounding shape. The flowers of this plant are numerous, small and yellow with small bract like leaves at the base of each flower. The Las Vegas buckwheat is very conspicuous when flowering in late September and early October. It is restricted to gypsum soil outcroppings in Clark and Lincoln Counties, Nevada. Only recently has the taxonomy of the subspecies been confirmed using molecular genetic analyses.

Loss of habitat from development is a significant threat with over 95 percent of the historic range and potential habitat of the subspecies lost to development. In 2005, the Las Vegas

buckwheat was known from nine locations on approximately 1,149 acres. However, since that time, approximately 289 acres were or soon will be developed, and the current distribution of the plant occupies 892 acres. In addition, OHV activity and other public land uses (casual public use, mining, and dumping) directly and indirectly threaten over half of the remaining habitat. To date, regulatory mechanisms to protect the Las Vegas buckwheat are inadequate. Its designation as a BLM special status species and limited resource and law enforcement personnel has not provided adequate protection on lands managed by the BLM. The Las Vegas buckwheat is not protected by the State of Nevada or any other regulatory mechanisms on other federal lands. We have determined that candidate status is warranted for the Las Vegas buckwheat as a result of threats to the remaining 892 acres of Las Vegas buckwheat. Conservation measures are being developed that could reduce the amount of occupied habitat at risk, but we believe it would be premature to consider these measures sufficiently complete as to remove these threats. The magnitude of threats is high since the more significant threats (development and surface mining) would result in direct mortality of the plants in over half of its' habitat. While both development and mining are very likely to occur in the future, they are not expected to happen in the immediate future, and thus, the threats are nonimminent. Accordingly, we assigned the Las Vegas buckwheat an LPN of 6.

#### Listing Priority Changes in Candidates

We reviewed the LPN for all candidate species and are changing the numbers for the following species. Some of the changes reflect actual changes in either the magnitude or imminence of the threats, and in one case, the LPN change reflects a change in the taxonomy of the species. For some species, our changes in the LPN reflect efforts to ensure national consistency as well as closer adherence to the 1983 guidelines in assigning these numbers, rather than a change in the nature of the threats.

#### Birds

Friendly ground-dove, American Samoa DPS (*Gallicolumba stairi stairi*)—The following summary is based on information contained in our files. The genus *Gallicolumba* is distributed throughout the Pacific and Southeast Asia. The genus is represented in the oceanic Pacific by six species. Three are endemic to Micronesian islands or archipelagos, two are endemic to island

groups in French Polynesia, and *G. stairi* is endemic to Samoa, Tonga, and Fiji. All six species have some level of threatened status on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List. Some authors recognize two subspecies of the friendly ground-dove, one, slightly smaller, in the Samoan archipelago (*G. s. stairi*), and one in Tonga and Fiji (*G. s. vitiensis*), but morphological differences between the two are minimal.

In American Samoa, the friendly ground-dove has been found on the islands of Ofu and Olosega (Manua Group). Threats to this subspecies have not changed over the past year. Of the primary threats to the subspecies (predation by nonnative species and natural catastrophes such as hurricanes), predation by nonnative species is thought to be occurring now, and predation likely has been occurring for several decades. This predation may be an important impediment to increasing the population. Predation by introduced species has played a significant role in reducing, limiting, and extirpating populations of island birds, especially ground-nesters, in the Pacific and other locations worldwide. Nonnative predators known or thought to occur in the range of the friendly ground-dove in American Samoa are feral cats (*Felis catus*), Polynesian rats (*Rattus exulans*), black rats (*R. rattus*), and Norway rats (*R. norvegicus*).

In January 2004 and February of 2005, hurricanes virtually destroyed the habitat of *G. stairi* in an area on Olosega Island where the species had been most frequently recorded. Although this species has coexisted with severe storms for millennia, this example illustrates the potential for natural disturbance to exacerbate the effect of anthropogenic disturbance on small populations. Consistent monitoring using a variety of methods over the last 5 years yielded few observations of this taxon in American Samoa. The total population size is poorly known, but is unlikely to number more than a few hundred pairs. The past five years or so of surveys have revealed no change in the relative abundance of this taxon in American Samoa. The distribution of the friendly ground-dove is limited to steep, forested slopes with an open understory and a substrate of fine scree or exposed earth; this habitat is not common in American Samoa. We revised the LPN from a 6 to a 9 to better reflect the fact that the threats posed to the friendly ground-dove (its small population size and nonnative predators), while imminent and occurring throughout its range, are

believed to be of a moderate magnitude rather than a high magnitude.

Kittlitz's Murrelet (*Brachyramphus brevirostris*)—Kittlitz's murrelet is a small diving seabird whose entire North American population, and most of the world's population, inhabits Alaskan coastal waters discontinuously from Point Lay south to northern portions of Southeast Alaska. Kittlitz's murrelets are associated with tidewater glaciers. The current population estimate for Kittlitz's murrelets in Alaska is approximately 16,700 birds, a decline of 74 to 84 percent during the past 10 to 20 years. New survey information supports and strengthens the negative population trend estimates that have been previously reported.

Threats to Kittlitz's murrelets include large-scale processes such as global climate change and marine climate regime shift. These large-scale processes may influence Kittlitz's murrelet survival and reproduction. Glacial retreat, a global phenomenon that affects many of the glaciers with which Kittlitz's murrelets are associated, is associated with changing forage fish availability and may result in increased predation from corvids (retreat of glaciers allows corvids easier access to murrelets on which they prey). Even if the causes of rapid climate warming were curbed today, feedback mechanisms would result in the continued retreat of tidewater glaciers into the foreseeable future. In addition, the declining population trend makes this species particularly susceptible to ongoing threats from other human activities, including oil spills, bycatch in commercial gillnet fisheries, and disturbance by tour boats. Kittlitz's murrelets are believed to have been seriously affected by the *Exxon Valdez* oil spill in Prince William Sound (PWS) in 1989. Estimates of direct mortality of Kittlitz's murrelets from this oil spill constituted a loss of 7 to 15 percent of the PWS population. Catastrophic events such as oil spills could have a significant negative effect on the population of this already diminished species. Susceptibility to mortality as bycatch in commercial fishing could be a significant factor in their population decline; Kittlitz's murrelets are caught in gill nets in numbers disproportionate to their density. In PWS, salmon gillnet fisheries occur each summer in or near Kittlitz's murrelet habitat. Kittlitz's murrelets represented 5 percent and 30 percent of murrelet bycatch in gillnets during 1990 and 1991, respectively. Tour boat visitation to glacial fjords is a growing industry, and this activity may increasingly disrupt Kittlitz's murrelet feeding behavior; tour boats

may provide artificial perch sites for avian predators. The number of cruise ships allowed into Glacier Bay has increased 30 percent since 1985, while smaller charter boats and private boats have increased 8 percent and 15 percent, respectively. An increase in tour boat operations has been noted in Kenai Fjords National Park as well. Disturbance can disrupt feeding birds and persistent boat traffic may prevent murrelets from using high quality foraging areas.

Based on the observed population trajectory and the severity of present threats (rapid glacial retreat, acute and chronic oil spills, commercial gillnet fishing, and human disturbance from tour boats), the threats to this species are high in magnitude and imminent. We changed the LPN from a 5 to a 2 to reflect that the threats to this species are ongoing.

**Xantus's murrelet (*Synthliboramphus hypoleucus*)**—The Xantus's murrelet is a small seabird in the Alcidi family that occurs along the west coast of North America in the United States and Mexico. The species has a limited breeding distribution, only nesting on the Channel Islands in southern California and on islands off the west coast of Baja California, Mexico. Although data on population trends are scarce, the population is suspected to have declined greatly over the last century, mainly due to introduced predators such as rats (*Rattus* sp.) and feral cats (*Felis catus*) to nesting islands, with extirpations on three islands in Mexico. A dramatic decline (up to 70 percent) from 1977 to 1991 was detected at the largest nesting colony in southern California, possibly due to high levels of predation on eggs by the endemic deer mouse (*Peromyscus maniculatus elusus*). Identified threats include introduced predators at nesting colonies, oil spills and oil pollution, reduced prey availability, human disturbance, and artificial light pollution.

Although substantial declines in the Xantus's murrelet population likely occurred over the last century, some of the largest threats are being addressed, and, to some degree, ameliorated. Declines and extirpations at several nesting colonies were thought to have been caused by nonnative predators, which have been removed from many of the islands where they once occurred. Most notably, since 1994, Island Conservation and Ecology Group has systematically removed rats, cats, and dogs from every murrelet nesting colony in Mexico, with the exception of cats and dogs on Guadalupe Island. In 2002, rats were eradicated from Anacapa

Island in southern California, which has resulted in improvements in reproductive success at that island. In southern California, there are also plans to remove rats from San Miguel Island, and to restore nesting habitat on Santa Barbara Island through the Montrose Settlements Restoration Project, which may benefit the Xantus's murrelet population at those islands.

Artificial lighting from squid fishing and other vessels, or lights on islands, remains a potential threat to the species. Bright lights make Xantus's murrelets more susceptible to predation, and they can also become disoriented and exhausted from continual attraction to bright lights. Chicks can become disoriented and separated from their parents at sea, which could result in death of the dependent chicks. High-wattage lights on commercial market squid (*Loligo opalescens*) fishing vessels used at night to attract squid to the surface of the water in the Channel Islands was the suspected cause of unusually high predation on Xantus's murrelets by western gulls and barn owls at Santa Barbara Island in 1999. To address this threat, in 2000, the California Fish and Game Commission required light shields and a limit of 30,000 watts per boat; it is unknown if this is sufficient to reduce impacts. Squid fishing has not occurred at a particularly noticeable level near any of the colonies in the Channel Islands since 1999; however, this remains a potential future threat.

A proposal to build a liquid natural gas (LNG) facility 600 meters (1,969 feet) off the Coronados Islands in Baja California, Mexico, was considered a potential major threat to the species. This island contains one of the largest nesting populations of Xantus's murrelets in the world. Potential impacts of this facility to the nesting colony included bright lights at night from the facility and visiting tanker vessels, noise from the facility or from helicopters visiting the facility, and the threat of oil spills associated with visiting tanker vessels. However, Chevron announced in March 2007 that they have abandoned plans to develop this facility and withdrew their permits. LNG facilities are proposed for construction in the Channel Islands; however, these are early in the complex and long-term planning processes; it is possible that none of these facilities will be built. In addition, none of them are directly adjacent to nesting colonies, where their impacts would be expected to be more significant.

We considered the LNG facility off the Coronados Islands to be an imminent threat of high magnitude, which

resulted in the previous listing priority of a 2. While this proposed LNG facility no longer poses a threat, the remaining threats, in particular oil spills, are high in magnitude since they have the potential to cause direct mortality and reduce reproductive success throughout a majority of the species' range. The threats are nonimminent since they are not currently occurring. Therefore, we have changed the LPN from a 2 to a 5.

#### Reptiles

**Louisiana pine snake (*Pituophis ruthveni*)**—The Louisiana pine snake (LPS) historically occurred in fire-maintained longleaf-pine ecosystems of west-central Louisiana and extreme east-central Texas. Those ecosystems provided an herbaceous layer necessary to maintain the Louisiana pine snake's primary prey, the Baird's pocket gopher. Current potentially occupied habitat in Louisiana and Texas is estimated to be approximately 300,000 acres, with 70 percent occurring on public lands and 30 percent in private ownership. Results of trapping and radio-telemetry surveys suggest that extensive population declines and local extirpations have occurred during the last 50 to 80 years. To address those issues on public lands, a Candidate Conservation Agreement (CCA) was completed in 2003 to maintain and enhance potentially occupied habitat, and protect known Louisiana-pine-snake populations. Much of the public land is now being managed on longer rotations (i.e., 70+ years) where silvicultural prescriptions include smaller clearcuts, midstory removal, thinning, and prescribed fire. Private lands generally are not managed to support the longleaf-pine ecosystem and its characteristic herbaceous layer; however, several private landowners with known Louisiana-pine-snake populations continue to be involved in conservation efforts with reported conservation of more than 2,000 acres in 2006.

Within both the public and private sectors, interest in longleaf-pine restoration appears to be growing and with the appropriate emphasis could slow or reverse habitat loss trends. To address this and other issues, the LPS Conservation Group is expanding conservation efforts through the development of a Comprehensive Conservation Plan that would build upon the CCA success. Other factors affecting Louisiana pine snakes throughout its range include low fecundity, which magnifies other threats and increases the likelihood of local extinctions, and vehicular mortality, which can significantly affect Louisiana-pine-snake population and community

structure. While the magnitude of Louisiana-pine-snake habitat loss has been great in the past and the remaining habitat is degraded, habitat loss does not represent an imminent threat, because the rate of habitat loss is declining. Additionally, pro-active partnerships to address key management concerns and research needs are resulting in some additional long-leaf pine habitat that is suitable for the Louisiana pine snake or its prey species. However, while conservation actions have produced needed results, they have not yet adequately reduced threats to the species, particularly on private land. The lack of adequate habitat still poses a threat and when coupled with the very low fecundity rate and extremely low population size (based on capture rates and population estimates) make the threat high in magnitude. Overall, due to nonimminent, high-magnitude threats, we changed the LPN from an 8 to a 5 for this species.

#### Amphibians

Columbia spotted frog, Great Basin DPS (*Rana luteiventris*)—Currently, Columbia spotted frogs appear to be widely distributed throughout southwestern Idaho, eastern Oregon, and northeastern and central Nevada, but local populations within these general areas appear to be small and isolated from each other. Recent work by researchers in Idaho and Nevada has documented loss of historically known sites, reduced numbers of individuals within local populations, and declines in the reproduction of those individuals. Small highly fragmented populations, characteristic of the majority of existing populations of Columbia spotted frogs in the Great Basin, are highly susceptible to extinction processes. Threats to Columbia-spotted-frog habitat, including water development, improper grazing, mining activities and non-native species, have and continue to contribute to the degradation and fragmentation of habitat. Emerging fungal diseases, such as chytridiomycosis, and the spread of parasites are contributing factors to Columbia-spotted-frog population declines throughout portions of its range. Effects of climate change such as drought and stochastic (randomly occurring) events such as fire often have detrimental effects to small isolated populations and can often exacerbate existing threats.

A 10-year Conservation Agreement and Strategy was signed in September 2003 for both the Northeast and the Toiyabe subpopulations in Nevada. The goals of the conservation agreements are to reduce threats to Columbia spotted

frogs and their habitat to the extent necessary to prevent populations from becoming extirpated throughout all or a portion of their historic range and to maintain, enhance, and restore a sufficient number of populations of Columbia spotted frogs and their associated habitat to ensure their continued existence throughout their historical range. Additionally, a Candidate Conservation Agreement with Assurances was completed in 2006 for the Owyhee subpopulation at Sam Noble Springs, Idaho. Because these conservation agreements have reduced the magnitude of the imminent threats from high to moderate, we changed the LPN from a 3 to a 9 for this DPS of the Columbia spotted frog.

Black Warrior waterdog (*Necturus alabamensis*)—The Black Warrior waterdog is a salamander that inhabits streams above the Fall Line within the Black Warrior River Basin in Alabama. There is very little specific locality information available on the historical distribution of the Black Warrior waterdog since little attention was given to this species between its description in 1937 and the 1980s. At that time, there were a total of only 11 known historical records from 4 Alabama counties. Two of these sites have now been inundated by impoundments. Extensive survey work was conducted in the 1990s to look for additional populations. Currently, the species is known from 14 sites in 5 counties.

Water-quality degradation is the biggest threat to the continued existence of the Black Warrior waterdog. Most streams that have been surveyed for the waterdog showed evidence of pollution and many appeared biologically depauperate. Sources of point and nonpoint pollution in the Black Warrior River Basin have been numerous and widespread. Pollution is generated from inadequately treated effluent from industrial plants, sanitary landfills, sewage treatment plants, poultry operations, and cattle feedlots. Surface mining represents another threat to the biological integrity of waterdog habitat. Runoff from old, abandoned coal mines generates pollution through acidification, increased mineralization, and sediment loading. The North River, Locust Fork, and Mulberry Fork, all streams that this species inhabits, are on the Environmental Protection Agency's list of impaired waters. An additional threat to the Black Warrior waterdog is the creation of large impoundments that have flooded thousands of square hectares (acres) of its habitat. These impoundments are likely marginal or unsuitable habitat for the salamander. While the water-quality threat is

pervasive and problematic, the overall magnitude of the threat is moderate as there has not been a steep rate of decline in this species population. Water quality degradation in the Black Warrior basin is ongoing; therefore, the threats are imminent. We changed the LPN from a 2 to an 8 for this species since the threats are of a moderate rather than high magnitude.

#### Clams

Fluted kidneyshell (*Ptychobranthus subtentum*)—The fluted kidneyshell is a freshwater mussel (Unionidae) endemic to the Cumberland and Tennessee River systems (Cumberlandian Region) in Alabama, Kentucky, Tennessee, and Virginia. It requires shoal habitats in free-flowing rivers to survive and successfully recruit new individuals into its populations.

This species has been extirpated from numerous regional streams and is no longer found in the State of Alabama. Habitat destruction and alteration (e.g., impoundments, sedimentation, and pollutants) are the chief factors that contributed to its decline. The fluted kidneyshell was historically known from at least 37 streams but is currently restricted to no more than 12 isolated populations. Current status information for most of the 12 populations deemed to be extant is available from recent periodic sampling efforts (sometimes annually) and other field studies, particularly in the upper Tennessee River system. Some populations in the Cumberland River system have had recent surveys as well (e.g., Wolf, Little Rivers; Little South Fork; Horse Lick, Buck Creeks). Populations in Buck Creek, Little South Fork, Horse Lick Creek, Powell River, and North Fork Holston River have clearly declined over the past two decades. Based on recent information, the overall population of the fluted kidneyshell is declining rangewide and the species remains in large numbers and is clearly viable in just the Clinch River/Copper Creek, although smaller, viable populations remain (e.g., Wolf, Little, North Fork Holston Rivers; Rock Creek). Most other populations are of questionable or limited viability, with some on the verge of extirpation (e.g., Powell River; Little South Fork; Horse Lick, Buck, Indian Creeks). Newly reintroduced populations in the Nolichucky and Duck Rivers will hopefully begin to reverse the downward population trend of this species. The threats are high in magnitude since all populations of this species are severely affected by numerous threats (impoundments, sedimentation, small population size,

isolation of populations, gravel mining, municipal pollutants, agricultural runoff, nutrient enrichment, and coal processing pollution) which results in mortality and/or reduced reproductive output. Since the threats are ongoing, they are imminent. Therefore, to help ensure consistency in the application of our listing priority process, we changed the LPN from a 5 to a 2 to reflect that the threats are imminent and high in magnitude.

#### Snails

**Black mudalia (*Elimia melanoides*)**—The black mudalia is a small species of aquatic snail found clinging to clean gravel, cobble, boulders and/or logs in flowing water on shoals and riffles. The historical habitat of the black mudalia included much of the upper Black Warrior River drainage above the Fall Line at Tuscaloosa, Alabama. The species has been extirpated from more than 80 percent of that range through the construction of dams and impoundments, sedimentation, and non-point source pollution from land surface runoff. Populations that may have avoided impoundment apparently disappeared due to historical pollution events and/or natural catastrophic events. However, after being considered extinct for two decades, the black mudalia was rediscovered in a small portion of its historical range in the Black Warrior drainage. Discovery of surviving populations in shoals of five streams in the upper Black Warrior River and high densities reported at Blackburn Fork reduce the magnitude of the threats from high to moderate. However, all known populations are currently affected by point and/or non-point source pollution; human land uses, including cattle grazing, row crops, timber, chicken farms, and home construction are currently causing sedimentation and eutrophication (reduction of oxygen in the water) of black mudalia habitats. Thus, based on ongoing threats that we now consider to be moderate in magnitude, we changed the LPN from 2 to 8 for the black mudalia.

**Huachuca springsnail (*Pyrgulopsis thompsoni*)**—The following summary is based on information from our files. No new information was provided in the petition received on May 11, 2004. The Huachuca springsnail inhabits 13 springs and ciénegas at elevations of 4,500 to 7,200 feet in southeastern Arizona (11 sites) and adjacent portions of Sonora, Mexico (2 sites). The springsnail is typically found in the shallower areas of springs or cienegas, often in rocky seeps at the spring source. Ongoing threats include habitat

modification, wildfire, cattle grazing, and groundwater pumping. Prior communication with personnel from Fort Huachuca indicated they were in the process of evaluating the status of this species on Department of Defense lands and developing conservation strategies; this may result in a reduction or elimination of threats in the future. Because we determined that the proportion of the range subjected to various threats is smaller than we previously determined, the threats are moderate in magnitude. In addition, although there is no actual change in threats over the past year, modification of the spring habitat, wildfire, cattle grazing, and groundwater pumping are ongoing or imminent threats. Therefore, to help ensure consistency in the application of our listing priority process, we changed the LPN from a 5 to an 8 to reflect that the threats are imminent but are moderate in magnitude.

**Page springsnail (*Pyrgulopsis morrisoni*)**—The following summary is based on information from our files. No new information was provided in the petition received on May 11, 2004. The Page springsnail is known to exist only within a complex of springs located within an approximately 1.5-kilometer (0.93-mile) stretch along the west side of Oak Creek around the community of Page Springs, Yavapai County, Arizona. Many of the springs where the springsnail occurs have been subjected to some level of modification for domestic, agricultural, ranching, fish hatchery, and recreational activities. Arizona Game and Fish Department management plans for the Bubbling Ponds and Page Springs fish hatcheries include commitments to replace lost habitat and to monitor remaining populations of invertebrates such as the Page springsnail. The Arizona Game and Fish Department and the Service have made significant progress on development of a candidate conservation agreement, but the effectiveness of planned and implemented actions has not been demonstrated. Based on recent survey data, it appears that the Page springsnail is abundant within natural habitats and persists in modified habitats, albeit at reduced densities. The magnitude of threats is considered high because limited distribution of this narrow endemic makes any detrimental effects from threats likely to result in extirpation or extinction. The immediacy of the threat of groundwater withdrawal is uncertain due to conflicting information that suggests it may be either imminent or not.

However, overall, the threats are imminent because the majority of them are currently occurring. Although there is no actual change in threats over the past year, modification of the spring habitat for this species is an ongoing or imminent threat. Therefore, to help ensure consistency in the application of our listing priority process, we changed the LPN from a 5 to a 2 to reflect that the threats are imminent.

#### Insects

**Dakota skipper (*Hesperia dacotae*)**—The following summary is based on information contained in our files, including information from the petition we received on May 12, 2003. The Dakota skipper is a small- to mid-sized butterfly that inhabits high-quality tallgrass and mixed grass prairie in Minnesota, North Dakota, South Dakota, and the provinces of Manitoba and Saskatchewan in Canada. The species is presumed to be extirpated from Iowa and Illinois and from many sites within occupied States.

The species is threatened by conversion of its native prairie habitat for agricultural purposes, overgrazing, invasive species, gravel mining, inbreeding, population isolation, and, in some cases, prescribed fire. Prairie succeeds to shrubland or forest without periodic fire, grazing, or mowing; thus, the species is also threatened at sites where such disturbances are not applied. We, other agencies, and private organizations (e.g., The Nature Conservancy) protect and manage some Dakota skipper sites. Although proper management is always necessary to ensure its persistence, even at protected sites, it is secure at some sites owned by these entities. The species is also secure at some sites where private landowners manage native prairie in ways that conserve Dakota skipper. Recent surveys in at least parts of the species' range have led us to revise our view of the imminence of threats to Dakota skipper. In January 2007, for example, Minnesota Department of Natural Resources proposed revising the status of Dakota skipper in the state from threatened to endangered because it "appears to be rapidly disappearing from remnant habitat." In addition, approximately half of the inhabited sites are privately owned with little or no protection. Ongoing threats on these sites include invasive species, overgrazing, and herbicide applications. A few private sites are protected from conversion by easements, but these do not prevent adverse effects from overgrazing. The threats are such that the species warrants listing; the threats are moderate in magnitude and, based on



the above new information, are imminent. Therefore, we changed the listing priority number from an 11 to an 8 for the Dakota skipper to reflect the increase in immediacy of threats to remnant habitat, particularly on private lands.

Coral Pink Sand Dunes tiger beetle (*Cicindela albissima*)—The Coral Pink Sand Dunes tiger beetle occurs only at the Coral Pink Sand Dunes, approximately 7 miles west of Kanab, Kane County, in south-central Utah. It is restricted to a small part of the dune field, situated at an elevation of about 1,820 m (6,000 ft). The beetle's habitat is being adversely affected by ongoing recreational off-road vehicle use that is destroying and degrading the beetle's habitat, especially the interdunal swales used by the larvae. The continued survival of the beetle depends on the preservation of its habitat. The two agencies that manage the dune field, the Utah Department of Parks and Recreation and the Bureau of Land Management, have restricted recreational off-road vehicle use in some areas, which reduces impacts. However, the protected areas may not be of sufficient size to enable the population to increase in size. The beetle's population is also vulnerable to overcollecting by professional and hobby tiger-beetle collectors. Because the taxon was recently elevated to a full species based on genetic research, we changed the listing priority from a 9 to an 8. The imminence and magnitude of the threats remain the same (imminent and moderate to low magnitude).

Stephan's riffle beetle (*Heterelmis stephani*)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Stephan's riffle beetle is an endemic riffle beetle found in limited spring environments within the Santa Rita Mountains, Pima County, Arizona. The beetle is known from Bog Spring and Sylvester Spring in Madera Canyon, within the Coronado National Forest. These springs are typical isolated, mid-elevation, permanently saturated, spring-fed aquatic climax communities commonly referred to as ciénegas. Threats are largely from habitat modification (from recreational activities in the springs and changes in water chemistry due to catastrophic natural disasters such as fires or floods); we consider them to be of moderate to low magnitude due to the lack of focused studies to evaluate the permanence of threats or the likelihood of persistence of the species in areas that are unaffected. Furthermore, because the threats are currently

occurring, they are best characterized as imminent. Due to moderate to low magnitude of imminent threats, we changed the LPN from a 5 to an 8 for Stephan's riffle beetle.

#### Crustaceans

*Typhlatya monae* (troglobitic groundwater shrimp)—*Typhlatya monae* is a subterranean small shrimp known from Puerto Rico, Barbuda, and Dominican Republic. It is classified as a troglobite, or obligatory cave organism, of which its most extraordinary feature is the reduction or loss of vision and pigmentation. It feeds on organic waste material and debris, such as bat guano.

Little is known concerning the status of *Typhlatya monae* in either Barbuda or Dominican Republic. Although in Puerto Rico this species was previously found at Mona Island, currently *Typhlatya monae* is known from only three caves within the Guánica Commonwealth Forest in the municipalities of Guánica, Yauco, and Guayanilla. However, the species may still be found in the reef deposit aquifers in Mona Island that have not yet been surveyed. In 1995, close to 2,000 individuals were estimated; over 95 percent of these were observed in only one cave. Although no systematic censuses have been conducted since 1995, we have recently documented the presence of the species in all three caves and obtained information regarding another cave in which the species may occur from Puerto Rico Commonwealth Forest personnel.

Changes in groundwater quality, collection of rare animals, predation, limited distribution of the species, limited availability of appropriate habitat (i.e., underground aquifers within cave formations), potential reduction of food sources (e.g., mortality or reduction in bat populations), and low population numbers potentially threaten populations of *Typhlatya monae*. However, because the known range of *Typhlatya monae* is within protected lands, and because we have received new information of known management activities within the Guánica Commonwealth Forest or Mona Island (activities are managed such that some of the threats to this species no longer exist; e.g. the caves are closed to visitors), we now consider the magnitude of the remaining threats (possible extraction of ground-water in Mona and vulnerability to catastrophic events) moderate to low. Therefore, we changed the LPN from a 5 to an 11 for this species.

#### Flowering plants

*Abronia alpina* (Ramshaw Meadows sand-verbena)—*Abronia alpina* is a small perennial herb, 2.5 to 15.2 centimeters (1 to 6 inches) across which forms compact mats with lavender-pink, trumpet-shaped, and generally fragment flowers. *Abronia alpina* is known from one main population center in Ramshaw Meadow on the Kern Plateau of the Sierra Nevada, California, and from one subpopulation found in adjacent Templeton Meadow. The total estimated area occupied is approximately 6 hectares (15 acres). The population fluctuates from year to year without any clear trends. Population estimates from 1985–1994 range from a low of 69,652 plants in 1986 to 132,215 plants in 1987. Surveys conducted since 1994 indicate that no significant changes have occurred in population size or location, although, the 2003 survey showed population numbers to be at the low end of the range. The population was last monitored in 2006.

The threats currently facing *Abronia alpina* include natural and human habitat alteration, hydrologic changes to the water table, and recreational use within meadow habitats. Lodgepole pine encroachment has altered the meadow and becoming established within *A. alpina* habitat. Lodgepole pine encroachment may alter soil characteristics by increasing organic matter levels, decreasing porosity, and moderating diurnal temperature fluctuations thus reducing the competitive ability of *A. alpina* to persist in an environment more hospitable to other plant species. The Ramshaw Meadow ecosystem is subject to potential alteration by lowering of the water table due to downcutting of the South Fork of the Kern River (SFKR). The SFKR flows through Ramshaw Meadow, at times coming within 15 m (50 ft) of *A. alpina* habitat, particularly in the vicinity of five subpopulations. The habitat occupied by *A. alpina* directly borders the meadow system supported by the SFKR. Drying out of the meadow system could potentially affect *A. alpina* pollinators and/or seed dispersal agents. Established hiker, packstock, and cattle trails pass through *A. alpina* subpopulations. Two main hiker trails pass through Ramshaw Meadow, but were rerouted out of *A. alpina* subpopulations where feasible, in 1988 and 1997. Remnants of cattle trails that pass through subpopulations in several places receive occasional incidental use by horses and sometimes hikers. Cattle use, however, currently, is not a threat due to the 2001 implementation of a ten-year

moratorium on the Templeton allotment which prohibits cattle from all *A. alpina* locations. In 2007, the U.S. Forest Service in cooperation with the Service drafted a Conservation Agreement for *A. alpina* that would provide protective measures via increased management of recreation in the area, habitat management, and research on *A. alpina*. Approval and finalization of this Agreement is anticipated in Fiscal Year 2008. The Service is funding studies to determine appropriate conservation measures. As a result of rerouting hiking trails, curtailing grazing, and development of a Conservation Agreement between the U.S. Forest Service and the Service the threats facing *Abronia alpina* have been reduced. Because the population is stable and the threats have been reduced, we changed the LPN for *A. alpina* from an 8 to an 11, reflecting nonimminent threats that are moderate to low in magnitude.

*Bidens campylotheca* ssp. *waihoi*ensis (Kookoolau)—Kookoolau is an erect, perennial found in wet *Acacia-Metrosideros* (koa-ohia) forest on Maui, Hawaii. *Bidens campylotheca* ssp. *waihoi*ensis is known from 1 and possibly 2 populations, 1 of 200 individuals, and the second of possibly as many as 300 individuals. It is threatened by feral pigs and cattle, which eat this plant and degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Conservation measures such as strategic fences and control of nonnative plants benefit the plants in Kipahulu Valley; however, the individuals in Waihoi Valley are still affected by these threats. Therefore, to reflect the fact that the threats are ongoing, we have changed the LPN for this species from a 6 to a 3.

*Chamaecrista lineata* var. *keyensis* (Big Pine partridge pea)—This pea is endemic to the lower Florida Keys, and restricted to pine rocklands, hardwood hammock edges, and roadsides and firebreaks within these ecosystems. Historically, it was known from Big Pine, No Name, Ramrod, and Cudjoe Keys (Monroe County, Florida). It presently occurs on Big Pine, plus two very small populations found on Cudjoe and lower Sugarloaf Keys in 2005. It is fairly well distributed in Big Pine Key pine rocklands, which encompass approximately 580 hectares (1,433 acres). Roughly 90 percent of its current range is within the Service's National Key Deer Refuge. In late 2005, it occurred within 37.2 percent of 541 plots sampled throughout the publicly owned pine rocklands on Big Pine Key. Frequency of occurrence was twice as

great and density over 3 times greater in the less fragmented, more fire-prone northern portion of Big Pine Key than the southern part. Pine rockland communities are maintained by relatively frequent fires. In the absence of fire, shrubs and trees encroach on pine rockland and the pea is eventually shaded out. The National Key Deer Refuge (NKDR) has a prescribed fire program, though with many constraints on implementing fire. Absence of fire is the greatest of the short-term and deterministic threats.

Hurricanes are also a threat. Hurricane Wilma (October 2005) resulted in a storm surge that covered most of Big Pine Key with sea water. In plots sampled after Wilma, frequency of occurrence decreased to less than a third and density decreased to less than half that found in plots sampled before Wilma.

The magnitude of threats to the Big Pine partridge pea is moderate. Partridge pea has a very limited distribution that is somewhat fragmented and fire limitation, salt water storm surges (direct mortality, as well as slash pine mortality, associated with hurricanes), and pollinator limitation, constitute significant threats. Additionally, threats from storm surges associated with hurricanes are exacerbated by sea level rise. Big Pine partridge pea exists as one relatively large population (possibly fragmented into a metapopulation) on Big Pine Key and two very small, isolated populations on two other keys. However, population size is on the order of several hundred thousand, and the majority occurs on the NKDR. Over the long run, partridge pea receives protective measures only on NKDR and the Terrestris Preserve. The immediacy of threats is imminent as the probability of intense hurricanes has increased in recent years, and increasingly sea levels have exacerbated the threat. Additionally, storm surges have complicated efforts to conduct prescribed fires. If the frequency of prescribed fire does not increase, the imminence of threats due to fire suppression will continue to increase. Because the threats are moderate rather than high in magnitude due to some protection from threats provided by the NKDR and Terrestris Preserve, we changed the LPN from a 6 to a 9 for the Big Pine partridge pea.

*Chamaesyce deltoidea* ssp. *serpyllum* (Wedge spurge)—New survey results were obtained in March 2006. Wedge spurge is a small, prostrate herb. It has always been restricted to Big Pine Key in Monroe County, Florida. Most of the range falls within the National Key Deer

Refuge. It is restricted to pinelands on limestone rock (pine rockland), at sites with exposed rock or gravel, low understory cover, and low hardwood density. Pine rocklands encompass approximately 580 hectares (1,433 acres) on Big Pine Key. It is not widely dispersed within the limited range. In late 2005, it occurred within 7.4 percent of 541 plots sampled throughout the publicly owned pine rocklands on Big Pine Key. Hurricane Wilma (October 2005) resulted in a storm surge that covered most of Big Pine Key with sea water. Before and after Wilma, it occurred in 9.3 of 332 sample plots and 4.3 percent of 209 sample plots, respectively, and density decreased significantly within plots. Occupied plots had become restricted to the higher, middle portion of Big Pine Key. In the absence of fire, shrubs and trees encroach on pine rockland and spurge is eventually shaded out.

The magnitude of threats to the wedge spurge is moderate. Wedge spurge has a narrow distribution composed of few occurrences, and threats result from lack of fire, hurricanes, sea level rise, and invasive exotic plants. Additionally, threats from storm surges associated with hurricanes are exacerbated by sea-level rise. Wedge spurge exists essentially as a single (fragmented) population on Big Pine Key, which over the long run is protected only on NKDR and the Terrestris Preserve. However, population size is on the order of several hundred thousand, and the majority occurs on the NKDR. The National Key Deer Refuge has a prescribed fire program, though with many constraints on implementing fire.

The threats to the wedge spurge are imminent. The best available information indicates that this plant is intrinsically vulnerable to extinction because it is a narrow endemic. Moreover, the threats of hurricanes and shading due to lack of fire are ongoing. However, because the threats are moderate rather than high in magnitude due to some protection from threats provided by the NKDR and Terrestris Preserve, we changed the LPN from a 6 to a 9 for the wedge spurge.

*Cordia rupicola* (no common name)—*Cordia rupicola*, a small shrub, has been described from southwestern Puerto Rico (Peñuelas and Guánica), Vieques Island, and Anegada Island (British Virgin Islands). *Cordia rupicola* is restricted to subtropical dry forest life zone overlying a limestone substrate. At present time, less than 20 individuals of *C. rupicola* are currently known from four sites in Puerto Rico; only a few individuals are located in protected lands managed for conservation by the

Puerto Rico Department of Natural and Environmental Resources or the Service. The area that contains 83 percent of the known population is located in a privately-owned property and is threatened by habitat destruction or modification. While the population on Aneгада Island is currently stable, this population is threatened by potential residential and commercial development. Both populations are also vulnerable to natural (e.g., hurricanes) or manmade (e.g., human-induced fires) threats. All sites are located in a xeric environment vulnerable to human-induced fires which could destroy entire populations. For these reasons, the magnitude of the current threats is high. While hurricanes and fire do occur, the rate of occurrence is such that they do not pose an imminent threat. The threats this species faces are ones that will arise in the future if conservation measures are not implemented and long-term impacts are not averted. For these reasons, the threats to the species as a whole are nonimminent, and therefore, we changed the LPN from a 2 to a 5 for this species.

*Dalea carthagenensis floridana* (Florida prairie-clover)—*Dalea carthagenensis floridana* occurs in Big Cypress National Preserve in Monroe and Collier Counties, Florida. It is also known from small populations in Miami-Dade County. There are a total of nine extant occurrences, most of which are on conservation land. Existing occurrences are extremely small and may not be viable, especially those in Miami-Dade County. Remaining habitats are fragmented. This plant is threatened by habitat loss and habitat degradation due to fire suppression, the difficulty of applying prescribed fire to pine rocklands, and threats from exotic plants. Damage to plants by off-road vehicles is a serious threat within the Big Cypress National Preserve; the threat from illegal mountain biking at the R. Hardy Matheson Preserve has been reduced. This species is being parasitized by the introduced insect lobate lac scale at some localities (e.g., R. Hardy Matheson Preserve), but we do not know the extent of this threat. This plant is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges. Due to its restricted range and the small sizes of most isolated occurrences, this species is vulnerable to environmental (catastrophic hurricanes), demographic (potential episodes of poor reproduction), and genetic (potential inbreeding depression) threats. After a thorough review of the species status

and threats, the magnitude of threats is high and threats are imminent because of the limited number of occurrences and the small number of individual plants at each occurrence. In addition, even though many sites are on conservation lands, these plants still face significant ongoing threats. Therefore, we have changed the LPN from 9 to 3 for this subspecies.

*Echinomastus erectocentrus* var. *acunensis* (Acuna cactus)—The following summary is based on information contained in our files and the petition we received on October 30, 2002. The Acuna cactus is known from six sites on well-drained gravel ridges and knolls on granite soils in Sonoran Desert scrub association at 1300–2000 feet elevation.

Habitat destruction has been a threat in the past and is a potential future threat to this species. New roads and illegal activities have not yet directly affected the cactus populations at Organ Pipe Cactus National Monument, but areas in close proximity to these known populations have been altered. Cactus populations located in the Florence area have not been monitored, and these populations may be in danger of habitat loss due to recent urban growth in the area. Urban development near Ajo, Arizona, as well as that near Sonoyta, Mexico, is a significant threat to the Acuna cactus. Populations of the Acuna cactus within the Organ Pipe Cactus National Monument have shown a 50-percent mortality rate in recent years. The reason(s) for the mortality are not known, but continuing drought conditions are thought to play a role. The Arizona Plant Law and the Convention on International Trade in Endangered Species of Wild Fauna and Flora provide some protection for the Acuna cactus. However, illegal collection is a primary threat to this cactus variety and has been documented on the Organ Pipe Cactus National Monument in the past. The threats continue to be of a high magnitude. The threats are now imminent, as evidenced by the continued decline of the species, most likely from effects from the ongoing drought. Conditions in 2006 worsened, and the drought is prevalent throughout the range of this variety. For this reason, we believe that the main threat, drought, is on-going and is a significant threat to the long-term viability of this variety. Thus, we changed the LPN from a 6 to a 3 for this cactus variety.

*Geranium hanaense* (Nohoanu)—This species is a decumbent shrub found in bogs on Maui, Hawaii. This species is known from two adjacent bogs totaling 300 to 500 individuals. *Geranium*

*hanaense* is threatened by pigs that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. However, feral pigs have been fenced out of and removed from both bogs in which this species currently occurs, and a control program has reduced nonnative plants in all fenced areas. Given that the threats to the only known populations of this species are currently being managed and the populations are routinely monitored, this changes the overall magnitude of these threats to moderate. The threats are imminent, however, because the fences must be routinely monitored and nonnative plants must continually be controlled. Therefore, we have changed the LPN for this species from a 5 to an 8.

*Helianthus verticillatus* (whorled sunflower)—The following information is based on information contained in our files. The whorled sunflower is found in moist, prairie-like openings in woodlands and along adjacent creeks. Despite extensive surveys throughout its range, only five populations are known for this species from seven sites. There are two populations documented for Cherokee County, Alabama; one in Floyd County, Georgia; and one each in Madison and McNairy Counties, Tennessee. This species appears to have restricted ecological requirements and is dependent upon the maintenance of prairie-like openings for its survival. Active management of habitat is needed to keep competition and shading under control. Much of its habitat has been degraded or destroyed for agricultural, silvicultural, and residential purposes; timber harvest remains a potential threat for the Alabama populations. We changed the priority number from an 11 to a 5 to reflect a high magnitude of threat based on current information. The 11 was assigned previously because the magnitude of threat was then moderate since information at that time indicated that the Georgia site, which is permanently protected, was the largest population, had thousands of plants, and was thriving. New information indicates that this Georgia site actually only harbors 15 to 20 individuals and that plants at this site appear to have low fitness as indicated by their shorter stature and the absence of flowering in this population. The remaining four populations are all on private land with no protection at this time. However, the threats are still nonimminent though since efforts are actively underway to obtain protection for these sites and habitat conversion and timber harvesting are not currently affecting the species.

*Phacelia stellaris* (Brand's phacelia)—*Phacelia stellaris* is an annual plant in the Hydrophyllaceae (water-leaf family). Plants are spreading to erect, 6 to 25 cm (2.5 to 10 in) tall. *Phacelia stellaris* was historically found in Los Angeles, Riverside, and San Diego Counties and in coastal northern Baja California, Mexico. Approximately 50 percent of the linear extent of the coastal occurrences of this species has been lost, presumably to urbanization and habitat degradation. The last documentation of the range of the species in Mexico was in 1975. In the United States, four of the five known extant occurrences are from coastal San Diego County, California, in the following areas: Marine Corps Base Camp Pendleton, Silver Strand in the City of San Diego, within a few hundred yards of the Mexican border at Lichty Mesa, and the recently rediscovered population at Coronado Island on Naval Air Station North Island. The only other known extant occurrence is in western Riverside County, southwest of Fairmont Park. Potential threats to the U.S. occurrences include: The anticipated Border Fence project, development or agricultural activities, trampling from humans and equestrian traffic, disturbances from management actions, and invasive nonnative plants. Three of the five populations are very small (tens to low-hundreds) and small populations are considered subject to random events and genetic constraints. This species faces high magnitude threats, but the efforts of land managers and other regulatory mechanisms have resulted in the threats being nonimminent. Therefore, because overall, the threats are nonimminent, we changed the LPN for this species from a 2 to a 5.

*Phyllostegia floribunda* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is an erect subshrub found in mesic to wet forest on the island of Hawaii, Hawaii. This species is known from 10 locations totaling fewer than 270 naturally occurring and outplanted individuals on State, private, and Federal lands. *Phyllostegia floribunda* is threatened by feral pigs that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. The Park Service, The Nature Conservancy of Hawaii, and the State have outplanted over 170 individuals at O'laa Forest Reserve, Kona Hema, and Waiakea Forest Reserve (greater than 50, 20 individuals, and 100 individuals, respectively). Fences

protect approximately seven populations on private, State, and Park Service lands. Nonnative plants have been reduced in these fenced areas. However, no conservation efforts have been implemented for the unfenced populations. Because these threats are of imminent, but only moderate magnitude for the majority of the populations, we changed the LPN from a 2 to an 8.

*Sideroxylon reclinatum* ssp. *austrorfloridense* (Everglades bully)—Everglades bully occurs on pinelands, pineland/prairie ecotones, and prairies in Everglades National Park and private lands in Miami-Dade County, and Big Cypress National Preserve in Monroe County, Florida. Pine rocklands in Miami-Dade County have largely been destroyed by residential, commercial, and urban development and agriculture. Most remaining suitable habitat for this plant has been negatively altered by human activity. While privately owned pine rocklands are at risk from development, habitat for this plant is, for the most part, protected. The species is threatened by habitat loss and habitat degradation due to fire suppression, the difficulty of applying prescribed fire to pine rocklands, and exotic plants. Hydrology has been altered within Long Pine Key at Everglades National Park due to artificial drainage, which lowered ground water, and construction of roads, which either impounded or diverted water. Regional water management intended to restore the Everglades could negatively affect the pinelands of Long Pine Key, where the largest population occurs. At this time, it is not known whether Everglades restoration will have a positive or negative effect. This species may be vulnerable to catastrophic events and natural disturbances, such as hurricanes. Sea level rise will likely be a factor over the long term. After a thorough review of the species status and threats, the magnitude of threats continues to remain moderate to low, particularly since additional populations have recently been documented at Big Cypress National Preserve and on small pinelands in Miami-Dade County. We anticipate that additional occurrences will be found at Everglades National Park. Overall, the threats are nonimminent, particularly since most of the habitat is protected and managed to benefit this species. For the largest population in Everglades National Park, efforts are under way to ameliorate the threats from exotic plants. Therefore, we changed the LPN from a 9 to a 12 for this subspecies.

*Solanum nelsonii* (Popolo)—The following summary is based on information contained in our files. No

new information was provided in the petition we received on May 11, 2004. *Solanum nelsonii* is a sprawling or trailing shrub found in coral rubble or sand in coastal sites. This species is known from populations in the northwestern Hawaiian Islands: Midway (approximately 260 plants), Laysan (approximately 490 plants), Pearl and Hermes (unknown number of individuals), Nihoa (8,000 to 15,000 adult plants); and Molokai (approximately 300 plants), in the main Hawaiian Islands. *Solanum nelsonii* is moderately threatened by ungulates (on Molokai) that degrade and destroy habitat, and that may eat it, and by nonnative plants that outcompete and displace it (Molokai and the northwestern Hawaiian Islands). Ungulate exclusion fences, routine fence monitoring and maintenance, and weed control protect the population of *S. nelsonii* on Molokai. Limited weed control is conducted in the northwestern Hawaiian Islands. In addition, *S. nelsonii* is likely threatened by being eaten by a nonnative grasshopper, *Schistocerca nitens*, in the northwestern Hawaiian Islands. Currently no control measures are in place for this grasshopper. Because these threats are of moderate magnitude and are imminent for the majority of the populations, we changed the LPN from a 2 to an 8.

*Symphytichum georgianum* (Georgia aster)—Georgia aster is a relict species of post oak savanna/prairie communities that existed in the southeast prior to widespread fire suppression and extirpation of large native grazing animals. Most remaining populations survive adjacent to roads, utility rights of way and other openings where current land management mimics natural disturbance regimes. Georgia aster currently is known to occur in the States of Alabama, Georgia, North Carolina, and South Carolina. The species appears to have been extirpated from Florida.

Most of the known populations are small (fewer than 50 stems), and because the species' main mode of reproduction is vegetative, each isolated population may represent only a few genotypes. A key factor impacting the Georgia aster is the present and threatened destruction, modification, and curtailment of its habitat and range as a result of subdivision development, highway expansion/improvement activities, herbicide application, and succession by wood plants due to fire suppression. The inadequacy of existing regulatory mechanisms is another factor posing a threat to the species, as approximately 95 percent of the known

surviving populations are estimated to occur on private lands and no state or local laws protect the plants or their habitat. The species is not afforded specific protection on federal lands, where we estimate 5 percent of the populations occur. A third factor impacting the species is direct damage from mowing or herbicide applications conducted as part of maintenance along highways and rights of way; these activities can kill plants, and possibly extirpate populations in local areas.

In previous years, we assigned an LPN of 5 to the Georgia aster, corresponding to a magnitude rating of high and an immediacy rating of nonimminent. However, based on the Service's efforts to achieve greater consistency in the interpretation of magnitude and immediacy, as well as new information regarding the abundance of the species, we are now revising the LPN. With regard to immediacy, the threats described above are currently occurring and are, therefore, imminent. We expect the threats are operating throughout the range of the species. However, the species is still relatively widely distributed, with occurrences in 3 counties in Alabama, 9 counties in North Carolina, 11 counties in South Carolina, and possibly as many as 18 counties in Georgia. Also, recent information indicates the species is more abundant than when we initially identified it as a candidate for listing, with possibly as many as 120 populations, in comparison to approximately 60 when it became a candidate in 1999. Taking into account its distribution and the new information indicating the species is more abundant than previously realized, we have revised the magnitude of threats from "high" to "moderate." Therefore, we have changed the LPN from a 5 to an 8.

#### *Ferns and Allies*

*Christella boydiae* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is a small-to-medium-sized fern found in mesic to wet forest along streambanks on Oahu and Maui, Hawaii. Historically, this species was also found on the island of Hawaii; however, the species has been extirpated from that island. Currently, this species is known from 4 populations totaling fewer than 200 individuals. Two populations, numbering 162 and 2 individuals respectively, are found within Haleakala National Park on the island of Maui, where they are fenced and managed. The other two populations, numbering 5

and 9 individuals respectively, are located on State and private lands in the Koolau Mountains of Oahu. This species is threatened by feral pigs that degrade and/or destroy habitat and that may eat this plant, nonnative plants that compete for light and nutrients, and man-made stream diversion. Feral pigs have been fenced out of the two populations on Maui, and nonnative plants have been reduced in the fenced areas. No conservation efforts are under way to alleviate threats to the two populations on Oahu. The two managed populations constitute 92 percent of the currently known populations. Therefore, the magnitude of the threats acting upon the currently extant populations is considered moderate, while the threats from feral pig activities and nonnative plants are ongoing, and therefore imminent. Thus, we changed the LPN from a 2 to an 8 for this species.

#### **Taxonomic Changes in Candidates**

##### *Mammals*

Mazama pocket gopher (*Thomomys mazama* ssp. *couchi*, *douglasii*, *glacialis*, *louiei*, *melanops*, *pugetensis*, *tacomensis*, *tumuli*, *yelmensis*)—Based on mitochondrial DNA analysis, we are including an additional subspecies of Mazama pocket gopher (Brush Prairie pocket gopher, *T. Mazama douglasii*), in our candidate list. See summary below under "*Findings for Petitioned Candidate Species*" for additional information.

##### *Insects*

Coral Pink Sand Dunes tiger beetle (*Cicindela albissima*)—Based on recently genetic research, this taxon was recently elevated to a full species. See summary above under "*Summary of Listing Priority Changes in Candidates*" for additional information.

#### **Candidate Removals**

As summarized below, we have evaluated the threats to the following four species and considered factors that, individually and in combination, presently or potentially could pose a risk to these species and their habitat. After a review of the best available scientific and commercial data, we conclude that listing these four species under the Endangered Species Act is not warranted because the species are not likely to become endangered species within the foreseeable future throughout all or a significant portion of their range. Therefore, for each of these species we find that proposing a rule to list them is not warranted, and we no longer consider them to be candidate species for listing. We will continue to monitor

the status of these species, and to accept additional information and comments concerning this finding. We will reconsider this determination in the event that new information indicates that the threats to these species are of a considerably greater magnitude or imminence than identified through assessments of information in our files, as summarized here. The summary below also notes two other species for which we published separate findings removing them from candidate status since the most recent CNOR.

##### *Fish*

Fluvial arctic grayling, upper Missouri River DPS (*Thymallus arcticus*)—see **Federal Register** notice published on April 24, 2007 (72 FR 20305).

##### *Insects*

Beaver Cave beetle (*Pseudanophthalmus major*)—see **Federal Register** notice published on October 11, 2006 (71 FR 59711).

Surprising cave beetle (*Pseudanophthalmus inexpectatus* Barr)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The surprising cave beetle is a small (4 mm), eyeless, reddish-brown, troglitic insect that belongs to the ground beetle family Carabidae. The species is predatory, feeding upon other small cave invertebrates such as spiders, mites, and millipedes.

We made the surprising cave beetle a candidate for listing on October 30, 2001. The species was originally described from two caves in Mammoth Cave National Park (MCNP), Kentucky—the historic entrance of Mammoth Cave (or Crevice Pit) and White Cave. Subsequent to this discovery, it was later found in Great Onyx Cave in MCNP. Since 2001, when we identified it as a candidate, we have found that the surprising cave beetle is more common and widespread than previously believed. In 2002, the species was discovered in a previously unnamed cave (now called Surprising Cave) within MCNP. This discovery was notable because it represented a northern range extension for the species and was made in a cave system that many speculate is completely separate from those located south of the Green River.

In 2006, the species was discovered in a fifth cave (Saucer Cave) within MCNP. Thus, we now know that the distribution of the species includes at least five areas within MCNP. In addition, over the past 6 years a total of

10 individuals have been observed during routine surveys for other cave biota. Because the surprising cave beetle is small, cryptic, and difficult to locate within the cave environment, the collection of 10 individuals is a significant accomplishment for a *Pseudanophthalmus* survey, especially when the surprising cave beetle was not the target organism. Many of the caves in MCNP have not been adequately surveyed for *Pseudanophthalmus* or other small cave organisms, and based on the information now available, we believe the species is more common within these habitats than first believed.

The most significant potential threats to the species (trampling by humans, habitat disturbance, and disruption of energy inputs) are abated by its location within a national park (MCNP) and MCNP's strict control over the majority of the cave system and its habitats. Tours are offered in only two of the five caves where the species is known to occur, and tours take place in areas away from known beetle habitats. Habitat disturbance, vandalism, and entrance manipulation are unlikely to occur because the caves are in isolated, protected locations within a national park. Other potential threats, such as contamination of cave systems through polluted stormwater runoff and toxic chemical spills, are not considered to be significant because of their low probability of occurrence. In addition, we entered into a 15-year Candidate Conservation Agreement (CCA) for the surprising cave beetle in 2001 with the National Park Service (NPS) at MCNP. The purpose of this CCA is for the Service and NPS to jointly implement conservation measures for the surprising cave beetle in MCNP. Management activities undertaken by MCNP under the CCA increase protection and enhance the status of this species. The Agreement was updated in 2004, and the NPS continues their efforts under this agreement.

Based on findings in our updated assessment of the surprising cave beetle, we conclude that listing this species under the Endangered Species Act is not warranted within the foreseeable future throughout all or a significant portion of its range. There is no portion of its range for which we have information that the species might be locally threatened. The current level of threats will not result in the species becoming in danger of extinction nor do we foresee threats increasing at any time in the future. The species no longer meets our definition of a candidate, and we have removed it from candidate status.

Warm spring zaitzevian riffle beetle (*Zaitzevia thermae*)—The warm spring

zaitzevian riffle beetle is an aquatic flightless beetle endemic to Bridger Creek Warm Springs near Bozeman, Montana. This spring is entirely on land managed by the Service's Fish Technology Center (FTC) and is a water source for the FTC. The warm spring zaitzevian riffle beetle is not known to drift within a water system with any probability of survival and requires clean water and small rock substrate absent siltation. The beetles feed on small pieces of algae and diatoms that they scrape from the submerged rocks. The warm spring zaitzevian riffle beetle requires warm and flowing surface water with surface temperatures of 16 to 29°C (60 to 84°F). Water temperature is likely the most influential factor in the species' biology. The distribution of the species is described as colonies found within three main areas along 50 linear meters (m) (164 linear feet (ft)) of Bridger Creek where a warm spring emerges at or near creek water surface level. A large cement water collection box built around the spring in the early 1900s provides protection to the riffle beetle's spring habitat and it is within this sheltered area where the majority of the warm spring zaitzevian riffle beetle population occurs.

A 1994 management plan prepared by the Service for the beetle guided successful implementation of actions to ensure that warm water flow out of the collection box to external seep habitat was not hindered by debris, make necessary repairs, maintain barricades and signs to prevent public disturbance of the beetle's habitat, and monitor water flow and the species to determine if conservation measures should be modified. The 1994 management plan also provided for removal of silt from the bottom of the collection box, if necessary; however, there has been no need to implement silt removal. In 2001, the FTC acquired 40 acres of land adjacent to and uphill from the spring, which provided additional protection of the spring by preventing development and adverse land use on these lands. The area around the spring continues to be protected by a chain-link fence and signs erected by the FTC, limiting foot traffic in the area (the area historically was used for swimming) as required in the 1994 management plan. In 2002, with approval of entomologists from Montana State University (MSU) per the 1994 management plan, the height of the collection box roof was raised an additional 0.6 m (2 ft) to decrease the chance of Bridger Creek runoff or flood water contaminating water in the collection box. The purpose of this project was to protect the FTC's water

source from potential pathogens, silt, aquatic nuisance species, decreased water temperature, and harmful chemicals, which in turn protects the habitat of the beetle. The project also included alteration to the roof of the water collection box to improve light penetration into the box for the beetles. The actions implemented through this project continue to effectively provide beetle habitat. In July 2006, a new Conservation Agreement and Strategy (CAS) was finalized. The goal of the CAS is to ensure long-term, effective conservation of the warm spring zaitzevian riffle beetle and Brown's riffle beetle (*Microcylloepus browni*), another endemic beetle found in warm water seeps downstream of warm spring zaitzevian riffle beetle habitat. The CAS formalizes the ongoing cooperative effort of the signatories in conserving the warm spring zaitzevian riffle beetle in its native habitat. The signatories to the CAS are: the Service; Montana Fish, Wildlife and Parks; and MSU. Activities under the CAS are overseen by a workgroup of biologists representing the signatories. Under the 2006 CAS, water monitoring now is conducted by the Service according to the more detailed protocols in the CAS monitoring plan, which further ensures that necessary information will be acquired in order to respond appropriately in the event that water pollution or contamination is detected. Most of the conservation efforts described in the CAS are continuations of practices that were already being implemented, and are effective in addressing the potential threats to the warm spring zaitzevian riffle beetle. These efforts include continuing to remove debris from the cement box, maintenance of signage and delivery of educational materials, and review of any proposed changes in land and stream uses that might impact the species and its habitat.

We carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the warm spring zaitzevian riffle beetle (habitat development or other alterations that would alter water flow, temperature or chemistry, and stochastic events such as flooding) and considered factors that, individually and in combination, could pose a risk to the species and its habitat. This species occurs in a single spring, and the area it occupies encompasses approximately 35 m<sup>2</sup> (377 ft<sup>2</sup>), plus small adjacent seeps upstream and downstream where the species occurs in small numbers (approximately 1 m<sup>2</sup> (11 ft<sup>2</sup>) of habitat). All occupied habitat is significant to the species due to its

relatively small area and single location, therefore separate analysis of portions of the range is not applicable to this species. The foreseeable future for this species is linked to threats (habitat sustainability) more strongly than to life cycle timeframes; because the known population is carefully managed through the 2006 Conservation Agreement and Strategy, threats are not expected to increase within the foreseeable future. The FTC has committed to fund the CAS for 5 years, and we have no reason to believe that the FTC will discontinue funding and implementing the CAS into the future. We conclude that listing this species under the Act is not warranted. Because the current population is stable and threats have been addressed, it is not likely to become in danger of extinction within the foreseeable future throughout all or a significant portion of its range. This species no longer meets our definition of a candidate and is removed from candidate status.

#### Flowering Plants

*Erigeron basalticus* (Basalt daisy)—*Erigeron basalticus* is a perennial, herbaceous plant with a taproot and one to several sprawling stems 10 to 15 centimeters (cm) (4 to 6 inches (in)) long. *Erigeron basalticus* grows in crevices in basalt cliffs on canyon walls, at elevations from 380 to 460 m (1,250 to 1,500 ft), along the Yakima River Canyon and Selah Creek, a tributary of the Yakima River, Washington. It is found in microsites that are largely devoid of other vegetation and undergoing primary succession. To date, threats from highway maintenance, rock quarrying, collection, location on private lands, herbicide spray drift, recreational rock climbing, or landslides previously described for this species have not been observed to affect numbers, distribution, or recruitment of *Erigeron basalticus* since the time it was initially surveyed. Overall population numbers have fluctuated within a range, but appear to be relatively stable since 1988. Monitoring of the majority of the known sites in June 2007, by the University of Washington College of Forest Resources, Botanic Gardens Rare Plant Care and Conservation Branch, provided additional data to support the removal of this species from candidacy. In addition to robust numbers counted in nearly all populations, the survey group discovered two previously unknown locations for *E. basalticus* so the species is more abundant than previously realized.

The Bureau of Land Management has no plans to change management on the Areas of Critical Environmental Concern

where several subpopulations of *E. basalticus* occur. Activities previously thought to pose potential threats to the species have not materialized and we have no basis for concluding that they would affect the species in the future. Continued surveys indicate subpopulations have been fluctuating in size within a reasonable range over time, and we have no reason to believe that this will change in the future. Further, there is no portion of its range for which we have information that the species might be locally threatened. Based on our updated assessment, we conclude that *E. basalticus* is not likely to become in danger of extinction within the foreseeable future throughout all or a significant portion of its range. Therefore we find that listing *E. basalticus* is not warranted and we remove this species from candidate status.

#### Ferns and Allies

*Botrychium lineare* (slender moonwort)—A member of the adder's-tongue family (Ophioglossaceae), *Botrychium lineare* is a small perennial fern. The species is known from 22 sites spread across 8 States (Alaska, Colorado, Minnesota, Montana, Oregon, South Dakota, Washington, and Wyoming) and two Canadian Provinces (Alberta and Yukon Territory), with a total geographic range of more than 107,000 square miles. Over 3,300 miles (5,300 kilometers) separate *B. lineare* sites in Alaska and Minnesota. Seventeen of the 20 known sites in the United States occur on Federal lands, with 3 sites found on private lands.

Review of recent information indicates there is an increase in the number of known locations of *Botrychium lineare* and the geographic range is much larger than we previously understood. Based on increased survey efforts, at least 12 new population sites have been found in 6 states, including 4 new States, and two Canadian provinces since 2003. Population sites are generally small in area and number of individuals, making the species difficult to locate and survey for, or detect in plant surveys. Because *Botrychium* species have few diagnostic features (they are small and have only one leaf), *B. lineare* can be difficult to distinguish from other closely related moonworts. For example, one former *B. lineare* population site in Idaho and two in Nevada described in the May 11, 2005, Candidate Notice of Review (70 FR 24870) are now considered something other than *B. lineare* based on genetic analysis. Some researchers consider *B. lineare* a habitat generalist that may be an opportunistic colonizer

since it is found in a variety of natural sites, and several extant population sites are found in man-made disturbed sites (i.e., roadsides and roadbeds, mine tailings, and along stream banks). Because they are found in a variety of habitat types, describing suitable or a specific habitat type is problematic. We believe that the species is more widespread than currently reported. The disjunct nature of known population sites over a wide geographic range of more than 107,000 square miles suggests that additional undetected *B. lineare* populations will likely be discovered both within and outside of the largely unsurveyed geographic range of the species in the United States and Canada.

Much of the information provided to us regarding potential threats to *Botrychium lineare* is general in nature or there is uncertainty and very little documentation on how potential threats are affecting existing, disjunct populations, individual plants or the various natural and disturbed habitats of the species. Not all known population sites are exposed to potential threats. Where Federal land managers have recognized that threats could be affecting *B. lineare* populations, various conservation measures are being implemented. In total, potential threats are being addressed at 8 of the 20 *B. lineare* population sites in the United States (2 Canadian population sites not included). Invasive, nonnative species are reported to occur within 4 populations and adjacent to 10 populations. Conservation measures to reduce the occurrence of invasive species are under way at seven sites in Colorado, Montana, and Oregon. Monitoring to detect presence of additional invasive species is currently conducted at two additional sites in Oregon. Thirteen populations occur adjacent to or near roads; avoidance and minimization measures are in place at four sites in Colorado and one site in South Dakota to reduce the impact of road-related activities. Livestock impacts have been precluded at one site in Washington through an enclosure.

Based on our updated assessment, we have determined that *Botrychium lineare* is not likely to become in danger of extinction within the foreseeable future throughout all or a significant portion of its range. We have no information that indicates that any of the known *B. lineare* populations constitute a significant portion of the range of the species or that there is any portion of its range where the species might be locally threatened. *Botrychium lineare's* known geographic range is much larger than previously understood and it is likely that additional *B. lineare*

populations will be discovered both within and outside of the largely unsurveyed geographic range of the species in the United States and Canada. There is also insufficient information to adequately describe suitable habitat for the species, or to fully understand *B. lineare's* biological vulnerability to potential threat factors. Therefore, we find that listing is not warranted and we remove this species from candidate status.

### Petition Findings

The Act provides two mechanisms for considering species for listing. One method allows the Secretary, on his own initiative, to identify species for listing under the standards of section 4(a)(1). We implement this through the candidate program, discussed above. The second method for listing a species provides a mechanism for the public to petition us to add a species to the Lists. Under section 4(b)(3)(A), when we receive such a petition, we must determine within 90 days, to the maximum extent practicable, whether the petition presents substantial information that listing may be warranted (a "90-day finding"). If we make a positive 90-day finding, we must promptly commence a status review of the species under section 4(b)(3)(A); we must then make and publish one of three possible findings within 12 months of the receipt of the petition (a "12-month finding"):

1. The petitioned action is not warranted;
2. The petitioned action is warranted (in which case we are required to promptly publish a proposed regulation to implement the petitioned action; once we publish a proposed rule for a species, section 4(b)(5) and 4(b)(6) govern further procedures regardless of whether we issued the proposal in response to a petition); or
3. The petitioned action is warranted but (a) the immediate proposal of a regulation and final promulgation of regulation implementing the petitioned action is precluded by pending proposals, and (b) expeditious progress is being made to add qualified species to the lists of endangered or threatened species. (We refer to this as a "warranted-but-precluded finding.")

Section 4(b)(3)(C) of the Act requires that when we make a warranted but precluded finding on a petition, we are to treat such a petition as one that is resubmitted on the date of such a finding. Thus, we are required to publish new 12-month findings on these "resubmitted" petitions on an annual basis.

On December 5, 1996, we made a final decision to redefine "candidate species" to mean those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but for which issuance of the proposed rule is precluded (61 FR 64481; December 6, 1996). Therefore, the standard for making a species a candidate through our own initiative is identical to the standard for making a warranted-but-precluded 12-month petition finding on a petition to list, and we add all petitioned species for which we have made a warranted-but-precluded 12-month finding to the candidate list.

This publication also provides notice of substantial 90-day findings and the warranted-but-precluded 12-month findings pursuant to section 4(b)(3) for candidate species listed on Table 1 that we identified on our own initiative, and that subsequently have been the subject of a petition to list. Even though all candidate species identified through our own initiative already have received the equivalent of substantial 90-day and warranted-but-precluded 12-month findings, we reviewed the status of the newly petitioned candidate species and through this CNOR are publishing specific section 4(b)(3) findings (i.e., substantial 90-day and warranted but precluded 12-month findings) in response to the petitions to list these candidate species. We publish these findings as part of the first CNOR following receipt of the petition.

Pursuant to section 4(b)(3)(C)(i) of the Act, once a petition is filed regarding a candidate species, we must make a 12-month petition finding in compliance with section 4(b)(3)(B) of the Act at least once a year, until we publish a proposal to list the species or make a final not-warranted finding. We make this annual finding for petitioned candidate species through the CNOR.

Section 4(b)(3)(C)(iii) of the Act requires us to "implement a system to monitor effectively the status of all species" for which we have made a warranted-but-precluded 12-month finding, and to "make prompt use of the [emergency listing] authority [under section 4(b)(7)] to prevent a significant risk to the well being of any such species." The CNOR plays a crucial role in the monitoring system that we have implemented for all candidate species by providing notice that we are actively seeking information regarding the status of those species. We review all new information on candidate species as it becomes available, prepare an annual species assessment form that reflects monitoring results and other new

information, and identify any species for which emergency listing may be appropriate. If we determine that emergency listing is appropriate for any candidate, whether it was identified through our own initiative or through the petition process, we will make prompt use of the emergency listing authority under section 4(b)(7). We have been reviewing and will continue to review, at least annually, the status of every candidate, whether or not we have received a petition to list it. Thus, the CNOR and accompanying species assessment forms also constitute the Service's annual finding on the status of petitioned species pursuant to section 4(b)(3)(C)(i).

On June 20, 2001, the United States Court of Appeals for the Ninth Circuit held that the 1999 CNOR (64 FR 57534; October 25, 1999) did not demonstrate that we fulfilled the second component of the warranted-but-precluded 12-month petition findings for the Gila chub and Chiracahua leopard frog (*Center for Biological Diversity v. Norton*, 254 F.3d 833 (9th Cir. 2001)). The court found that the one-line designation in the table of candidates in the 1999 CNOR, with no further explanation, did not satisfy section 4(b)(3)(B)(iii)'s requirement that the Service publish a finding "together with a description and evaluation of the reasons and data on which the finding is based." The court suggested that this one-line statement of candidate status also precluded meaningful judicial review.

On June 21, 2004, the United States District Court for Oregon agreed that we can use the CNOR as a vehicle for making petition findings and that our reasoning for why listing is precluded does not need to be based on an assessment at a regional level (as opposed to a national level) (*Center for Biological Diversity v. Norton* Civ. No. 03-1111-AA (D. Or.)). However, this court found that our discussion on why listing the candidate species were precluded by other actions lacked specificity; in the list of species that were the subject of listing actions that precluded us from proposing to list candidate species, we did not state the specific action at issue for each species in the list and we did not indicate which actions were court-ordered.

On June 22, 2004, in a similar case, the United States District Court for the Eastern District of California also concluded that our determination of preclusion may appropriately be based on a national analysis (*Center for Biological Diversity v. Norton* No. CV S-03-1758 GEB/DAD (E.D. Cal.)). This court also found that the Act's



imperative that listing decisions be based solely on science applies only to the determination about whether listing is warranted, not the question of when listing is precluded.

On March 24, 2005, the United States District Court for the District of Columbia held that we may not consider critical habitat activities in justifying our inability to list candidate species, requiring that we justify both our preclusion findings and our demonstration of expeditious progress by reference to listing proceedings for unlisted species (*California Native Plant Society v. Norton*, Civ. No. 03–1540 (JR) (D.D.C.)). The court further found that we must adequately itemize priority listings, explain why certain species are of high priority, and explain why actions on these high-priority species preclude listing species of lower priority. The court approved our reliance on national rather than regional priorities and workload in establishing preclusion and approved our basic explanation that listing candidate species may be precluded by statutorily mandated deadlines, court-ordered actions, higher-priority listing activities, and a limited budget.

We drafted previous CNORs to address the concerns of these courts and continue to incorporate those changes that addressed the courts' concerns in this CNOR. We include a description of the reasons why the listing of every petitioned candidate species is both warranted and precluded at this time. We make our determinations of preclusion on a nationwide basis to ensure that the species most in need of listing will be addressed first and also because we allocate our listing budget on a nationwide basis (see below). Regional priorities can also be discerned from Table 1, which includes the lead region and the LPN for each species. Our preclusion determinations are further based upon our budget for listing activities for unlisted species and we explain the priority system and why the work we have accomplished does preclude action on listing candidate species.

Pursuant to section 4(b)(3)(C)(ii) and the Administrative Procedure Act (5 U.S.C. 551 et seq.), any party with standing may challenge the merits of any not-warranted or warranted-but-precluded petition finding incorporated in this CNOR. The analysis included herein, together with the administrative record for the decision at issue (particularly the supporting species assessment form), will provide an adequate basis for a court to review the petition finding.

Nothing in this document or any of our policies should be construed as in any way modifying the Act's requirement that we make a resubmitted 12-month petition finding for each petitioned candidate within 1 year of the date of publication of this CNOR. If we fail to make any such finding on a timely basis, whether through publication of a new CNOR or some other form of notice, any party with standing may seek judicial review.

In this CNOR, we continue to address the concerns of the courts by including more specific information in our discussion on preclusion (see below). In preparing this CNOR, we reviewed the current status of and threats to the 203 candidates and 5 listed species for which we have received a petition and for which we have found listing or reclassification from threatened to endangered to be warranted but precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for each of these species has been, for the preceding months, and continues to be, precluded by higher-priority listing actions. Additional information that is the basis for this finding is found in the species assessments and our administrative record for each species.

Our review included updating the status of and threats to petitioned candidate or listed species for which we published findings, pursuant to section 4(b)(3)(B), in the previous CNOR. We have incorporated new information we gathered since the prior finding and, as a result of this review, we are making continued warranted-but-precluded 12-month findings on the petitions for these species.

We have identified the candidate species for which we received petitions by the code "C\*" in the category column on the left side of Table 1. As discussed above, the immediate publication of proposed rules to list these species was precluded by our work on higher-priority listing actions, listed below, during the period from September 12, 2006, through September 30, 2007. We will continue to monitor the status of all candidate species, including petitioned species, as new information becomes available. This review will determine if a change in status is warranted, including the need to emergency-list a species under section 4(b)(7) of the Act.

In addition to identifying petitioned candidate species in Table 1 below, we also present brief summaries of why these particular candidates warrant listing. More complete information, including references, is found in the species assessment forms. You may

obtain a copy of these forms from the Regional Office having the lead for the species, or from the Fish and Wildlife Service's Internet Web site: <http://endangered.fws.gov/>. As described above, under section 4 of the Act we may identify and propose species for listing based on the factors identified in section 4(a)(1), and section 4 also provides a mechanism for the public to petition us to add a species to the lists of species determined to be threatened species or endangered species under the Act. Below we describe the actions that continue to preclude the immediate proposal of a regulation and final promulgation of a regulation implementing the petitioned action, and we describe the expeditious progress we are making to add qualified species to the lists of endangered or threatened species.

#### *Preclusion and Expeditious Progress*

Preclusion is a function of the listing priority of a species in relation to the resources that are available and competing demands for those resources. (As described above in the Summary, the listing priority of a species is represented by the LPN we assign to it.) Thus, in any given fiscal year (FY), multiple factors dictate whether it will be possible to undertake work on a proposed listing regulation or whether promulgation of such a proposal is warranted but precluded by higher-priority listing actions.

The resources available for listing actions are determined through the annual Congressional appropriations process. The appropriation for the Listing Program is available to support work involving the following listing actions: Proposed and final listing rules; 90-day and 12-month findings on petitions to add species to the Lists or to change the status of a species from threatened to endangered; resubmitted petition findings; proposed and final rules designating critical habitat; and litigation-related, administrative, and program management functions (including preparing and allocating budgets, responding to Congressional and public inquiries, and conducting public outreach regarding listing and critical habitat). The work involved in preparing various listing documents can be extensive and may include, but is not limited to: Gathering and assessing the best scientific and commercial data available and conducting analyses used as the basis for our decisions; writing and publishing documents; and obtaining, reviewing, and evaluating public comments and peer review comments on proposed rules and incorporating relevant information into

final rules. The number of listing actions that we can undertake in a given year also is influenced by the complexity of those listing actions; that is, more complex actions generally are more costly. For example, during the past several years, the cost (excluding publication costs) for preparing a 12-month finding, without a proposed rule, has ranged from approximately \$11,000 for one species with a restricted range and involving a relatively uncomplicated analysis to \$305,000 for another species that is wide-ranging and involving a complex analysis.

We cannot spend more than is appropriated for the Listing Program without violating the Anti-Deficiency Act (see 31 U.S.C. 1341(a)(1)(A)). In addition, in FY 1998 and for each fiscal year since then, Congress has placed a statutory cap on funds which may be expended for the Listing Program, equal to the amount expressly appropriated for that purpose in that fiscal year. This cap was designed to prevent funds appropriated for other functions under the Act (e.g., Recovery funds for removing species from the Lists), or for other Service programs, from being used for Listing Program actions (see House Report 105-163, 105th Congress, 1st Session, July 1, 1997).

Recognizing that designation of critical habitat for species already listed would consume most of the overall Listing Program appropriation, Congress also put a critical habitat subcap in place in FY 2002 and has retained it each subsequent year to ensure that some funds are available for other work in the Listing Program: "The critical habitat designation subcap will ensure that some funding is available to address other listing activities" (House Report No. 107-103, 107th Congress, 1st Session, June 19, 2001). In FY 2002 and each year until last year (FY 2006), the Service has had to use virtually the entire critical habitat subcap to address court-mandated designations of critical habitat, and consequently none of the critical habitat subcap funds have been available for other listing activities.

Thus, through the listing cap, the critical habitat subcap, and the amount of funds needed to address court-mandated critical habitat designations, Congress and the courts have in effect determined the amount of money available for other listing activities. Therefore, the funds in the listing cap, other than those needed to address court-mandated critical habitat for already listed species, set the limits on our determinations of preclusion and expeditious progress.

Congress also recognized that the availability of resources was the key element in deciding whether, when making a 12-month petition finding, we would prepare and issue a listing proposal or make a "warranted but precluded" finding for a given species. The Conference Report accompanying Pub. L. 97-304, which established the current statutory deadlines and the warranted-but-precluded finding, states (in a discussion on 90-day petition findings that by its own terms also covers 12-month findings) that the deadlines were "not intended to allow the Secretary to delay commencing the rulemaking process for any reason other than that the existence of pending or imminent proposals to list species subject to a greater degree of threat would make allocation of resources to such a petition [i.e., for a lower-ranking species] unwise." Taking into account the information presented above, in FY 2007, the outer parameter within which "expeditious progress" must be measured is that amount of progress that could be achieved by spending \$5,193,000, which was the amount available in the Listing Program appropriation that was not within the critical habitat subcap.

Our process is to make our determinations of preclusion on a nationwide basis to ensure that the species most in need of listing will be addressed first and also because we allocate our listing budget on a nationwide basis. However, through court orders and court-approved settlements, Federal district courts have mandated that we must complete certain listing activities with respect to specified species and have established the schedules by which we must complete those activities. The species involved in these court-mandated listing activities are not always those that we have identified as being most in need of listing. As described below, a majority of the \$5,193,000 appropriation available in FY 2007 for new listings of species is being consumed by court-mandated listing activities; by ordering or sanctioning these actions, the courts essentially determined that these were the highest priority actions to be undertaken with available funding. Copies of the court orders and settlement agreements referred to below are available from the Service and are part of the administrative record for these resubmitted petition findings.

The FY 2007 appropriation of \$5,193,000 for listing activities (that is, the portion of the Listing Program funding not related to critical habitat

designations for species that already are listed) was fully allocated to fund work in the following categories of actions in the Listing Program: Compliance with court orders and court-approved settlement agreements requiring that petition findings or listing determinations be completed by a specific date; section 4 (of the Act) listing actions with absolute statutory deadlines; essential litigation-related, administrative, and program management functions; and a few high-priority listing actions. The allocations for each specific listing action were identified in the Service's FY 2007 Allocation Table (part of our administrative record). Although more funds were available in FY 2007 than in previous years to work on listing actions that were not the subject of court orders or court-approved settlement agreements, based on the available funds and their allocation for these purposes, only limited FY 2007 funds were available for work on proposed listing determinations for the following high-priority candidate species: 3 southeastern aquatic species, all with LPN 2 (Georgia pigtoe, interrupted rocksnail, and rough hornsnail); 2 species from the island of Oahu, Hawaii, both with LPN 2 (*Doryopteris takeuchii* and *Melicope hiiakae*); 1 species from the island of Molokai, Hawaii, with LPN 2 (*Phyllostegia hispida*); 31 species from the island of Kauai, Hawaii, including 24 species with LPN 2 and 7 other candidates included in the listing determination package for the sake of efficiency because they overlap geographically and/or have the same threats (Kauai creeper, *Drosophila attigua*, *Astelia waialealae*, *Canavalia napaliensis*, *Chamaesyce eleanoriae*, *Chamaesyce remyi* var. *kauaiensis*, *Chamaesyce remyi* var. *remyi*, *Charpentiera densiflora*, *Cyanea eleleensis*, *Cyanea kuhihewa*, *Cyrtandra oenobarba*, *Dubautia imbricata* ssp. *imbricata*, *Dubautia plantaginea* ssp. *magnifolia*, *Dubautia waialealae*, *Geranium kauaiense*, *Keysseria erici*, *Keysseria helenae*, *Labordia helleri*, *Labordia pumila*, *Lysimachia daphnoides*, *Melicope degeneri*, *Melicope paniculata*, *Melicope puberula*, *Myrsine mezii*, *Pittosporum napaliense*, *Platydesma rostrata*, *Pritchardia hardyi*, *Psychotria grandiflora*, *Psychotria hobdyi*, *Schiedea attenuata*, *Stenogyne kealiae*); and 4 Hawaiian damselflies, all with LPN 2 (*Megalagrion nesiotis*, *Megalagrion leptodemas*, *Megalagrion oceanicum*, *Megalagrion pacificum*).

FY 2007 listing allocation	Allocated	Available balance
FY07 Appropriation (including space reprogramming) .....	\$5,193,000	\$5,193,000
Space reprogramming (program's portion of rent for building space) .....	216,778	4,976,222
Regional & Washington Offices (staff salaries & benefits and administrative costs) .....	1,674,012	3,302,210
90-day findings .....	604,617	2,697,593
12-month findings .....	830,193	1,867,400
Proposed Listing/Critical Habitat .....	963,000	904,400
Economic Analysis (for Critical Habitat) .....	504,400	400,000
Final Listing/CH .....	300,000	100,000
Attorney Fees/Litigation Expenses .....	100,000	0

Specific details regarding the individual actions taken using the FY 2007 funding, which precluded our ability to undertake listing proposals for candidate species, except the species noted above, are provided below (information on the cost of individual actions is part of our administrative record).

In addition to being precluded by lack of available funds, work on proposed rules for candidates with lower priority (i.e., those that have LPNs of 4–12) is also precluded by the need to issue proposed rules for higher-priority species facing high-magnitude, imminent threats (i.e., LPNs of 1–3). We currently have more than 120 species with an LPN of 2 (see Table 1).

We further ranked the candidate species with an LPN of 2 by using the following extinction-risk type criteria: IUCN Red list status/rank, Heritage rank (provided by NatureServe), Heritage threat rank (provided by NatureServe), and species currently with fewer than 50 individuals, or 4 or fewer populations. Those species with the highest IUCN rank (critically

endangered), the highest Heritage rank (G1), the highest Heritage threat rank (substantial, imminent threats), and currently with fewer than 50 individuals, or fewer than 4 populations comprise a list of approximately 40 candidate species that have the highest priority to receive funding to work on a proposed listing determination. Note, to be more efficient in our listing process, as we work on proposed rules for these species in the next several years, we are preparing multi-species proposals when appropriate, and these may include species with lower priority if they overlap geographically or have the same threats as species with LPN of 2. Finally, proposed rules for reclassification of threatened species to endangered are lower priority, since the listing of the species already affords the protection of the Act and implementing regulations.

Thus, we continue to find that proposals to list the petitioned candidate species included in Table 1 are all warranted but precluded, except for the candidate species listed above.

As explained above, a determination that listing is warranted but precluded must also demonstrate that expeditious progress is being made to add qualified species to, and remove qualified species from, the Lists. (We note that in this CNOR we do not discuss specific actions taken on progress towards removing species from the Lists because that work is conducted using appropriations for our Recovery program, a separately budgeted component of the Endangered Species Program. As explained above in our description of the statutory cap on Listing Program funds, the Recovery Program funds and actions supported by them cannot be considered in determining expeditious progress made in the Listing Program.) As with our “precluded” finding, expeditious progress in adding qualified species to the Lists is a function of the resources available and the competing demands for those funds. Our expeditious progress in FY 2007 in the Listing Program, through September 30, 2007, included preparing and publishing the following:

FY 2007 COMPLETED LISTING ACTIONS AS OF 09/30/2007

Publication date	Title	Actions	FR pages
10/11/2006 .....	Withdrawal of the Proposed Rule to List the Cow Head Tui Chub ( <i>Gila biocolor vaccaceps</i> ) as Endangered.	Notice of withdrawal, Threats eliminated.	71 FR 59700–59711.
10/11/2006 .....	Revised 12-Month Finding for the Beaver Cave Beetle ( <i>Pseudanophthalmus major</i> ).	Notice of 12-month petition finding, Not warranted.	71 FR 59711–59714.
11/14/2006 .....	12-Month Finding on a Petition to List the Island Marble Butterfly ( <i>Euchloe ausonides insulanus</i> ) as Threatened or Endangered.	Notice of 12-month petition finding, Not warranted.	71 FR 66292–66298.
11/14/2006 .....	90-Day Finding for a Petition to List the Kennebec River Population of Anadromous Atlantic Salmon as Part of the Endangered Gulf Of Maine Distinct Population Segment.	Notice of 90-day petition finding, Substantial.	71 FR 66298–66301.
11/21/2006 .....	90-Day Finding on a Petition To List the Columbian Sharp-Tailed Grouse as Threatened or Endangered.	Notice of 90-day petition finding, Not substantial.	71 FR 67318–67325.
12/5/2006 .....	90-Day Finding on a Petition To List the Tricolored Blackbird as Threatened or Endangered.	Notice of 90-day petition finding, Not substantial.	71 FR 70483–70492.

## FY 2007 COMPLETED LISTING ACTIONS AS OF 09/30/2007—Continued

Publication date	Title	Actions	FR pages
12/6/2006 .....	12-Month Finding on a Petition To List the Cerulean Warbler ( <i>Dendroica cerulea</i> ) as Threatened with Critical Habitat.	Notice of 12-month petition finding, Not warranted.	71 FR 70717–70733.
12/6/2006 .....	90-Day Finding on a Petition To List the Upper Tidal Potomac River Population of the Northern Water Snake ( <i>Nerodia sipedon</i> ) as an Endangered Distinct Population Segment.	Notice of 90-day petition finding, Not substantial.	71 FR 70715–70717.
12/14/2006 .....	90-Day Finding on a Petition to Remove the Uinta Basin Hookless Cactus From the List of Endangered and Threatened Plants; 90-Day Finding on a Petition To List the Pariette Cactus as Threatened or Endangered.	Notice of 5-year Review, Initiation ..... Notice of 90-day petition finding, Not substantial. Notice of 90-day petition finding, Substantial.	71 FR 75215–75220.
12/19/2006 .....	Withdrawal of Proposed Rule to List <i>Penstemon grahamii</i> (Graham's beardtongue) as Threatened With Critical Habitat.	Notice of withdrawal, More abundant than believed, or diminished threats.	71 FR 76023–76035.
12/19/2006 .....	90-Day Finding on Petitions to List the Mono Basin Area Population of the Greater Sage-Grouse as Threatened or Endangered.	Notice of 90-day petition finding, Not substantial.	71 FR 76057–76079.
1/9/2007 .....	12-Month Petition Finding and Proposed Rule To List the Polar Bear ( <i>Ursus maritimus</i> ) as Threatened Throughout Its Range; Proposed Rule.	Notice of 12-month petition finding, Warranted. Proposed Listing, Threatened .....	72 FR 1063–1099.
1/10/2007 .....	Endangered and Threatened Wildlife and Plants; Clarification of Significant Portion of the Range for the Contiguous United States Distinct Population Segment of the Canada Lynx.	Clarification of findings .....	72 FR 1186–1189.
1/12/2007 .....	Withdrawal of Proposed Rule To List <i>Lepidium papilliferum</i> (Slickspot Peppergrass).	Notice of withdrawal, More abundant than believed, or diminished threats.	72 FR 1621–1644.
2/2/2007 .....	12-Month Finding on a Petition To List the American Eel as Threatened or Endangered.	Notice of 12-month petition finding, Not warranted.	72 FR 4967–4997.
2/13/2007 .....	90-Day Finding on a Petition To List the Jollyville Plateau Salamander as Endangered.	Notice of 90-day petition finding, Substantial.	72 FR 6699–6703.
2/13/2007 .....	90-Day Finding on a Petition To List the San Felipe Gambusia as Threatened or Endangered.	Notice of 90-day petition finding, Not substantial.	72 FR 6703–6707.
2/14/2007 .....	90-Day Finding on a Petition to List <i>Astragalus debequaeus</i> (DeBeque milkvetch) as Threatened or Endangered.	Notice of 90-day petition finding, Not substantial.	72 FR 6998–7005.
2/21/2007 .....	90-Day Finding on a Petition To Re-classify the Utah Prairie Dog From Threatened to Endangered and Initiation of a 5-Year Review.	Notice of 5-year Review, Initiation ..... Notice of 90-day petition finding, Not substantial.	72 FR 7843–7852.
3/8/2007 .....	90-Day Finding on a Petition To List the Monongahela River Basin Population of the Longnose Sucker as Endangered.	Notice of 90-day petition finding, Not substantial.	72 FR 10477–10480.
03/29/2007 .....	90-Day Finding on a Petition To List the Siskiyou Mountains Salamander and Scott Bar Salamander as Threatened or Endangered.	Notice of 90-day petition finding, Substantial.	72 FR 14750–14759.
04/24/2007 .....	Revised 12-Month Finding for Upper Missouri River Distinct Population Segment of Fluvial Arctic Grayling.	Notice of 12-month petition finding, Not warranted.	72 FR 20305–20314.
05/02/2007 .....	12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly ( <i>Euphilotes pallescens</i> ssp. <i>arenamontana</i> ) as Threatened or Endangered with Critical Habitat.	Notice of 12-month petition finding, Not warranted.	72 FR 24253–24263.

## FY 2007 COMPLETED LISTING ACTIONS AS OF 09/30/2007—Continued

Publication date	Title	Actions	FR pages
05/22/2007 .....	Status of the Rio Grande Cutthroat Trout.	Notice of Review .....	72 FR 28864–28665.
05/30/2007 .....	90-Day Finding on a Petition To List the Mt. Charleston Blue Butterfly as Threatened or Endangered.	Notice of 90-day petition finding, Substantial.	72 FR 29933–29941.
06/05/2007 .....	12-Month Finding on a Petition To List the Wolverine as Threatened or Endangered.	Notice of Review .....	72 FR 31048–31049.
06/06/2007 .....	90-Day Finding on a Petition To List the Yellow-Billed Loon as Threatened or Endangered.	Notice of 90-day petition finding, Substantial.	72 FR 31256–31264.
06/13/2007 .....	12-Month Finding for a Petition To List the Colorado River Cutthroat Trout as Threatened or Endangered.	Notice of 12-month petition finding, Not warranted.	72 FR 32589–32605.
06/25/2007 .....	12-Month Finding on a Petition To List the Sierra Nevada Distinct Population Segment of the Mountain Yellow-Legged Frog ( <i>Rana muscosa</i> ).	Notice of amended 12-month petition finding, Warranted but Precluded.	72 FR 34657–34661.
07/05/2007 .....	12-Month Finding on a Petition To List the Casey's June Beetle ( <i>Dinacoma caseyi</i> ) as Endangered With Critical Habitat.	Notice of 12-month petition finding, Warranted but precluded.	72 FR 36635–36646.
08/15/2007 .....	90-Day Finding on a Petition To List the Yellowstone National Park Bison Herd as Endangered.	Notice of 90-day petition finding, Not substantial.	72 FR 45717–45722.
08/16/2007 .....	90-Day Finding on a Petition To List <i>Astragalus anserinus</i> (Goose Creek milk-vetch) as Threatened or Endangered.	Notice of 90-day petition finding, Substantial.	72 FR 46023–46030.
8/28/2007 .....	12-Month Finding on a Petition To List the Gunnison's Prairie Dog as Threatened or Endangered.	Notice of Review .....	72 FR 49245–49246.
9/11/2007 .....	90-Day Finding on a Petition To List Kenk's Amphipod, Virginia Well Amphipod, and the Copepod <i>Acanthocyclops columbiensis</i> as Endangered.	Notice of 90-day petition finding, Not substantial.	72 FR 51766–51770.
9/18/2007 .....	12-Month Finding on a Petition To List <i>Sclerocactus brevispinus</i> (Pariette cactus) as an Endangered or Threatened Species; Taxonomic Change From <i>Sclerocactus glaucus</i> to <i>Sclerocactus brevispinus</i> , <i>S. glaucus</i> , and <i>S. wetlandicus</i> .	Notice of 12-month petition finding for uplisting, Warranted but precluded.	72 FR 53211–53222.

Our expeditious progress also includes work on listing actions for 68 species for which decisions were not completed as of the end of FY 2007. These actions are listed below; we are

conducting work on those actions in the top section of the table under a deadline set by a court, actions in the middle section of the table to meet statutory timelines, that is, timelines required

under the Act, and actions in the bottom section of the table are high priority listing actions:

## LISTING ACTIONS FUNDED BUT NOT COMPLETED IN FY2007

Species	Action
<b>Actions Subject to Court Order/Settlement Agreement</b>	
Wolverine .....	12-month petition finding (remand).
Western sage grouse .....	90-day petition finding (remand).
Queen Charlotte goshawk .....	Final listing determination.
Rio Grande cutthroat trout .....	Candidate assessment (remand).
<b>Statutory Listing Actions</b>	
Polar bear .....	Final listing determination.
Ozark chinquapin .....	90-day petition finding.
Kokanee .....	90-day petition finding.
Black-footed albatross .....	90-day petition finding.
Tucson shovel-nosed snake .....	90-day petition finding.

LISTING ACTIONS FUNDED BUT NOT COMPLETED IN FY2007—Continued

Species	Action
Gopher tortoise—Florida population .....	90-day petition finding.
Sacramento valley tiger beetle .....	90-day petition finding.
Eagle lake trout .....	90-day petition finding.
Smooth billed ani .....	90-day petition finding.
Mojave ground squirrel .....	90-day petition finding.
Gopher tortoise—eastern population .....	90-day petition finding.
Bay Springs salamander .....	90-day petition finding.
Tehachapi slender salamander .....	90-day petition finding.
Coaster brook trout .....	90-day petition finding.
Mojave fringe-toed lizard .....	90-day petition finding.
Evening primrose .....	90-day petition finding.
Palm Springs pocket mouse .....	90-day petition finding.
Northern leopard frog .....	90-day petition finding.
Mountain whitefish—Big Lost River population .....	90-day petition finding.
Giant Palouse earthworm .....	90-day petition finding.
Shrike, Island loggerhead .....	90-day petition finding.
Cactus ferruginous pygmy owl .....	90-day petition finding.
<b>High Priority Listing Actions</b>	
3 Southeastern aquatic species .....	Proposed listing
2 Oahu plants .....	Proposed listing
31 Kauai species .....	Proposed listing
4 Hawaiian damselflies .....	Proposed listing
<i>Phyllostegia hispida</i> .....	Proposed listing

We also funded work on resubmitted petitions findings for 203 candidate species and 5 listed species (species petitioned prior to the last CNOR). Note we have not updated our resubmitted petition finding for the Columbia Basin population of the greater sage-grouse in this notice as we are considering new information and will update our findings at a later date. We also have not updated our resubmitted petition findings for the 41 candidate species for which we are preparing proposed listing determinations, which will be published at a later date (see summaries below). As explained above, these resubmitted petition findings are required by statute, and findings for these 203 candidates and 5 listed species are being published as part of this CNOR. We also funded revised 12-month petition findings for 4 candidate species that we are removing from candidate status, which are being published as part of this CNOR (see *Summary of Candidate Removals*). We are also funding work on the next annual review of those resubmitted petition findings, which will be published as part of the next CNOR. Because the majority of these species were already candidate species prior to our receipt of a petition to list them, we had already assessed their status using funds from our Candidate Conservation Program. We also continue to monitor the status of these species through our Candidate Conservation Program. The cost of updating the species assessment forms and publishing the joint

publication of the CNOR and resubmitted petition findings is shared between the Listing Program and the Candidate Conservation Program.

We have endeavored to make our listing actions as efficient and timely as possible, given the requirements of the relevant law and regulations, and constraints relating to workload and personnel. We are continually considering ways to streamline processes or achieve economies of scale, such as by batching related actions together. Given our limited budget for implementing section 4 of the Act, these actions described above collectively constitute expeditious progress.

Although we have not been able to resolve the listing status of many of the candidates, several programs in the Service contribute to the conservation of these species. In particular, we have a separate budgeted program, the Candidate Conservation program, which focuses on providing technical expertise for developing conservation strategies and agreements to guide voluntary on-the-ground conservation work for candidate and other at-risk species. The main goal of this program is to address the threats facing candidate species. If sufficiently successful, this eliminates the need to list them, allowing us to remove them from the candidate list. Through this program, we work with our partners (other Federal agencies, State agencies, Tribes, local governments, private landowners, and private conservation organizations) to address the threats to candidate species

and other species at risk. We are actively engaged in the conservation of these species and have, to-date, signed more than 100 Candidate Conservation Agreements and 16 Candidate Conservation Agreements with Assurances. We are implementing these voluntary conservation agreements for more than 140 species covering 5 million acres of habitat.

Through sustained implementation of strategically designed conservation efforts, we are actively working to conserve many candidate species. In some instances, this culminates in making listing unnecessary for species that are proposed or candidates for listing. Recent examples include the Cow Head tui chub, Beaver Cave beetle, Surprising Cave beetle, and Warm Spring zaitzevian riffle beetle.

*Findings for Petitioned Candidate Species*

For our revised 12-month petition findings for species we are removing from candidate status, see summaries above under “*Summary of Candidate Removals*.”

**Mammals**

Pacific Sheath-tailed Bat, American Samoa DPS (*Emballonura semicaudata semicaudata*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This small bat is a member of the Emballonuridae, an Old World bat family that has an extensive

distribution, primarily in the tropics. The Pacific sheath-tailed bat was once common and widespread in Polynesia and Micronesia and it is the only insectivorous bat recorded from a large part of this area. The species as a whole (*E. semicaudata*) occurred on several of the Caroline Islands (Palau, Chuuk, and Pohnpei), Samoa (Independent and American), the Mariana Islands (Guam and the CNMI), Tonga, Fiji, and Vanuatu. While populations appear to be healthy in some locations, mainly in the Caroline Islands, they have declined drastically in other areas, including Independent and American Samoa, the Mariana Islands, Fiji, and possibly Tonga. Scientists recognize four subspecies: *E. s. rotensis*, endemic to the Mariana Islands (Guam and the Commonwealth of the Northern Mariana Islands (CNMI)); *E. s. sulcata*, occurring in Chuuk and Pohnpei; *E. s. palauensis*, found in Palau; and *E. s. semicaudata*, occurring in American and Independent Samoa, Tonga, Fiji, and Vanuatu. This candidate assessment form addresses the distinct population segment of *E. s. semicaudata* that occurs in American Samoa.

*E. s. semicaudata* historically occurred in American and Independent Samoa, Tonga, Fiji, and Vanuatu. It is extant in Fiji and Tonga, but may be extirpated from Vanuatu and Independent Samoa. There is some concern that it is also extirpated from American Samoa, where surveys are currently ongoing to ascertain its status. The factors that have led to the decline of this subspecies are poorly understood; however, current threats to this subspecies include habitat loss, predation by introduced species, and its small population size and distribution, which make the taxon extremely vulnerable to extinction due to typhoons and similar natural catastrophes. The Pacific sheath-tailed bat may also be susceptible to disturbance to roosting caves. The LPN for *E. s. semicaudata* is 3, because the magnitude of the threats is high, the threats are imminent, and the taxon in question is a distinct population segment of a subspecies.

**Pacific Sheath-tailed Bat**  
(*Emballonura semicaudata rotensis*), Guam and the Commonwealth of the Northern Mariana Islands—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This small bat is a member of the Emballonuridae, an Old World bat family that has an extensive distribution, primarily in the tropics. The Pacific sheath-tailed bat was once

common and widespread in Polynesia and Micronesia and it is the only insectivorous bat recorded from a large part of this area. The species as a whole (*E. semicaudata*) occurred on several of the Caroline Islands (Palau, Chuuk, and Pohnpei), Samoa (Independent and American), the Mariana Islands (Guam and the CNMI), Tonga, Fiji, and Vanuatu. While populations appear to be healthy in some locations, mainly in the Caroline Islands, they have declined drastically in other areas, including Independent and American Samoa, the Mariana Islands, Fiji, and possibly Tonga. Scientists recognize four subspecies: *E. s. rotensis*, endemic to the Mariana Islands (Guam and the Commonwealth of the Northern Mariana Islands (CNMI)); *E. s. sulcata*, occurring in Chuuk and Pohnpei; *E. s. palauensis*, found in Palau; and *E. s. semicaudata*, occurring in American and Independent Samoa, Tonga, Fiji, and Vanuatu. This candidate assessment form addresses the Mariana Islands subspecies. *E. s. rotensis* is historically known from the Mariana Islands and formerly occurred on Guam and in the CNMI on Rota, Aguiuan, Tinian (known from prehistoric records only), Saipan, and possibly Anatahan and Maug. Currently, *E. s. rotensis* appears to be extirpated from all but one island in the Mariana archipelago. The single remaining population of this subspecies occurs on Aguiuan, CNMI.

Threats to this subspecies have not changed over the past year. The primary threats to the subspecies are habitat loss and degradation as a result of feral goat (*Capra hircus*) activity on the island of Aguiuan and the taxon's small population size and limited distribution. Predation by nonnative species and human disturbance are also potential threats to the subspecies. The subspecies may be near the point where stochastic events, such as typhoons, are increasingly likely to affect its continued survival. The disappearance of the remaining population on Aguiuan would result in the extinction of the subspecies. The LPN for *E. s. rotensis* remains at 3 because the magnitude of the threats is high, the threats are imminent, and the taxon in question is a subspecies.

**New England cottontail (*Sylvilagus transitionalis*)**—The following summary is based on information from our files and information collected during the public comment period on the 90-day petition finding. We received the petition on August 30, 2000. The 90-day finding was published on June 30, 2004 (69 FR 39395).

The New England cottontail (NEC) is a medium to large-sized cottontail rabbit

that may reach 1,000 grams in weight, and is one of two species within the genus *Sylvilagus* occurring in New England. New England cottontails are considered habitat specialists, in so far as they are dependent upon early-successional habitats typically described as thickets. The species is the only endemic cottontail in New England. Historically, the NEC ranged from southeastern New York (east of the Hudson River) north through the Champlain Valley, southern Vermont, the southern half of New Hampshire, southern Maine and south throughout Massachusetts, Connecticut and Rhode Island. The current range of the NEC has declined substantially and occurrences have become increasingly separated. The species' distribution is fragmented into five apparently isolated metapopulations in about 14 percent of the species' historic range. The area occupied by the cottontail has contracted from approximately 90,000 sq km to 12,180 sq km. It is estimated that less than one third of the occupied sites occur on lands in conservation status and fewer than 10 percent are being managed for early successional forest species.

The primary threat to the New England cottontail is loss of habitat through succession and alteration. Isolation of occupied patches by areas of unsuitable habitat and high predation rates are resulting in local extirpation of New England cottontails from small patches. The range of the New England cottontail has contracted by 75 percent or more since 1960 and current land uses in the region indicate that the rate of change, about two percent range loss per year, will continue. Additional threats include competition for food and habitat with introduced eastern cottontails and large numbers of native white-tailed deer; inadequate regulatory mechanisms in effect to protect the habitat; and mortality from predation. Based on threats of high magnitude that are imminent, we assigned this species an LPN of 2.

**Fisher, West Coast DPS (*Martes pennanti*)**—The following summary is based on information in our files and in the Service's initial warranted-but-precluded finding published in the **Federal Register** on April 8, 2004 (68 FR 18770). The fisher is a carnivore in the family Mustelidae and is the largest member of the genus *Martes*. Historically, the West Coast population of the fisher extended south from British Columbia into western Washington and Oregon, and in the North Coast Ranges, Klamath-Siskiyou Mountains, and Sierra Nevada in California. The fisher is believed to be extirpated or reduced

to scattered individuals from the lower mainland of British Columbia through Washington and in the central and northern Sierra Nevada range in California. Native populations of fisher currently occur in the North Coast Ranges of California, the Klamath-Siskiyou Mountains of northern California and southern Oregon, and in isolated populations occurring in the southern Sierra Nevada in California. Descendants of a fisher reintroduction effort also occur in the southern Cascade Range in Oregon. There is a lack of precise empirical data on West Coast DPS fisher numbers. However, there is a lack of detections over much of the fisher's historic range, even with standardized survey and monitoring efforts in California, Oregon, and Washington. There is also a high degree of genetic relatedness within some populations, and populations of native fisher in California are separated by four times the species' maximum dispersal distance. The above listed factors all indicate that the likely extant fisher populations are small and isolated from one another.

Major threats that fragment or remove key elements of fisher habitat include various forest vegetation management practices such as timber harvest and fuels reduction treatments. Other potential major threats include: Stand-replacing fire, Sudden Oak Death, Phytophthora, urban and rural development, recreation development, and highways. Major threats to fisher that lead to direct mortality and injury to fisher include: Collisions with vehicles; predation; and viral borne diseases such as rabies, parvovirus, canine distemper, and *Anaplasma phagocytophilum*. Existing regulatory mechanisms on Federal, State, and private lands affect key elements of fisher habitat and do not provide sufficient certainty that conservation efforts will be effective or will be implemented. The magnitude of threats is high as they occur across the range of the DPS resulting in a negative impact on fisher distribution and abundance. However, the threats are nonimminent as the greatest long-term risks to the fisher in its west coast range are the subsequent ramifications of the isolation of small populations, and the three remaining areas containing fisher populations appear to be stable or not rapidly declining based on recent survey and monitoring efforts. Therefore, we assigned an LPN of 6 to this population.

Mazama pocket gopher (*Thomomys mazama* ssp. *couchi*, *douglasii*, *glacialis*, *louiei*, *melanops*, *pugetensis*, *tacomensis*, *tumuli*, *yelmensis*)—The

following summary is based on information contained in our files. No new information was provided in the petition received December 11, 2002. Since publication of our last CNOR, the Brush Prairie pocket gopher was recently discovered to have been erroneously assigned to another species, *T. talpoides douglasii* (a northern pocket gopher). Mitochondrial DNA analysis determined that it is actually a subspecies of *T. mazama*, thus we are now including this subspecies in our candidate list as *T. m. douglasii*. Seven of these nine subspecies of pocket gopher are associated with glacial outwash prairies in western Washington (*T. m. melanops* is found on alpine meadows in Olympic National Park, and *T. m. douglasii* is found in extreme southwest Washington). Of these seven subspecies, five are likely still extant (*couchi*, *glacialis*, *pugetensis*, *tumuli*, and *yelmensis*); two of the subspecies (*louiei* and *tacomensis*) are likely extinct. Few of these glacial outwash prairies remain in Washington today. Historically, such prairies were patchily distributed, but the area they occupied was approximately 170,000 acres. Now, residential and commercial development, and ingrowth of woody and/or nonnative vegetation (often due to fire-regime alteration) have further reduced their extent of suitable habitats. In addition, development in or adjacent to these prairies has likely increased predation on Mazama pocket gophers by dogs and cats.

The magnitude of threat is high due to populations with patchy and isolated distributions in habitats highly desirable for development and subject to a wide variety of human activities that permanently alter the habitat. The threat of invasive plant species to the quality of a highly specific habitat requirement is high and constant. There are few known populations of each subspecies. A limited dispersal capability and the loss and degradation of additional patches of appropriate habitat will further isolate populations and increase their vulnerability to extinction. Loss of any of the subspecies will reduce the genetic diversity and the likelihood of continued existence of the *Thomomys mazama* subspecies complex in Washington. The threats are imminent as they are ongoing. Gravel pits threaten persistence of one of the subspecies (Roy Prairie), and the largest populations of two other subspecies (Shelton and Olympia) are located on airports with planned development. Yelm pocket gophers are also threatened by proposed development on Fort Lewis, and ongoing development in

Olympia. Thus, we assign an LPN of 3 to these subspecies.

Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Palm Springs round-tailed ground squirrel is one of four recognized subspecies of round-tailed ground squirrels. The range of this squirrel is limited to the Coachella Valley region of Riverside County, California. Primary habitat for the Palm Springs round-tailed ground squirrel is the dunes and hummocks associated with *Prosopis glandulosa* var. *torreyana* (honey mesquite) and to a lesser extent those dunes and hummocks associated with *Larrea tridentata* (creosote), or other vegetation. Rapid growth of desert cities such as Palm Springs and Palm Desert in the Coachella Valley has raised concerns about the conservation of the narrowly distributed Palm Springs round-tailed ground squirrel. Urban development and drops in the groundwater table have eliminated 90 percent of the honey mesquite in the Coachella Valley. Furthermore, urban development has fragmented habitat occupied by this squirrel thereby isolating populations. The high rate of urban development and associated lowering of the groundwater table that was likely historically responsible for the high losses of honey mesquite sand dune/hummocks habitat continues today. We continue to assign the Palm Springs ground squirrel subspecies a listing priority of 3 because the threats are ongoing and are of a high magnitude as they affect a large portion of its' range.

Southern Idaho ground squirrel (*Spermophilus brunneus endemicus*)—The following summary is based on information contained in our files. The southern Idaho ground squirrel is endemic to four counties in southwest Idaho; its total known range is approximately 425,630 hectares (1,051,752 acres). Threats to southern Idaho ground squirrels include: habitat deterioration and fragmentation; direct killing from shooting, trapping, or poisoning; predation; competition with Columbian ground squirrels; and inadequacy of existing regulatory mechanisms. Habitat deterioration and fragmentation appear to be the primary threats to the species. Nonnative annuals now dominate much of this species' range, have changed the species composition of vegetation, and have altered the fire regime in a perpetuating cycle throughout much of the range. Habitat deterioration, destruction, and



fragmentation are thought to have resulted in the current patchy distribution of southern Idaho ground squirrels. Based on recent genetic work, southern Idaho ground squirrels are subject to more genetic drift and inbreeding than expected. Cost effective methods of habitat restoration are currently unknown for southern Idaho ground squirrels. Two Candidate Conservation Agreements with Assurances (CCAAs) have been completed for this species, both of which allow agency access for population and habitat surveys and habitat enhancement/restoration work. The magnitude of threat is moderate for this species because habitat degradation remains the primary threat to the species in some areas where the species is found. While some habitat restoration has taken place, restoration has not yet occurred on a meaningful scale to further reduce the magnitude or eliminate this threat. The immediacy of the threat is imminent for this species due to the ongoing threat from the prevalence and dominance of nonnative vegetation and the current patchy distribution of the species. Thus, we assign an LPN of 9 to this subspecies.

Washington ground squirrel (*Spermophilus washingtoni*)—The following summary is based on information contained in our files and in the petition we received on March 2, 2000. The Washington ground squirrel is one of the smallest members of the subgenus *Spermophilus* and is found within the shrub-steppe habitat of the Columbia Basin ecosystem of Oregon and Washington. The soil types used by the squirrels are distributed sporadically within the species' range, and have been significantly fragmented by human development in the Columbia Basin. Approximately two-thirds of the Washington ground squirrel's total historical range has been converted to agriculture. When agriculture occurs, little evidence of ground squirrel use has been documented, and reports indicate that agriculture (along with other development) continues to eliminate Washington-ground-squirrel habitat in portions of its range.

Most remaining habitat is threatened by the occurrence and spread of nonnative species, particularly cheatgrass. Nonnative plants threaten squirrels by out-competing native plants, thereby altering available cover, food quantity and quality, and altering fire intervals. The ultimate effects of cheatgrass invasion on this species are not fully understood. While Washington ground squirrels eat cheatgrass, it is not likely a viable long-term dietary option since cheatgrass populations are

unstable during drought and cheatgrass contains large amounts of indigestible silica which may make it a poor nutrition source. Fire recurrence intervals typically switch from 20–100 years in sagebrush-grassland ecosystems to 3–5 years in cheatgrass-dominant sites. Increased fire occurrence reduces native bunchgrass and shrub cover (by competition or preventing the re-establishment of shrub cover) and allows exotic species to further out-compete native species.

The most contiguous, least-disturbed expanse of suitable Washington-ground-squirrel habitat within the species' range occurs on the Boeing site and Naval Weapons Training Facility near Boardman, Oregon. In Washington, the largest expanse of known suitable habitat occurs on State and Federal land. In Washington, recent declines in some colonies have been precipitous for unknown (possibly weather-related) reasons. Recent surveys have located additional sites in Washington and Oregon. However, detections are primarily located in the three disjunct metapopulations, indicating that fragmentation and increased vulnerability to natural and man-made factors is still a widespread threat. In Oregon, some threats are addressed by the State listing of this species, and by the recently signed Threemile Canyon Farms Multi-Species Candidate Conservation Agreement with Assurances (Agreement).

Current threats to the long-term persistence of this species include the following: historical and current habitat loss from the conversion of habitat to agriculture and other development, habitat fragmentation, limited dispersal corridors, recreational shooting, genetic isolation and drift, spread of nonnative species, and predation. Potential threats include disease, drought, and possible competition with related ground-squirrel species in disturbed habitat at the periphery of their range. While there are a variety of conservation actions and research activities, they do not address all of the threats throughout the species' range. Due to the widespread current and potential threats to the species we conclude the magnitude of threats remains high. Because the Agreement addressed the imminent loss of a large portion of habitat to agriculture, and because there are no other known, large-scale efforts to convert suitable habitat to agriculture, the threats, overall, are nonimminent. We, therefore, kept the LPN at 5.

#### Birds

Spotless crane, American Samoa DPS (*Porzana tabuensis*)—The following

summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *P. tabuensis* is a small, dark, cryptic rail found in wetlands and rank scrub or forest in the Philippines, Australia, Fiji, Tonga, Society Islands, Marquesas, Independent Samoa, and American Samoa (Ofu, Tau). The genus *Porzana* is widespread in the Pacific, where it is represented by numerous island-endemic and flightless species (many of which are extinct as a result of anthropogenic disturbances) as well as several more cosmopolitan species, including *P. tabuensis*. No subspecies of *P. tabuensis* are recognized. The American Samoa population is the only population of spotless cranes under U.S. jurisdiction. The available information indicates that distinct populations of the spotless crane, a species not noted for long-distance dispersal, are definable. The population of spotless cranes in American Samoa is discrete in relation to the remainder of the species as a whole, which is distributed in widely separated locations. Although the spotless crane (and other rails) have dispersed widely in the Pacific, island rails have tended to reduce or lose their power of flight over evolutionary time and so become isolated (and vulnerable to terrestrial predators such as rats). The population of this species in American Samoa is therefore distinct based on geographic and distributional isolation from spotless crane populations on other islands in the oceanic Pacific, the Philippines, and Australia. The American Samoa population of the spotless crane links the Central and Eastern Pacific portions of the species' range. The loss of this population could cause an increase of roughly 500 miles (805 kilometers) in the disjunction between the central and eastern Polynesian portions of the spotless crane's range, and could result in the isolation of the Marquesas and Society Islands populations by further limiting the potential for even rare genetic exchange. Based on the discreteness and significance of the American Samoa population of the spotless crane, we consider this population to be a distinct vertebrate population segment which warrants review for listing under the Act.

Threats to this species have not changed over the past year. The population in American Samoa is threatened by small population size, limited distribution, predation by nonnative mammals, continued development of wetland habitat, and natural catastrophes such as hurricanes.

The co-occurrence of a known predator of ground-nesting birds, the Norway rat (*Rattus norvegicus*), and the only known population of the spotless crane under U.S. jurisdiction, along with the extremely restricted observed distribution and low numbers, indicate that the American Samoa distinct population segment of this species continues to merit status as a candidate for listing. Based on our assessment of existing information about the imminence and high magnitude of these threats, we assigned the spotless crane an LPN of 3.

Kauai creeper (*Oreomystis bairdi*)—We have not updated our candidate assessment for this species as we are currently developing a proposed listing rule.

Yellow-billed cuckoo, western U.S. DPS (*Coccyzus americanus*)—The following summary is based on information contained in our files and the petition we received on February 9, 1998. See also our 12-month petition finding published on July 25, 2001 (66 FR 38611). The yellow-billed cuckoo is a medium-sized bird of about 12 inches (30 centimeters) in length with a slender, long-tailed profile and a fairly stout and slightly down-curved bill. Plumage is grayish-brown above and white below, with rufous primary flight feathers with the tail feathers boldly patterned with black and white below. Western cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods (*Populus fremontii*) and willows (*Salix* sp.). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California. We consider the yellow-billed cuckoos that occur in the western United States as a distinct population segment (DPS). The area for this DPS is west of the crest of the Rocky Mountains.

The threats currently facing the yellow-billed cuckoo include habitat loss, cattle grazing, and pesticide application. Principal causes of riparian habitat losses are conversion to agricultural and other uses, dams and river flow management, stream channelization and stabilization, and livestock grazing. Available breeding habitats for cuckoos have also been substantially reduced in area and quality by groundwater pumping and the replacement of native riparian habitats by invasive nonnative plants, particularly tamarisk. Overuse by livestock has been a major factor in the degradation and modification of riparian habitats in the western United

States. The effects include changes in plant community structure and species composition and in relative abundance of species and plant density. These changes are often linked to more widespread changes in watershed hydrology. Livestock grazing in riparian habitats typically results in reduction of plant species diversity and density, especially of palatable broadleaf plants like willows and cottonwood saplings, and is one of the most common causes of riparian degradation. In addition to destruction and degradation of riparian habitats, pesticides may affect cuckoo populations. In areas where riparian habitat borders agricultural lands, e.g., in California's central valley, pesticide use may indirectly affect cuckoos by reducing prey numbers, or by poisoning nestlings if sprayed directly in areas where the birds are nesting. We retain an LPN of 3 for the yellow-billed cuckoo due to imminent threats of a high magnitude.

Friendly ground-dove, American Samoa DPS (*Gallicolumba stairi stairi*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

Streaked horned lark (*Eremophila alpestris strigata*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on December 11, 2002. The streaked horned lark occurs in Washington and Oregon, and is thought to be extirpated in British Columbia, Canada. In Washington, surveys show that there are approximately 330 remaining breeding birds. In Oregon, the breeding population is estimated to be approximately 400 birds.

The streaked horned lark's breeding habitat continues to be threatened by loss and degradation due to conversion of native grasslands to other uses (such as agriculture, homes, recreational areas, and industry), encroachment of woody vegetation, and invasion of nonnative plant species (e.g., Scot's broom, sod-forming grasses, and beachgrasses). Wintering habitats are seemingly few, and susceptible to unpredictable conversion to unsuitable over-wintering habitat. Where larks inhabit manmade habitats similar in structure to native prairies (such as airports, military reservations, agricultural fields, and dredge-formed islands), or where they occur adjacent to human habitation, they are subjected to a variety of unintentional human disturbances such as mowing, recreational and military

activities, plowing, flooding, and dredge spoil dumping during the nesting season, as well as intentional disturbances such as at the McChord Air Force Base where falcons and dogs are used to haze the birds in order to prevent aircraft collisions. In some areas, landowners have taken steps to improve streaked-horned-lark nesting habitat.

The magnitude of threat is high due to small populations with low genetic diversity and patchy and isolated habitats in areas desirable for development, many of which remain unsecured. The threat of invasive plant species is high and constant, aside from a few restoration sites. The numbers of individuals are low and the numbers of populations are few. Over-wintering birds are concentrated in larger flocks and subject to unpredictable wintering habitat loss (especially in Oregon), potentially affecting a large portion of the population at one time. In Washington, known populations occur on airports, military bases, coastal beaches, and Columbia River islands, where management, training activities, recreation, and dredge spoil dumping continue to negatively affect streaked-horned-lark breeding and wintering. In Oregon, breeding and wintering sites occur on Columbia River islands, in cultivated grass fields, grazed pastures, fallow fields, roadside shoulders, Christmas tree farms, and wetland mudflats. Such areas continue to be subject to negative impacts such as dredge spoil dumping, development, plowing, mowing, pesticide and herbicide applications, trampling, vehicle traffic, and recreation.

The threats are imminent due to the continued loss of suitable lark habitat, risks to the wintering populations, plans for development on and adjacent to several of its nesting areas, use of falcons and dogs to haze breeding birds at McChord AFB, planned and/or continued expansions of the McChord AFB West Ramp and Olympia Airport, and annual Air Force military training and fire-bombing on top of lark nesting habitat. We continue to assign an LPN of 3 to this species.

Red knot (*Calidris canutus rufa*)—The following summary is based on information from our files and information provided by petitioners. We received one petition on August 9, 2004, and two others were each received on August 5, 2005. The *rufa* subspecies is one of six recognized subspecies of red knot and one of three subspecies occurring in North America (hereafter all mention of red knot refers strictly to the *rufa* subspecies). This subspecies makes one of the longest distance

migrations known in the animal kingdom as it travels between breeding areas in the central Canadian Arctic and wintering areas that are primarily in southern South America along the coast of Chile and Argentina. They migrate along the Atlantic coast of the United States, where they may be found from Maine to Florida. The Delaware Bay area (in Delaware and New Jersey) is the largest known spring migration stopover area, with far fewer migrants congregating elsewhere along the Atlantic coast. The concentration in the Delaware Bay area occurs from the middle of May to early June, corresponding to the spawning season of horseshoe crabs. The knots feed on horseshoe crab eggs, rebuilding energy reserves needed to complete migrations to the Arctic and arrive on the breeding grounds in good condition. Surveys at wintering areas and at Delaware Bay during spring migration indicate a substantial decline in recent years. At the Delaware Bay area, peak counts between 1982 and 1998 were as high as 95,360 knots. Although counts may vary considerably between years, some of the population fluctuations can be attributed to predator-prey cycles in the breeding grounds, and counts show that knots rebound from such reductions. In the past, horseshoe crab eggs were so numerous that a knot could eat enough in two to three weeks to double its weight. Research shows that from 1997 to 2002 an increasing proportion of red knots leaving the Delaware Bay failed to achieve threshold departure masses needed to fly to breeding grounds and survive an initial few days of snow cover, and this corresponded to reduced annual survival rates. Recently, peak counts at the Delaware Bay area have been lower than in the past and do not show a rebound. The peaks were 13,315 in 2004, 15,345 in 2005, and 13,455 in 2006. Counts in recent years at the principal wintering areas in South America also are substantially lower than in the past and do not show a rebound.

The primary factor threatening the red knot is destruction and modification of its habitat, particularly the reduction in key food resources resulting from reductions in horseshoe crabs, which are harvested primarily for use as bait and secondarily to support a biomedical industry. Commercial harvest increased substantially in the 1990's. Since 1999, a series of timing restrictions and substantially lower harvest quotas have been adopted by the Atlantic States Marine Fisheries Commission (ASMFC), as well as New Jersey and Delaware. In May 2006, the ASMFC adopted

restrictions effective from October 1, 2006, to September 30, 2008, including a prohibition on harvest and landing of horseshoe crabs in New Jersey and Delaware from January 1 through June 7, harvest of males only from June 8 through December 31, and harvest limited to no more than 100,000 horseshoe crabs per state per year. The ASMFC also adopted other restrictions applicable to Maryland and Virginia. New Jersey has established restrictions which supersede those of the ASMFC; as a result there is a moratorium on all horseshoe crab harvest in New Jersey from May 15, 2006 through June 7, 2008, after which the restrictions adopted by ASMFC apply. In February 2007, Delaware imposed a two-year moratorium, effective January 1, 2007, on harvest of horseshoe crabs within Delaware lands or waters. In June 2007, following litigation by two businesses involved in the harvesting and sale of horseshoe crabs, Delaware's moratorium was overturned. Consequently Delaware developed regulations allowing for a male-only horseshoe crab harvest, consistent with restrictions adopted by ASMFC. The reductions in commercial harvest since 1999 are substantial: 726,660 horseshoe crab landings for bait were reported in 1999 in Delaware and New Jersey, compared to 173,177 in 2004. However, we do not know whether horseshoe crab populations will rebuild or how long a lag time there may be in increased availability of eggs, as they need 8 to 10 years to reach sexual maturity and other key information for estimating population response is lacking. A survey in Delaware Bay showed spawning activity was stable or slightly declining from 1999 to 2004. In 2004, availability of horseshoe crab eggs on principal shorebird foraging beaches increased over recent years. The peak number of migrant red knots observed at Delaware Bay increased slightly in 2005 compared to 2004, and in 2006 the peak count was similar to that in 2004. Also, body weights of red knots at the time of departure from Delaware Bay improved in 2005 over previous years. Counts of red knots at key wintering areas in South America, although much reduced from the past, were similar in 2007 to the counts in 2006 and 2005. Thus in recent years the number of knots has been much lower than in the past and the trend in the abundance is not improving despite a four-fold reduction in horseshoe crab landings since the late 1990s.

Other identified threat factors include habitat destruction due to beach erosion and various shoreline protection and

stabilization projects that are impacting areas used by migrating knots for foraging, the inadequacy of existing regulatory mechanisms, human disturbance, and competition with other species for limited food resources. Also, the concentration of red knots in the Delaware Bay areas and at a relatively small number of wintering areas make the species vulnerable to potential large-scale events in those areas such as oil spills or severe weather. Overall, we conclude that the major threat, the modification of habitat through harvesting of horseshoe crabs to such an extent that it puts the viability of the knot at substantial risk, is of a high magnitude, but is nonimminent because of reductions and restrictions on harvesting horseshoe crabs. Based on nonimminent threats of a high magnitude, we retain an LPN of 6 for this subspecies.

Kittlitz's murrelet (*Brachyramphus brevirostris*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files and the petition we received on May 9, 2001.

Xantus's murrelet (*Synthliboramphus hypoleucus*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files and the petition we received on April 16, 2002.

Lesser prairie-chicken (*Tympanuchus pallidicinctus*)—The following summary is based on information contained in our files and the petition received on October 5, 1995. Additional information can be found in the 12-month finding published on June 7, 1998 (63 FR 31400). Biologists estimate that the occupied range has declined by 92 percent since the 1800s. The most serious threats to the lesser prairie-chicken are loss of habitat from conversion of native rangelands to introduced forages and cultivation, cumulative habitat degradation caused by severe grazing, woody plant invasion of open prairies, fire suppression, herbicides, and habitat fragmentation caused by structural and transportation developments. Many of these threats may exacerbate the normal effects of periodic drought on lesser prairie-chicken populations. In many cases, the remaining suitable habitat has become fragmented by the spatial arrangement of these individual threats. Habitat fragmentation can be a threat to the species through several mechanisms: remaining habitat patches may become smaller than necessary to meet the requirements of individuals and populations, necessary habitat

heterogeneity may be lost to areas of homogeneous habitat structure, areas between habitat patches may harbor high levels of predators or brood parasites, and the probability of recolonization decreases as the distance between suitable habitat patches expands.

Based on all currently available information, we find that ongoing threats to the lesser prairie-chicken, as outlined in the 12-month finding, remain unchanged and lesser prairie-chickens continue to warrant federal listing as threatened. We have determined that the overall magnitude of threats to the lesser prairie-chicken throughout its range is moderate, and that the threats are ongoing and thus, imminent. Consequently, an LPN of 8 remains appropriate for the species.

Greater sage-grouse, Columbia Basin DPS (*Centrocercus urophasianus*)—We have not updated our finding with regard to the Columbia Basin DPS of the greater sage-grouse in this notice. The following summary is based on information in our files and a petition, dated May 14, 1999, requesting the listing of the Washington population of western sage-grouse (*C. u. phaios*). Pursuant to Service policy (61 FR 4722), on May 7, 2001, we concluded that listing the Columbia Basin DPS of western sage-grouse, which was historically found in northern Oregon and central Washington, was warranted, but precluded by higher priority listing actions (66 FR 22984). In the May 4, 2004, notice, we found that a listing proposal for this DPS was still warranted but precluded by higher priorities, and maintained its LPN of 6. In the intervening time, the Service received two petitions requesting the listing of the entire ranges of the nominal western and eastern subspecies of greater sage-grouse, dated January 24 and July 3, 2002, respectively. However, based on communications with recognized sage-grouse experts, disagreement as to the validity of an eastern and western subspecies of sage-grouse existed. Due to this disagreement in the scientific community, the Service evaluated the available information with regard to our section 4 listing responsibilities under the Endangered Species Act (USFWS 1992). The Service subsequently concluded that the eastern and western subspecies designations for greater sage-grouse are inappropriate given current taxonomic standards (68 FR 6500 and 69 FR 933). The Institute for Wildlife Protection filed a court complaint, dated June 6, 2003, challenging the merits of the 90-day finding. On August 10, 2004, a U.S. District Court judge issued an order in

favor of the USFWS and dismissing the plaintiff's case. An appeal, dated November 24, 2004, was filed by the Institute for Wildlife Protection regarding this decision. On March 3, 2006, the 9th Circuit Court remanded the finding back to the Service to revisit the 90-day finding regarding the conclusion that the western sage-grouse is not a subspecies. The Court did uphold that the petitioned population (western sage-grouse) does not constitute a DPS. We will publish an updated finding addressing the Columbia Basin DPS in the **Federal Register** following our assessment of the remand.

Band-rumped storm-petrel, Hawaii DPS (*Oceanodroma castro*)—The following summary is based on information contained in our files and the petition we received on May 8, 1989. No new information was provided in the second petition received on May 11, 2004. The band-rumped storm-petrel is a small seabird that is found in several areas of the subtropical Pacific and Atlantic Oceans. In the Pacific, there are three widely separated breeding populations—one in Japan, one in Hawaii, and one in the Galapagos. Populations in Japan and the Galapagos are comparatively large and number in the thousands, while the Hawaiian birds represent a small, remnant population of possibly only a few hundred pairs. Band-rumped storm-petrels are most commonly found in close proximity to breeding islands. The three populations in the Pacific are separated by long distances across the ocean where birds are not found. Extensive at-sea surveys of the Pacific have revealed a broad gap in distribution of the band-rumped storm-petrel to the east and west of the Hawaiian Islands, indicating the distribution of birds in the central Pacific around Hawaii is disjunct from other nesting areas. The available information indicates that distinct populations of band-rumped storm-petrels are definable and that the Hawaiian population is distinct based on geographic and distributional isolation from other band-rumped storm-petrel populations in Japan, the Galapagos, and the Atlantic Ocean. A population also can be considered discrete if it is delimited by international boundaries across which exist differences in management control of the species. The Hawaiian population of the band-rumped storm-petrel is the only population within U.S. borders or under U.S. jurisdiction. Loss of the Hawaiian population would cause a significant gap in the distribution of the

band-rumped storm-petrel in the Pacific, and could result in the complete isolation of the Galapagos and Japan populations without even occasional genetic exchanges.

The band-rumped storm-petrel probably was common on all of the main Hawaiian Islands when Polynesians arrived about 1,500 years ago, based on storm-petrel bones found in middens on the island of Hawaii and in excavation sites on Oahu and Molokai. Nesting colonies of this species in the Hawaiian Islands currently are restricted to remote cliffs on Kauai and Lehua Island and high-elevation lava fields on Hawaii.

Vocalizations of the species were heard in Haleakala Crater on Maui as recently as 2006; however, no nesting sites have been located on the island to date. The significant reduction in numbers and range of the band-rumped storm-petrel is due primarily to predation by nonnative predators introduced by humans, including the domestic cat (*Felis catus*), small Indian mongoose (*Herpestes auropunctatus*), common barn owl (*Tyto alba*), black rat (*R. rattus*), Polynesian rat (*Rattus exulans*), and Norway rat (*R. norvegicus*), which occur throughout the main Hawaiian Islands, with the exception of the mongoose, which is not established on Kauai. Attraction of fledglings to artificial lights and collisions with artificial structures such as communication towers and utility lines are also threats. Erosion of nest sites caused by the actions of nonnative ungulates is a potential threat in some locations. Efforts are underway in some areas to reduce light pollution and mitigate the threat of collisions, but there are no large-scale efforts to control nonnative predators in the Hawaiian Islands. Based on the imminent threats of a high magnitude, we assign this distinct population segment an LPN of 3.

Elfin-woods warbler (*Dendroica angelae*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The elfin-woods warbler is a small entirely black and white warbler, distinguished by its white eyebrow stripe, white patches on ear covers and neck, incomplete eye ring, and black crown. *Dendroica angelae* was at first thought to occur only in the high elevation dwarf or elfin forests, but it has since been found at lower elevations, including shade coffee plantations and secondary forests. *Dendroica angelae* builds a compact cup nest, usually close to the trunk and well hidden among the epiphytes of a small

tree, and its breeding season extends from March to June. This species forages in the middle part of trees, gleaning insects from leaves in the outer portion of the tree crown. *Dendroica angelae* has been documented from four locations in Puerto Rico: Luquillo Mountains, Sierra de Cayey, and the Commonwealth forests of Maricao and Toro Negro. However, it has not been recorded again in Toro Negro and Cayey, following the passing of Hurricane Hugo in 1989. In 2003 and 2004, surveys were conducted for the elfin-woods warbler in the Carite Commonwealth Forest, Toro Negro Forest, Guilarte Forest, Bosque del Pueblo, Maricao Forest and the Caribbean National Forest, but only detected the species in the latter two. Biologist recorded 778 elfin-woods warblers in the Maricao Commonwealth Forest, and 196 elfin-woods warblers in the Caribbean National Forest.

Habitat destruction from expansion of public facilities within the forests, potential construction of additional telecommunication towers and their maintenance, disruption of breeding activities from pedestrians and high human use areas, switching from shade to sun coffee plantations, timber management practices, potential predators, and catastrophic natural events such as hurricanes and forest fires, threaten this species. Although these threats are not imminent, because most of the range of *Dendroica angelae* is within protected lands the magnitude of threat to *Dendroica angelae* is considered high, due to its restricted distribution and low population numbers. Therefore, we assign an LPN of 5 to this species.

#### Reptiles

Sand dune lizard (*Sceloporus arenicolus*)—The following summary is based on information contained in our files and in the petition we received June 6, 2002. The sand dune lizard is endemic to a small area in southeastern New Mexico (Chaves, Eddy, Lea, and Roosevelt Counties) and adjacent west Texas (Andrews, Crane, Gaines, Ward, and Winkler Counties). Within this area, the known occupied and potentially occupied habitat is only 1,697 square kilometers (655 square miles) in New Mexico, and an area of unknown size in west Texas. The sand dune lizard's distribution is localized and fragmented (i.e., known populations are separated by vast areas of unoccupied habitat), and the species is restricted to sand dune blowouts associated with active sand dunes and shinnery oak (*Quercus harvardii*) and scattered sandsage (*Artemisia filifolia*) vegetation. Sand

dune lizards are not found at sites lacking shinnery oak dune habitat.

It is clear that shinnery oak removal (e.g., by treating with the herbicide Tebuthiuron for livestock range improvements) results in dramatic reductions and extirpation of sand dune lizards. Scientists repeatedly confirmed the extirpation of sand dune lizards from areas with herbicide treatment to remove shinnery oak. In 1999, biologists estimated that about 25 percent of the total sand dune lizard habitat in New Mexico had been eliminated in the previous 10 years. The population of sand dune lizards has also been affected by oil and gas field development. An estimated 50-percent decline in sand dune lizard populations can be expected in areas with approximately 25 to 30 oil and/or gas wells per section. Because the distribution of sand dune lizards is localized and fragmented, and this species is a habitat specialist, impacts to its habitat will most likely greatly decrease populations. If current herbicide application continues and oil and gas development progresses as expected, the magnitude of threat to sand dune lizards will increase. Continued pressure to develop oil and gas resources in areas with sand dune lizards poses an imminent threat to the species. Therefore, we continue to assign this species an LPN of 2.

Eastern massasauga (*Sistrurus catenatus catenatus*)—The following summary is based on information contained in our files. No new information was provided in the petition received on May 11, 2004. The eastern massasauga is one of three recognized subspecies of massasauga. It is a small, thick-bodied rattlesnake that occupies shallow wetlands and adjacent upland habitat in portions of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Wisconsin, and Ontario.

Although the current range of *S. c. catenatus* resembles the subspecies' historical range, the geographic distribution has been restricted by the loss of the subspecies from much of the area within the boundaries of that range. Approximately 40 percent of the counties that were historically occupied by *S. c. catenatus* no longer support the subspecies. *S. c. catenatus* is currently considered imperiled in every State and province which it occupies. Each State and Canadian province across the range of *S. c. catenatus* has lost more than 30 percent, and for the majority more than 50 percent, of their historical populations. Furthermore, less than 35 percent of the remaining populations are considered secure. Approximately 59 percent of the remaining *S. c.*

*catenatus* populations occur wholly or in part on public land, and Statewide and/or site-specific Candidate Conservation Agreements with Assurances (CCAAs) are currently being developed for many of these areas in Iowa, Illinois, Michigan, and Wisconsin. In 2006, a CCAA with the Ohio Department of Natural Resources Division of Natural Areas and Preserves was completed for Rome State Nature Preserve in Ashtabula County. Populations soon to be under CCAs and CCAAs have a high likelihood of persisting and remaining viable. Other populations are likely to suffer additional losses in abundance and genetic diversity and some will likely be extirpated unless threats are removed in the near future. Because of the ongoing efforts to protect the subspecies through CCAAs, the magnitude of threats from habitat modification, habitat succession, incompatible land management practices, illegal collection for the pet trade, and human persecution is moderate overall, with most imminent threats occurring to remaining populations on private lands. Due in large part to the numerous CCAAs currently being developed and implemented, we do not believe emergency listing is warranted and have kept the LPN at 9 for this subspecies.

Black pine snake (*Pituophis melanoleucus lodingi*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. There are historical records for the black pine snake from one parish in Louisiana, 14 counties in Mississippi, and 3 counties in Alabama west of the Mobile River Delta. Black pine snake surveys and trapping indicate that this species has been extirpated from Louisiana and from four counties in Mississippi. Moreover, the distribution of remaining populations has become highly restricted due to the destruction and fragmentation of the remaining longleaf pine habitat within the range of the species. Most of the known Mississippi populations are concentrated on the DeSoto National Forest. Populations occurring on properties managed by State and other governmental agencies as gopher tortoise mitigation banks or wildlife sanctuaries represent the best opportunities for long-term survival of the species in Alabama. Other factors affecting the black pine snake include vehicular mortality and low reproductive rates, which magnify other threats and increase the likelihood of local extinctions. Due to the imminent

threats of high magnitude caused by the past destruction of most of the longleaf pine habitat of the black pine snake, and the continuing persistent degradation of what remains, we assigned an LPN of 3 to this subspecies.

Louisiana pine snake (*Pituophis ruthveni*)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files and the petition we received on July 19, 2000.

Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Sonoyta mud turtle occurs in a spring and pond at Quitobaquito Springs on Organ Pipe Cactus National Monument in Arizona, and in the Rio Sonoyta and Quitovac Spring of Sonora, Mexico. Loss and degradation of stream habitat from water diversion and groundwater pumping, along with its very limited distribution, is the primary threat to the Sonoyta mud turtle. Sonoyta mud turtles are highly aquatic and depend on permanent water for survival. The area of southwest Arizona and northern Sonora where the Sonoyta mud turtle occurs is one of the driest regions of the southwest. Due to continuing drought, irrigated agriculture, and development in the region, surface water in the Rio Sonoyta can be expected to dwindle further. This species may also be vulnerable to aerial spraying of pesticides on nearby agricultural fields. We retained an LPN of 3 for this subspecies because threats are of a high magnitude and continue to date, and therefore, are imminent.

#### Amphibians

Columbia spotted frog, Great Basin DPS (*Rana luteiventris*)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files and the petition we received on May 1, 1989.

Mountain yellow-legged frog, Sierra Nevada DPS (*Rana muscosa*)—The following summary is based on information contained in our files and the petition received on February 8, 2000. Also see our 12-month petition finding published on January 16, 2003 (68 FR 2283) and our amended 12-month petition finding published on June 25, 2007 (72 FR 34657). The mountain yellow-legged frog inhabits the high elevation lakes, ponds, and streams in the Sierra Nevada Mountains of California, from near 4,500 feet (ft) (1,370 meters (m)) to 12,000 ft (3,650 m).

The distribution of the mountain yellow-legged frog is from Butte and Plumas counties in the north to Tulare and Inyo counties in the south. A separate population in southern California is already listed as endangered (67 FR 44382).

Predation by introduced trout is the best-documented cause of the decline of the Sierra Nevada mountain yellow-legged frog, because it has been repeatedly observed that nonnative fishes and mountain yellow-legged frogs rarely co-exist. Mountain yellow-legged frogs and trout (native and nonnative) do co-occur at some sites, but these co-occurrences probably are mountain yellow-legged frog populations with negative population growth rates in the absence of immigration. To help reverse the decline of the mountain yellow-legged frog, the Sequoia and Kings Canyon National Parks have been removing introduced trout since 2001. Over 18,000 introduced trout have been removed from 11 lakes since the project started in 2001. The lakes are completely- to mostly fish-free and substantial mountain yellow-legged frog population increases have resulted. The California Department of Fish and Game (CDFG) has also removed or is in the process of removing nonnative trout from a total of between 10 and 20 water bodies in the Inyo, Humboldt-Toiyabe, Sierra, and El Dorado National Forests. In the El Dorado National Forest golden trout were removed from Leland Lakes, and attempts have been made to remove trout from two sites near Gertrude Lake and a tributary of Cole Creek; no data showing increase in mountain yellow-legged frogs at these sites was available.

In California, chytridiomycosis, more commonly known as chytrid fungus, has been detected in many amphibian species, including the mountain yellow-legged frog within the Sierra Nevada. Recent research has shown that this pathogenic fungus is widely distributed throughout the Sierra Nevada, and that infected mountain yellow-legged frogs die soon after metamorphosis. Several infected and uninfected populations were monitored in Sequoia and Kings Canyon National Parks over multiple years, documenting dramatic declines and extirpations in infected but not in uninfected populations. In the summer of 2005, 39 of 43 populations assayed in Yosemite National Park were positive for chytrid fungus.

The current distribution of the Sierra Nevada mountain yellow-legged frog is restricted primarily to publicly managed lands at high elevations, including streams, lakes, ponds, and meadow wetlands located on national forests, including wilderness and non-

wilderness on the forests, and national parks. In several areas where detailed studies of the effects of chytrid fungus on the mountain yellow-legged frog are ongoing, substantial declines have been observed over the past several years. For example, in 2005 surveys in Yosemite National Park mountain yellow-legged frogs were not detectable at 37 percent of 113 sites where they had been observed in 2000–2002; in 2005 in Sequoia and Kings Canyon National Parks mountain yellow-legged frogs were not detected at 47 percent of sites where they had been recorded 3–8 years earlier. A compounding effect of disease-caused extinctions of mountain yellow-legged frogs is that recolonization may never occur, because streams connecting extirpated sites to extant populations now contain introduced fishes, which act as barriers to frog movement within metapopulations. The most recent assessment of the species status in the Sierra Nevada indicates that mountain yellow-legged frogs occur at less than 8 percent of the sites from which they were historically observed. A group of prominent scientists further suggest a 10 percent decline per year in the number of remaining *Rana muscosa* populations and urge the listing of the mountain yellow-legged frogs as endangered. Based on imminent, high-magnitude threats, we continue to assign the population of mountain yellow-legged frog in the Sierra Nevada an LPN of 3.

Oregon spotted frog (*Rana pretiosa*)—The following summary is based on information contained in our files and the petition we received on May 4, 1989. Historically, the Oregon spotted frog ranged from British Columbia to the Pit River drainage in northeastern California. Based on surveys of historical sites, the Oregon spotted frog is now absent from at least 76 percent of its former range. The majority of the remaining Oregon spotted frog populations are small and isolated. The threats to the species' habitat include development, livestock grazing, introduction of nonnative plant species, changes in hydrology due to construction of dams and alterations to seasonal flooding, and poor water quality. Additional threats to the species are predation by nonnative fish and introduced bullfrogs; competition with bullfrogs for habitat; and diseases, such as oomycete water mold *Saprolegnia* and chytrid fungus infections. The magnitude of threat is high for this species because the small populations with patchy and isolated distributions are subject to a wide range of threats to both individuals and their habitats that

could seriously reduce or eliminate any of these isolated populations and further reduce the range of the species. Habitat restoration and management actions have not prevented a decline in the reproductive rates in some populations. The threats are imminent because each population is faced with multiple ongoing and potential threats. Therefore, we retain an LPN of 2 for the Oregon spotted frog.

Relict leopard frog (*Rana onca*)—The following summary is based on information contained in our files and the petition we received on May 9, 2002. Relict leopard frogs are currently known to occur only in two general areas in Nevada: near the Overton Arm area of Lake Mead, and Black Canyon below Lake Mead. These two areas comprise a small fraction of the historical distribution of the species, which included springs, streams, and wetlands within the Virgin River drainage downstream from the vicinity of Hurricane, Utah; along the Muddy River, Nevada; and along the Colorado River from its confluence with the Virgin River downstream to Black Canyon below Lake Mead, Nevada and Arizona. Suggested factors contributing to the decline of the species include alteration of aquatic habitat due to agriculture and water development, including regulation of the Colorado River, and the introduction of exotic predators and competitors. In 2005, the National Park Service, in cooperation with the Service and various other Federal, State, and local partners, developed a conservation agreement and strategy which is intended to improve the status of the species through prescribed management actions and protection. Conservation actions identified for implementation in the agreement and strategy include captive rearing tadpoles for translocation and refugium populations, habitat and natural history studies, habitat enhancement, population and habitat monitoring, and translocation. Conservation is proceeding under the agreement; however, additional time is needed to determine whether or not the agreement will be effective in eliminating or reducing the threats to the point that the relict leopard frog can be removed from candidate status. However, because of these conservation efforts the magnitude of existing threats is low to moderate. These threats remain nonimminent since there are no known projects or actions that would adversely affect frog populations or threaten surface water associated with known sites occupied by the frog. We assigned an LPN of 11 to this species.

Ozark hellbender (*Cryptobranchus alleganiensis bishopi*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Since the species was elevated to candidate status in 2001 (66 FR 54808), the known threats have increased. In particular, the 2006 discovery of the amphibian disease chytridiomycosis, caused by the pathogen *Batrachochytrium dendrobatidis*, in captive and remaining wild populations of the Ozark hellbender has made increased protection vital to persistence of this subspecies. Chytridiomycosis has proven fatal to several amphibian species worldwide, as well as to Ozark hellbenders in captivity. The majority (approximately 75 percent) of captive hellbenders at the St. Louis Zoo (St. Louis, Missouri) that have been infected with chytridiomycosis have died. Deaths relating to chytridiomycosis continue to occur as the St. Louis Zoo staff continues to search for an effective way to treat infected animals. Due to the incidence of *Batrachochytrium dendrobatidis* in the St. Louis Zoo hellbender population, in 2006 the Missouri Department of Conservation began testing wild hellbenders in Missouri for infection of the pathogen. Individuals that tested positive for the pathogen were found in all three Ozark hellbender rivers in Missouri. Although dead animals in the wild have not been seen, animals continue to be seen with increasingly severe abnormalities. These abnormalities have not been linked conclusively with the presence of *Batrachochytrium dendrobatidis*; however, considering the types of abnormalities documented (e.g., lesions, digit and appendage loss, epidermis sloughing) researchers believe there is likely a connection. In general, researchers have found that abnormalities in Ozark hellbenders are becoming increasingly more severe, often to a level that the animal is approaching death (e.g., missing digits on all/most limbs, missing all/most limbs). Recreational pressures on Ozark hellbender rivers have also increased substantially on an annual basis. The Missouri Department of Conservation reports that gigging popularity and pressure have increased, and present a significant threat to hellbenders during the breeding season as they tend to move greater distances and congregate in small groups where they are an easy target for giggers. Canoe, kayak, and motor/jet boat traffic has increased in recent years on the Jacks Fork, Current, Eleven Point, and North Fork Rivers.

The popularity of these float streams has grown to the point that the National Park Service is considering alternatives to reducing the number of boats that can be launched daily by concessionaires.

To date, nothing has been done to reduce or ameliorate ongoing threats to Ozark hellbenders. The Ozarks region continues to experience rapid urbanization, expansion of industrial agricultural practices such as concentrated animal feeding operations (chickens, turkeys, hogs, cattle), and logging. No laws are in place to preclude livestock from grazing in riparian corridors and resting in or along streams and rivers. The majority of the Ozarks region in Missouri and Arkansas is comprised of karst topography (caves, springs, sinkholes, and losing streams) further complicating the containment and transport of potential contaminants. In short, the abundance of waste being generated and lack of adequate treatment facilities or practices for both human and livestock waste poses a significant and ever increasing threat to aquatic ecosystems. The decrease in Ozark hellbender range and population size and the shift in age structure are likely due in part to a variety of historic and ongoing activities. The primary causes of these trends are habitat destruction and modification. Among these are impoundment, channelization, and siltation and water quality degradation from a variety of sources, including industrialization, agricultural runoff, mine waste, and timber harvest. Overutilization of hellbenders for commerce and scientific purposes is also likely contributing to their decline. The regulations targeting these threats, including Clean Water Act and state laws, have not prevented Ozark hellbender declines. Finally, most of the remaining Ozark hellbender populations are small and isolated, making them vulnerable to individual catastrophic events and reducing the likelihood of recolonization after localized extinctions. Due to the existence of ongoing, high-magnitude threats and the newly documented presence of chytridiomycosis, we are deliberating whether emergency listing is appropriate for the Ozark hellbender and continue to assign an LPN of 3 to this subspecies.

Austin blind salamander (*Eurycea waterlooensis*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Austin blind salamander is known to occur in and around three of the four spring sites that comprise the Barton

Springs complex in the City of Austin, Travis County, Texas.

Primary threats to this species are degradation of water quality and quantity due to expanding urbanization. The Austin blind salamander depends on a constant supply of clean water in the Edwards Aquifer discharging from Barton Springs for its survival. Urbanization dramatically alters the normal hydrologic regime and water quality of an area. Increased impervious cover caused by development increases the quantity and velocity of runoff that leads to erosion and greater pollution transport. Pollutants and contaminants that enter the Edwards Aquifer are discharged in salamander habitat at Barton Springs and have serious morphological and physiological effects to the salamander. As the human population increases in central Texas, greater demand on groundwater sources occurs. Increased pumping of the Edwards Aquifer can result in reduced springflows that may also have a detrimental impact on the salamander.

The Texas Commission on Environmental Quality adopted the Edwards Rules in 1995 and 1997, which require a number of water quality protection measures for new development occurring in the recharge and contributing zones of the Edwards Aquifer. However, Chapter 245 of the Texas Local Government Code permits "grandfathering" of state regulations. Grandfathering allows developments to be exempted from any new local or state requirements for water quality controls and impervious cover limits if the developments were planned prior to the implementation of such regulations. As a result of the grandfathering law, very few developments have followed these ordinances. New developments are still obligated to comply with regulations that were applicable at the time when project applications for development were first filed. In addition, it is significant that even if they were followed with every new development, these ordinances do not span the entire watershed for Barton Springs.

Consequently, development occurring outside these jurisdictions can have negative consequences on water quality and thus have an impact on the species. Despite having the Edwards Rules, as well as other local ordinances, in place, 10 years of trend data continues to show that water quality at Barton Springs is declining. Because of the limited distribution of this species, the magnitude of the threats facing it is high. The threats are imminent because urbanization is ongoing and continues to expand over the Barton Springs Segment of the Edwards Aquifer and

water quality continues to degrade. Thus, we retain an LPN of 2 for this species.

Georgetown salamander (*Eurycea naufragia*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Georgetown salamander is known to occur in spring outlets along five tributaries to the San Gabriel River and one cave in the City of Georgetown, Williamson County, Texas. The Georgetown salamander has a very limited distribution and depends on a constant supply of clean water from the Northern Segment of the Edwards Aquifer for its survival.

Primary threats to this species are degradation of water quality and quantity due to expanding urbanization. Increased impervious cover by development increases the quantity and velocity of runoff that leads to erosion and greater pollution transport. Pollutants and contaminants that enter the Edwards Aquifer are discharged from spring outlets in salamander habitat and have serious morphological and physiological effects to the species. As the human population increases in central Texas, greater demand on groundwater sources occurs. Increased groundwater pumping of the Edwards Aquifer results in reduced springflows that may also have a detrimental impact on the salamander.

The Texas Commission on Environmental Quality adopted the Edwards Rules in 1995 and 1997, which require a number of water quality protection measures for new development occurring in the recharge and contributing zones of the Edwards Aquifer. However, Chapter 245 of the Texas Local Government Code permits "grandfathering" of State regulations. Grandfathering allows developments to be exempted from any new local or State requirements for water quality controls and impervious cover limits if the developments were planned prior to the implementation of such regulations. As a result of the grandfathering law, very few developments have followed these ordinances. New developments are still obligated to comply with regulations that were applicable at the time when project applications for development were first filed. In addition, it is significant that even if they were followed with every new development, these ordinances do not span the entire watershed for the Edwards Aquifer. The Texas Commission on Environmental Quality has developed voluntary water quality protection measures for development in the Edwards Aquifer region of Texas;

however, it is unknown if these measures will be implemented or if they will be effective in maintaining or improving water quality.

Development occurring outside the Texas Commission on Environmental Quality's jurisdiction can have negative consequences on water quality and thus have an impact on the species. Despite having the Edwards Rules in place, as well as other local ordinances, 10 years of trend data at Barton Springs in Austin, Texas, continues to show that water quality is declining. Because of the limited distribution of the Georgetown salamander, the magnitude of the threats facing it is high. The threats are also imminent because urbanization is ongoing and continues to expand over the Northern Segment of the Edwards Aquifer. Thus, we retain an LPN of 2 for this species.

Salado salamander (*Eurycea chisholmensis*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Salado salamander is historically known to occur in two spring sites, Big Boiling Springs and Robertson Springs, near Salado, Bell County, Texas. Salamanders have not been located at Robertson Springs since 1991.

Primary threats to this species are habitat modification and degradation of water quality and quantity due to expanding urbanization. Many of the spring outlets in the City of Salado have been modified by dam construction. Because Big Boiling Springs is located near Interstate 35 and in the center of the city, increasing traffic and urbanization increase threats of contamination from spills, higher levels of impervious cover, and subsequent impacts to groundwater. Several groundwater contamination incidents have occurred within Salado salamander habitat. The Salado salamander depends on a constant supply of clean water from the Northern Segment of the Edwards Aquifer for its survival. Pollutants and contaminants that enter the Edwards Aquifer discharge in salamander habitat and have serious morphological and physiological effects to the salamander. As the human population increases in central Texas, greater demand on groundwater sources occurs. Increased pumping of the Edwards Aquifer can result in reduced springflows that may also have a detrimental impact on the salamander.

Controls of nonpoint source pollution in the watershed are implemented through the Edwards Rules (water quality protection measures for the



recharge and contributing zones of the Edwards Aquifer) adopted by the Texas Commission on Environmental Quality in 1995 and 1997. Although implementation of the Edwards Rules in other areas of the Northern Segment of the Edwards Aquifer may have the potential to affect conditions at spring sites occupied by the Salado salamander, the jurisdiction of Texas Commission on Environmental Quality does not extend into Bell County. For this reason, compliance with the Edwards Rules is not required in this part of the Edwards Aquifer. There are no other local or regional water protection measures that have been put in place for areas that feed the springs known to be occupied by the Salado salamander. Because of the limited distribution of this species, the magnitude of the threats facing it is high. The threats are also imminent because urbanization is ongoing and contamination events are occurring near spring sites known to support Salado salamanders. Thus, we retain an LPN of 2 for this species.

Yosemite toad (*Bufo canorus*)—The following summary is based on information contained in our files and the petition we received on April 3, 2000. See also our 12-month petition finding published on December 10, 2002 (67 FR 75834). Yosemite toads are moderately sized toads with females having black spots, edged with white or cream, that are set against a grey, tan or brown background. Males have a nearly uniform coloration of yellow-green to olive drab to greenish brown. Yosemite toads are most likely to be found in areas with thick meadow vegetation or patches of low willows near or in water, and use rodent burrows for overwintering and temporary refuge during the summer. Breeding habitat includes the edges of wet meadows, slow flowing streams, shallow ponds and shallow areas of lakes. The historic range of Yosemite toads in the Sierra Nevada occurs from the Blue Lakes region north of Ebbetts Pass (Alpine County) to south of Kaiser Pass in the Evolution Lake/Darwin Canyon area (Fresno County). The historic elevational range of Yosemite toads is 1,460 to 3,630 m (4,790 to 11,910 ft).

The threats currently facing the Yosemite toad include cattle grazing, timber harvesting, recreation, disease, and climate change. Inappropriate grazing has shown to cause loss of vegetative cover and destruction of peat layers in meadows, which lowers the groundwater table and summer flows. This may increase the stranding and mortality of tadpoles, or make these areas completely unsuitable for

Yosemite toads. Grazing can also degrade or destroy moist upland areas used as non-breeding habitat by Yosemite toads and collapse rodent burrows used by Yosemite toads as cover and hibernation sites. Timber harvesting and associated road development could severely alter the terrestrial environment and result in the reduction and occasional extirpation of amphibian populations in the Sierra Nevada. These habitat gaps may act as dispersal barriers and contribute to the fragmentation of Yosemite toad habitat and populations. Trails (foot, horse, bicycle, or off-highway motor vehicle) compact soil in riparian habitat, which increases erosion, displaces vegetation, and can lower the water table. Trampling or the collapsing of rodent burrows by recreational users, pets, and vehicles could lead to direct mortality of all life stages of the Yosemite toad and disrupt their behavior. Various diseases have been confirmed in Yosemite toads. Mass die-offs of amphibians have been attributed to: Chytrid fungal infections of metamorphs and adults; *Saprolegnia* fungal infections of eggs; iridovirus infection of larvae, metamorphs, or adults; and bacterial infections. Yosemite toads probably are exposed to a variety of pesticides and other chemicals throughout their range. Environmental contaminants could negatively affect the species by causing direct mortality; suppressing the immune system; disrupting breeding behavior, fertilization, growth or development of young; and disrupting the ability to avoid predation. We retained an LPN of 11 for the Yosemite toad since the threats are nonimminent and moderate to low in magnitude.

Black Warrior waterdog (*Necturus alabamensis*)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

#### Fishes

Headwater chub (*Gila nigra*)—The following summary is based on information contained in our files and the 12-month finding on a petition to list the species we published May 3, 2006 (71 FR 26007). The range of the headwater chub has been reduced by approximately 50 to 60 percent. Approximately 16 streams (125 miles (200 kilometers) of stream) are thought to be occupied out of 19 streams (312 miles (500 kilometers) of stream) formerly occupied in the Gila River Basin in Arizona and New Mexico. Remaining populations are fragmented

and isolated and threatened by a combination of factors.

Headwater chub are threatened by introductions of nonnative fish that prey on them and/or compete with them for food. These nonnative fish are difficult to eliminate and, therefore, pose an ongoing threat. Habitat destruction and modification has occurred and continues to occur as a result of dewatering, impoundment, channelization, and channel changes caused by alteration of riparian vegetation and watershed degradation from mining, grazing, roads, water pollution, urban and suburban development, groundwater pumping, and other human actions. Existing regulatory mechanisms do not appear to be adequate for addressing the impact of nonnative fish and also have not removed or eliminated the threats that continue to be posed in relation to habitat destruction or modification. The fragmented nature and rarity of existing populations makes them vulnerable to other natural or manmade factors, such as drought and wildfire.

The Arizona Game and Fish Department has created the Arizona Statewide Conservation Agreement for Roundtail Chub (*G. robusta*), Headwater Chub, Flannelmouth Sucker (*Catostomus latipinnis*), Little Colorado River Sucker (*Catostomus* spp.), Bluehead Sucker (*C. discobolus*), and Zuni Bluehead Sucker (*C. discobolus yarrowi*), which is in the process of being finalized. The New Mexico Department of Game and Fish recently listed the headwater chub as endangered and created a recovery plan for the species, Colorado River Basin Chubs (Roundtail Chub, Gila Chub (*G. intermedia*), and Headwater Chub) Recovery Plan, which was approved by the New Mexico State Game Commission on November 16, 2006. Both the Arizona Agreement and the New Mexico Recovery Plan recommend preservation and enhancement of extant populations and restoration of historical headwater chub populations. The recovery and conservation actions prescribed by Arizona and New Mexico plans, which we believe will reduce and remove threats to this species, will require further discussions and authorizations before they can be implemented. However, due to the ongoing high magnitude threats, including loss of habitat, degradation of remaining habitat, and others (e.g., nonnative species, drought, and fire), we maintain the current LPN of 2 for this species.

Arkansas darter (*Etheostoma cragini*)—The following summary is based on information from our files. No

new information was provided in the petition we received on May 11, 2004. The Arkansas darter is a small fish in the perch family native to portions of the Arkansas River basin. The species' range includes sites in extreme northwestern Arkansas, southwestern Missouri, and northeastern Oklahoma, within the Neosho River watershed. It also occurs in a number of watersheds and isolated streams in eastern Colorado, south-central and southwestern Kansas, and the Cimarron watershed in northwest Oklahoma. The species is most often found in small spring fed streams with sand substrate and aquatic vegetation. It appears stable at most sites where spring flows persist. It has declined in areas where spring flows have decreased or been eliminated. We estimate that currently there are approximately 145 occurrences of the Arkansas darter distributed across the five States; it was found at 29 of 67 sites sampled in 2005–2006. Major threats to the species include stream dewatering resulting from groundwater pumping in the western portion of the species' range, and development pressures in portions of its eastern range. Spills and runoff from confined animal feeding operations also potentially threaten the species range-wide. We are retaining an LPN of 11 for the Arkansas darter until we can assess more current information.

**Cumberland darter (*Etheostoma susanae*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Although the Cumberland darter was once recorded as abundant, it is now considered to be rare and extremely restricted in range known from only 18 locations in streams in the upper Cumberland River system, above Cumberland Falls, in Kentucky and Tennessee. The species inhabits shallow water in pools and runs of headwater streams with stable sand, silt, or sand-covered bedrock substrata.

The primary threat to the Cumberland darter is the siltation of instream habitats caused by coal mining activities, silvicultural practices, road construction, and urban development. The small size and range of Cumberland darter populations also make them much more susceptible to extirpation from single catastrophic events (such as toxic chemical spills) and reduces their ability to recover from smaller impacts to their habitat or populations. All surviving populations of the Cumberland darter are restricted to short stream reaches, with the majority believed to be restricted to less than one mile of stream. These occurrences are

thought to form six population clusters, which are isolated from one another by poor quality habitat, impoundments, or natural barriers. Specific information on the threats to the current distribution of the Cumberland darter was initiated in May 2006 by the Kentucky Department of Fish and Wildlife Resources and additional sampling was completed in spring 2007 at approximately 10 to 15 sites in Kentucky and Tennessee. Collectively, these factors are serious and significant impediments to the survival of the Cumberland darter; thus these threats are high in magnitude. Federal and state water quality laws have reduced water quality threats to some degree, and non-point pollution threats and modification of reach geomorphology and hydrology are cumulative and gradual. Therefore, these factors are nonimminent. Consequently, we have assigned the Cumberland darter a listing priority of 5, reflecting a threat magnitude and immediacy of high and nonimminent, respectively.

**Pearl darter (*Percina aurora*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Little is known about the specific habitat requirements or natural history of the Pearl darter. Pearl darters have been collected from a variety of river/stream attributes, mainly over gravel bottom substrate. This species is historically known only from localized sites within the Pascagoula and Pearl River drainages in two states. Currently, the Pearl darter is considered extirpated from the Pearl River drainage and rare in the Pascagoula River drainage. Since 1983, the range of the Pearl darter has decreased by 55 percent.

Pearl darters are vulnerable to the cumulative impacts of a variety of non-point pollution sources, such as sedimentation and chemicals, and also to more localized and concentrated pollution events. The steady yet gradual change in river and tributary geomorphology and hydrology over time is believed to have an impact on this species. The magnitude of threat to this species is high due to their limited and disjunct populations and threat due to sedimentation. However, the immediacy of the threat is nonimminent since no known projects are planned that would have a direct impact on the species, and the decline of water quality is slow and gradual. In addition, efforts are underway to improve habitat by reducing these threats and to increase and augment the numbers of Pearl darters by husbandry. Therefore, we assign this species an LPN of 5.

**Rush darter (*Etheostoma phytophilum*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Rush Darter is endemic to upland portions of the Black Warrior River system in Alabama where it occurs in shallow headwater streams. This species is uncommon and sporadic within its range, as it favors shallow, flowing water in spring runs and spring-associated streams with emergent vegetation. Only three disjunct populations are known: One in the Clear Creek system in Winston County, one in spring-fed tributaries of Turkey Creek in Jefferson County; and one population in Little Cove Creek (Cove Springs) in Etowah County. The Jefferson County population (Turkey Creek), which is located in a large metropolitan area, is threatened by urbanization and commercialization of its habitat. Siltation from bridge, road, and sewer line construction has been recently documented within the Turkey Creek watershed by academic researchers and Service biologists.

The major threat to the Winston County population of rush darters is erosion of Mill Creek, Doe and Wildcat Branch, and the cumulative increase of sediments caused from gravel roads and roadside ditches. Within the past year, biologists have observed increased erosion along roads adjacent to Doe and wildcat Branches which resulted in increased siltation within those streams. Increases in urbanization, road maintenance and silviculture practices contribute to increased sedimentation in the watershed. The major threat to the Cove Springs population is contamination of the water with chlorine. Efforts are underway to improve habitat and water quality; however, at this time all populations are being negatively affected by declining water quality. The magnitude of threat is high due to the limited number of populations, and the threat is imminent because water quality is currently declining for all populations. Thus, we assigned an LPN of 2 to this species.

**Yellowcheek darter (*Etheostoma moorei*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The yellowcheek darter is endemic to four headwater tributaries of the Little Red River. It is vulnerable to alterations in physical habitat characteristics such as the impoundment of Greers Ferry Reservoir, channel maintenance in the Archey Fork, increased sedimentation from eroding stream banks and poor riparian management, and illegal gravel

mining. Factors affecting the remaining populations include loss of suitable breeding habitat, habitat and water quality degradation, population isolation, and severe population declines exacerbated by stochastic drought conditions. A 2004–2005 threats assessment by Service personnel documented occurrences of the aforementioned activities and found 52 sites on the Middle Fork, 28 sites on the South Fork, eight sites on Archey Fork, and one site in the Turkey/Beech/Devils Fork system that are potential contributors to the decline of the species. Since the threats assessment was completed, natural gas exploration and development in the Fayetteville Shale formation in north central Arkansas has also become a primary threat in all watersheds and is not addressed by the conservation agreements in place or by any regulatory mechanism. The Middle Fork was listed as an impaired waterbody by the Arkansas Department of Environmental Quality in 2004 due to excessive bacteria and low dissolved oxygen.

Recent studies have documented significant declines in the numbers (60,000 in 1981; 10,300 in 2000) of this fish in the remaining populations and further range restriction within the tributaries (130.4 to 65.0 stream km). As a result, yellowcheek darter numbers had declined over a 20 year period by 83 percent in both the Middle Fork and South Fork, and 60 percent in the Archey Fork during a 2000 status survey. No yellowcheek darters have been found in the Turkey Fork between 1999 and 2005; the species has apparently been extirpated in that reach. Due to imminent threats of a high magnitude that are not currently targeted by conservation actions, we assigned this species an LPN of 2.

**Chucky madtom (*Noturus crypticus*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Chucky madtom is a rare catfish known from only 15 specimens collected from two Tennessee streams. A lone individual was collected in 1940 from Dunn Creek (a Little Pigeon River tributary) in Sevier County and 14 specimens have been encountered since 1991 in Little Chucky Creek (a Nolichucky River tributary) in Greene County. Only 3 specimens have been encountered since 1994 from two riffle areas in a short reach of Little Chucky Creek. All Little Chucky Creek specimens have been collected from stream runs with slow to moderate current over pea gravel, cobble, or slab-rock substrates.

Threats to the chucky madtom include both extrinsic and intrinsic factors. Extrinsic factors include potential degradation of water quality and breeding and sheltering habitat due primarily to agricultural land use practices and secondarily to urban and rural development in the watersheds of Little Chucky and Dunn creeks. The Service believes that intrinsic factors including the potential demographic effects of inbreeding, limited species distribution, presumed low number of individuals, and presumed low fecundity and short life span characteristic of closely related madtom species pose imminent threats to the chucky madtom in its only known extant and historic locations. Therefore, we assigned the chucky madtom an LPN of 2.

**Grotto sculpin (*Cottus* sp., sp. nov.)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Grotto sculpin, a small fish, is restricted to two karst areas (limestone regions characterized by sink holes, abrupt ridges, caves, and underground streams), the Central Perryville Karst and Mystery-Rimstone Karst in Perry County, southeast Missouri. Grotto sculpins have been documented in only 5 caves. The current overall range of the grotto sculpin has been estimated to encompass approximately 260 square kilometers (100 square miles).

The small population size and endemism of the grotto sculpin make it vulnerable to extinction due to genetic drift, inbreeding depression, and random or chance changes to the environment. The species' karst habitat is located down-gradient of the city of Perryville, Missouri, which poses a potential threat if contaminants from this urban area enter cave streams occupied by grotto sculpins. Various agricultural chemicals, such as ammonia, nitrite/nitrate, chloride, and potassium have been detected at levels high enough to be detrimental to aquatic life within the Perryville Karst area. More than half of the sinkholes in Perry County contain anthropogenic refuse, ranging from household cleansers and sewage to used pesticide and herbicide containers. As a result, potential water contamination from various sources of point and non-point pollution poses a significant threat to the grotto sculpin. Of the 5 cave systems documented to have grotto sculpins, populations in one cave system were likely eliminated, presumably as the result of point-source pollution. When the cave was searched in the spring of 2000, a mass mortality of grotto sculpin was noted, and

subsequent visits to the cave have failed to document a single live grotto sculpin. Thus, the species appears to have suffered a 20 percent decrease in the number of populations from the single event. Predatory fish such as common carp, fat-head minnow, yellow bullhead, green sunfish, bluegill, and channel catfish occur in all of the caves occupied by grotto sculpin. These potential predators may escape surface farm ponds that unexpectedly drain through sinkholes into the underground cave systems and enter grotto sculpin habitat. No regulatory mechanisms are in place that would provide protection to the grotto sculpin. Current threats to the habitat of the grotto sculpin may exacerbate potential problems associated with its low population numbers and increase the likelihood of extinction. Due to the high magnitude of ongoing, and thus imminent, threats we assigned this species an LPN of 2.

**Sharpnose shiner (*Notropis oxyrhynchus*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The sharpnose shiner is a small, slender minnow, endemic to the Brazos River Basin in Texas. Historically, the sharpnose shiner existed throughout the Brazos River and several of its major tributaries within the watershed. It has also been found in the Wichita River (within the Red River Basin) where it may have once naturally occurred but has since been extirpated. Current information indicates that the population within the Upper Brazos River drainage (upstream of Possum Kingdom Reservoir) is apparently stable, while the population within the Middle and Lower Brazos River Basins may only exist in remnant populations in areas of suitable habitat, which may no longer be viable, representing a reduction of approximately 68 percent of its historical range.

The most significant threat to the existence of the sharpnose shiner is potential reservoir development within its current range. Additional threats include irrigation and water diversion, sedimentation, desalination, industrial and municipal discharges, agricultural activities, in-stream sand and gravel mining, and the spread of invasive saltcedar. The current limited distribution of the sharpnose shiner within the Upper Brazos River Basin makes it vulnerable to catastrophic events such as the introduction of competitive species or prolonged drought. State law does not provide protection for the sharpnose shiner. The magnitude of threat is considered high since the major threat of reservoir

development within the species current range may render its remaining habitat unsuitable. The immediacy of threat is non-imminent because major reservoir projects are not likely to occur in the near future and there is potential for implementing other water supply options that could preclude reservoir development. For these reasons, we assign an LPN of 5 to this species.

**Smalleye shiner (*Notropis buccula*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The smalleye shiner is a small, pallid minnow endemic to the Brazos River Basin in Texas. The population of smalleye shiners within the Upper Brazos River drainage (upstream of Possum Kingdom Reservoir) is apparently stable. However, the shiner has not been collected since 1976 downstream from the reservoir, and may be extirpated from this area, representing a reduction of approximately 54 percent of its historical range.

The most significant threat to the existence of the smalleye shiner is potential reservoir development within its current range. Additional threats include irrigation and water diversion, sedimentation, desalination, industrial and municipal discharges, agricultural activities, in-stream sand and gravel mining, and the spread of invasive saltcedar. The current limited distribution of the smalleye shiner within the Upper Brazos River Basin makes it vulnerable to catastrophic events such as the introduction of competitive species or prolonged drought. State law does not provide protection for the smalleye shiner. The magnitude of threat is considered high since the major threat of reservoir development within the current range of the species may render its remaining habitat unsuitable. The immediacy of threat is considered non-imminent because major reservoir projects are not likely to occur in the near future and there is potential for implementing other water supply options that could preclude reservoir development. For these reasons, we assign an LPN of 5 to this species.

**Zuni bluehead sucker (*Catostomus discobolus yarrowi*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The range of the Zuni bluehead sucker has been reduced by over 90 percent. The Zuni bluehead sucker currently occupies 9 river miles in 3 areas of New Mexico, and potentially occurs in 27

miles in the Kinlichee drainage of Arizona. However, the number of occupied miles in Arizona is unknown and the genetic composition of these fish is still under investigation. Zuni bluehead sucker range reduction and fragmentation is caused by discontinuous surface water flow, separation of inhabited reaches by reservoirs, and habitat degradation from fine sediment deposition. The principal uses of surface and ground water within the Zuni River watershed are human consumption, livestock, and irrigation. Diverting water for agricultural use is the primary purpose of at least five impoundments, and several other reservoirs act as flood-control structures. Degradation of the upper watershed has led to increased sedimentation, and many of the reservoirs are now only shallow, eutrophic (low oxygen) ponds or wetlands with little or no storage capacity. The impoundments have also changed the downstream channel morphology and substrate composition of streams. Another major impact to populations of Zuni bluehead sucker was the application of fish toxicants through at least two dozen treatments in the Nutria and Pescado rivers between 1960 and 1975. Large numbers of Zuni bluehead suckers were killed during these treatments.

For several years, the New Mexico Department of Game and Fish has been the lead agency to develop a conservation plan for Zuni bluehead sucker. A study funded through section 6 of the Act was initiated in 2000 and has continued annually. The grant included funding for development and implementation of a Zuni Bluehead Sucker Conservation Plan and the acquisition of additional information on distribution, life history, and species associations. The Zuni Bluehead Sucker Recovery Plan was approved by the New Mexico State Game Commission during a State Game Commission meeting on December 15, 2004. The Recovery Plan recommends preservation and enhancement of extant populations and restoration of historical Zuni bluehead sucker populations. The recovery actions prescribed by the State Recovery Plan that we believe will reduce and remove threats to this subspecies will require further discussions and authorizations before they can be implemented. Because of the ongoing threats of high magnitude, including loss of habitat (historical and current from beaver activity), degradation of remaining habitat, drought, and fire, we maintain the current LPN of 3 for this subspecies.

### Clams

**Texas hornshell (*Popenaias popei*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Texas hornshell is a freshwater mussel found in the Black River of New Mexico and one confirmed locality in the mainstem Rio Grande of Texas and Mexico. The primary threats are habitat alterations such as stream bank channelization, impoundments, and diversions for agriculture and flood control; contamination of water by the oil and gas industry; alterations in the natural riverine hydrology; and increased sedimentation from prolonged overgrazing and loss of native vegetation. Riverine habitats in both the Black River and the Rio Grande are under constant threats from these adverse changes. The magnitude of threats is high because of the existence of only one confirmed location in New Mexico and Texas each, which makes this species highly vulnerable to extinction. The threats are imminent because past alterations to riverine habitats have resulted in the much reduced distribution of this species and demands for water from the Rio Grande continue to increase and make additional habitat degradation likely. Thus, we maintain the LPN of 2 for this species.

**Fluted kidneyshell (*Ptychobranchus subtentum*)**—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004.

**Neosho mucket (*Lampsilis rafinesqueana*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Neosho mucket is a freshwater mussel native to Arkansas, Kansas, Missouri, and Oklahoma. The species has been extirpated from approximately 62 percent (835 river miles) of its range, most of which has occurred in Kansas and Oklahoma. The Neosho mucket survives in four river drainages; however, only two of these, the Spring and Illinois Rivers, currently support relatively large populations.

Significant portions of the historic range have been inundated by the construction of at least 11 dams. Channel instability downstream of these dams has further reduced suitable habitat and mussel distribution. Range restriction and population declines have occurred due to habitat degradation attributed to impoundments, mining,

sedimentation, and agricultural pollutants. Rapid development and urbanization in the Illinois River watershed will likely continue to increase sedimentation and eutrophication to this river but populations are currently stable in this river. The remaining extant populations are vulnerable to random catastrophic events (e.g., flood scour, drought, toxic spills), land use changes within the limited range, and genetic isolation and the deleterious effects of inbreeding. These threats have led to the species being intrinsically vulnerable to extirpation. Although State regulations limit harvest of this species, there is little protection for habitat. The threats are high in magnitude as they can negatively affect the species throughout its range and result in mortality and/or reduced reproductive output. While some of the threats are ongoing and thus, imminent, others are nonimminent, but on balance, the threats are nonimminent. Thus, we assigned an LPN of 5 to this species.

**Alabama pearlshell (*Margaritifera marrianae*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Alabama pearlshell (*Margaritifera marrianae*) inhabits shallow riffles and pool margins of small creeks and streams of southwest Alabama. Only three populations of Alabama pearlshell have been confirmed to survive during the past 15 years. A comprehensive survey is planned by the Alabama Department of Conservation and Natural Resources in 2007. One of the three populations has declined significantly over the past few years, apparently due to increased sedimentation at this location and possibly other forms of non-point source (NPS) pollution. The other two populations also appear to be declining. The Alabama pearlshell has been assigned a listing priority of 2 because the NPS pollution is ongoing, and therefore imminent, and the vulnerability of small stream habitat to continuing NPS pollution, combined with the fewer numbers of live mussels in the three known populations, means that the NPS pollution poses a high-magnitude threat to this species.

**Slabside pearlymussel (*Lexingtonia dolabelloides*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The slabside pearlymussel is a freshwater mussel (Unionidae) endemic to the Cumberland and Tennessee River systems (Cumberlandian Region) in Alabama, Kentucky, Tennessee, and Virginia. It requires shoal habitats in

free-flowing rivers to survive and successfully recruit new individuals into its populations. Habitat destruction and alteration (e.g., impoundments, sedimentation, and pollutants) are the chief factors contributing to its decline. This species has been extirpated from numerous regional streams and is no longer found in the Commonwealth of Kentucky. The slabside pearlymussel was historically known from at least 32 streams but is currently restricted to no more than 10 isolated stream segments. Current status information for most of the 10 populations deemed to be extant is available from recent periodic sampling efforts (sometimes annually) and other field studies. Comprehensive surveys have taken place in the Middle and North Forks Holston River, Paint Rock River, and Duck River in the past several years. Based on recent information, the overall population of the slabside pearlymussel is declining rangewide. Of the five streams in which the species remains in good numbers and is clearly viable (e.g., Clinch, North and Middle Forks Holston, Paint Rock, Duck Rivers), the Middle and upper North Fork Holston Rivers have undergone drastic recent declines, while the Clinch population has been in a longer-term decline. Most of the remaining five populations (e.g., Powell River, Big Moccasin Creek, Hiwassee River, Elk River, Bear Creek) have doubtful viability and several if not all of them may be on the verge of extirpation. Since most of the populations of slabside pearlymussel are declining and face potential threats from impoundments, sedimentation, small population size, isolation of populations, gravel mining, municipal pollutants, agricultural run-off, nutrient enrichment, and coal processing pollution, the threats are high in magnitude. However, there is no specific information regarding the timing of these threats, so we do not consider them to be imminent. Thus, we continue to assign an LPN of 5 to this mussel.

**Georgia pigtoe (*Pleurobema hanleyanum*)**—We have not updated our candidate assessment for this species as we are currently developing a proposed listing rule.

**Altamaha spiny mussel (*Elliptio spinosa*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Altamaha spiny mussel is a freshwater mussel endemic to the Altamaha River drainage of southeastern Georgia. The historical range of the Altamaha spiny mussel was restricted to the Coastal Plain portion of the

Altamaha River and the lower portions of its three major tributaries, the Ochoopee, Ocmulgee, and Oconee Rivers. The Altamaha spiny mussel is associated with stable, coarse to fine sandy sediments of sandbars and sloughs and appears to be restricted to swiftly flowing water. As the name implies, the shells of these animals are adorned with one to five prominent spines that reach lengths from 10 to 25 mm (0.39 to 0.98 in). The species appears to be extirpated from the Ochoopee and Oconee Rivers, and its numbers are greatly reduced in the Ocmulgee and Altamaha Rivers.

Altamaha spiny mussels face severe habitat degradation from a number of sources. Primary among these are threats from sedimentation and contaminants within the rivers that the Altamaha spiny mussel inhabits. A new threat of deadhead logging has recently emerged. These threats to the Altamaha spiny mussel are further compounded by its limited distribution and the low population size identified in recent survey efforts. Efforts to identify the host fish and expand our understanding of the spiny mussels life cycle have not yet produced results. Since the threats are ongoing (i.e., imminent) and severely affect this species throughout its range (i.e., high in magnitude), we continue to assign an LPN of 2 to this species.

#### Snails

**Ogden mountainsnail (*Oreohelix peripherica wasatchensis*)**—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Ogden mountain snail is known from a single population near the mouth of Ogden Canyon, Weber County, Utah. The total occupied habitat is an area approximating 100 meters (328 ft) wide by 1 kilometer (0.5 miles) long. The restricted range of this snail, the proximity to an expanding residential area, and impacts from relatively heavy recreational use, makes it vulnerable to extirpation from stochastic or human-caused events. Threats to the colony have not changed or increased substantially over the past year. Recent molecular phylogenetic studies are expected to clarify the level of uniqueness of this taxon. The ongoing (i.e. imminent) threats are moderately affecting the species. Therefore, we retained an LPN of 9 for this subspecies.

**Fat-whorled (Bonneville) pondsnail (*Stagnicola bonnevillensis*)**—The following summary is based on information contained in our files. No new information was provided in the

petition we received on May 11, 2004. The fat-whorled pondsnail, also known as the Bonneville pondsnail, occupies four spring pools north of the Great Salt Lake in Box Elder County, Utah. While the number of individuals is unknown, the total known occupied habitat is less than one hectare. Previous and ongoing threats include chemical contamination of the groundwater. Significant actions are underway to remediate this threat, including implementation of a Corrective Action Plan to characterize and remediate groundwater contamination, implementation of a site management plan, and development of a groundwater model and risk assessment. These efforts have not been underway for a sufficient period to reduce the threat from contamination. While contamination continues to occur, and therefore, the threat is imminent, the levels of contamination are such that it affects the species over a longer timeframe, so the threat is moderate in magnitude. Therefore, we retained an LPN of 8 for this species.

Interrupted rocksnail (*Leptoxis foremani* (= *downei*)—We have not updated our candidate assessment as we are currently developing a proposed listing rule for this species.

Sisi snail (*Ostodes strigatus*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The sisi snail is a ground-dwelling species in the Potaridae family and is endemic to American Samoa. The species is now known from a single population on the island of Tutuila, American Samoa.

This species is currently threatened by habitat loss and modification and by predation from nonnative predatory snails. The decline of the sisi in American Samoa has resulted, in part, from loss of habitat to forestry and agriculture and loss of forest structure to hurricanes and alien weeds that establish after these storms. All live sisi snails have been found in the leaf litter beneath remaining intact forest canopy. No snails were found in areas bordering agricultural plots or in forest areas that were severely damaged by three hurricanes (1987, 1990, and 1991). Under natural historic conditions, loss of forest canopy to storms did not pose a great threat to the long term survival of these snails; enough intact forest with healthy populations of snails would support dispersal back into newly regrown canopy forest. However, the presence of alien weeds such as mile-a-minute vine (*Mikania micrantha*) may reduce the likelihood that native forest will re-establish in areas damaged by

the hurricanes. This loss of habitat to storms is greatly exacerbated by expanding agriculture. Agricultural plots on Tutuila have spread from low elevation up to middle and some high elevations, greatly reducing the forest area and thus reducing the resilience of native forests and its populations of native snails. These reductions also increase the likelihood that future storms will lead to the extinction of populations or species that rely on the remaining canopy forest. In an effort to eradicate the giant African snail (*Achatina fulica*), the alien rosy carnivore snail (*Euglandia rosea*) was introduced in 1980. The rosy carnivore snail has spread throughout the main island of Tutuila. Numerous studies show that the rosy carnivore snail feeds on endemic island snails including the sisi, and is a major agent in their declines and extirpations. At present, the major threat to long-term survival of the native snail fauna in American Samoa is predation by nonnative predatory snails. These threats are ongoing and are therefore imminent. Since the threats occur throughout the entire range of the species and have a significant effect on the survival of the snails, they are of a high magnitude. Therefore we assigned this species an LPN of 2.

Diamond Y Spring snail (*Pseudotryonia adamantina*) and Gonzales springsnail (*Tryonia circumstriata*)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Diamond Y Spring snail and Gonzales springsnail are small aquatic snails endemic to Diamond Y Spring in Pecos County, Texas. The spring and its outflow channel are owned and managed by The Nature Conservancy. These snails are primarily threatened with habitat loss due to springflow declines from drought and from pumping of groundwater. Additional threats include water contamination from accidental releases of petroleum products, as their habitat is in an active oil and gas field. Also, a nonnative aquatic snail (*Melanoides* sp.) was recently introduced into the native snails' habitat and may compete with endemic snails for space and resources. The magnitude of threats is high because limited distribution of these narrow endemics makes any impact from increasing threats (e.g., loss of springflow, contaminants, and nonnative species) likely to result in the extinction of the species. These species occur in one location in an arid region currently plagued by drought and

ongoing aquifer withdrawals, making the threat to spring flow imminent. Thus, we maintain the LPN of 2 for both species.

Fragile tree snail (*Samoana fragilis*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, the fragile tree snail is a member of the Partulidae family of snails and is endemic to the islands of Guam and Rota (Mariana Islands). Requiring cool and shaded native forest habitat, the species is now known from 4 populations on Guam and a single population on Rota. This species is currently threatened by habitat loss and modification and by predation from nonnative predatory snails and flatworms. Large numbers of deer (*Cervus marianus*) (Guam and Rota), pigs (*Sus scrofa*) (Guam), water buffalo (*Bubalus bubalis*) (Guam), and cattle (*Bos taurus*) (Rota), directly alter the understory plant community and overall forest microclimate making it unsuitable for snails. Predation by the alien rosy carnivore snail (*Euglandina rosea*) and the Manokwar flatworm (*Platydemus manokwari*) is a serious threat to the survival of the fragile tree snail. Field observations have established that the rosy carnivore snail and the Manokwar flatworm will readily feed on native Pacific island tree snails, including the Partulidae, such as those of the Mariana Islands. The rosy carnivore snail has caused the extirpation of many populations and species of native snails throughout the Pacific islands. Because all of the threats occur rangewide and have a significant effect on the survival of this snail species, they are high in magnitude. The threats are also ongoing and thus, are imminent. Therefore, we assigned this species an LPN of 2.

Guam tree snail (*Partula radiolata*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, the Guam tree snail is a member of the Partulidae family of snails and is endemic to the island of Guam. Requiring cool and shaded native forest habitat, the species is now known from 22 populations on Guam.

This species is primarily threatened by predation from nonnative predatory snails and flatworms. In addition, the species is also threatened by habitat loss and degradation. Predation by the alien rosy carnivore snail (*Euglandina rosea*) and the alien Manokwar flatworm (*Platydemus manokwari*) is a serious threat to the survival of the Guam tree

snail. Field observations have established that the rosy carnivore snail will readily feed on native Pacific island tree snails, including the Partulidae, such as those of the Mariana Islands. The rosy carnivore snail has caused the extirpation of many populations and species of native snails throughout the Pacific islands. The Manokwar flatworm has also contributed to the decline of native tree snails, in part due to its ability to ascend into trees and bushes that support native snails. Areas with populations of the flatworm usually lack partulid tree snails or have declining numbers of snails. On Guam, open agricultural fields and other areas prone to erosion were seeded with tangantangan (*Leucaena leucocephala*) by the U.S. Military. Tangantangan grows as a single species stand with no substantial understory. The microclimatic condition is dry with little accumulation of leaf litter humus and is particularly unsuitable as Guam tree snail habitat. In addition, native forest cannot reestablish and grow where this alien weed has become established. Because all of the threats occur rangewide and have a significant effect on the survival of this snail species, they are high in magnitude. The threats are also ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Humped tree snail (*Partula gibba*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, the humped tree snail is a member of the Partulidae family of snails, and was originally known from the island of Guam and the Commonwealth of the Northern Mariana Islands (islands of Rota, Aguiguan, Tinian, Saipan, Anatahan, Sarigan, Alamagan, and Pagan). Most recent surveys revealed a total of 14 populations on the islands of Guam, Rota, Aguiguan, Sarigan, Saipan, Alamagan, and Pagan. Although still the most widely distributed tree snail endemic in the Mariana Islands, remaining population sizes are often small.

This species is currently threatened by habitat loss and modification and by predation from nonnative predatory snails and flat worms. Throughout the Mariana Islands, feral ungulates (pigs (*Sus scrofa*), Philippine deer (*Cervus mariannus*), cattle (*Bos taurus*), water buffalo (*Bubalus bubalis*), and goats (*Capra hircus*)) have caused severe damage to native forest vegetation by browsing directly on plants, causing erosion, and retarding forest growth and regeneration. This in turn reduces the

quantity and quality of forested habitat for the humped tree snail. Currently, populations of feral ungulates are found on the islands of Guam (deer, pigs, and water buffalo), Rota (deer and cattle), Aguiguan (goats), Saipan (deer, pigs, and cattle), Alamagan (goats, pigs, and cattle), and Pagan (cattle, goats, and pigs). Goats were eradicated from Sarigan in 1998 and the humped tree snail has increased in abundance on that island, likely in response to the removal of all the goats. However, the population of humped tree snails on Anatahan is likely extirpated due to the massive volcanic explosions of the island beginning in 2003 and still continuing, and the resulting loss of up to 95 percent of the vegetation on the island. Predation by the alien rosy carnivore snail (*Euglandina rosea*) and the alien Manokwar flatworm (*Platydemus manokwari*) is a serious threat to the survival of the humped tree snail. Field observations have established that the rosy carnivore snail will readily feed on native Pacific island tree snails, including the Partulidae, such as those of the Mariana Islands. The rosy carnivore snail has caused the extirpation of many populations and species of native snails throughout the Pacific islands. The Manokwar flatworm has also contributed to the decline of native tree snails, in part due to its ability to ascend into trees and bushes that support native snails. Areas with populations of the flatworm usually lack partulid tree snails or have declining numbers of snails. The magnitude of threats is high because they cause significant population declines to the humped tree snail rangewide. These threats are ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Lanai tree snail (*Partulina semicarinata*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, *P. semicarinata* is a member of the Achatinellidae family of snails. Endemic to the island of Lanai, the species is currently known from 3 populations totaling 29 individuals. This species is highly threatened throughout its limited range by habitat loss and modification and by predation from rats. No efforts are being undertaken to remove rats in areas where *P. semicarinata* occur. The threat from this predator is expected to continue or increase unless the rats are actively controlled or eradicated. Habitat loss also continues as nonnative ungulates trample and browse native

vegetation required by *P. semicarinata*. Although the snails are in an area to be fenced, until the fence is completed and the ungulates have been removed, the habitat will continue to be degraded. The small number of individuals and the small number of populations make this species very susceptible to the negative effects of stochastic events such as hurricanes and storms. There is a population in captivity that is protected from the effects of unexpected droughts, though the effects of severe storms may still affect this population as evidenced by the loss of snails when a severe flood interrupted the power supply to the Hawaii Endangered Snail Captive Propagation Lab and temperatures increased within the environmental chambers containing the snails. In addition, these snails are likely subjected to the same concerns of reproductive vigor and loss of genetic variability. The magnitude of threats is high because they cause significant population declines to *P. semicarinata* rangewide. The threats are also ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Lanai tree snail (*Partulina variabilis*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, *P. variabilis* is a member of the Achatinellidae family of snails. Endemic to the island of Lanai, the species is currently known from 12 populations totaling 90 individuals. This species is highly threatened throughout its limited range by habitat loss and modification and by predation from rats. The threat from this predator is expected to continue or increase unless the rats are actively controlled or eradicated. Habitat loss also continues as nonnative ungulates trample and browse native vegetation required by *P. variabilis*. Although the snails are in an area to be fenced, until the fence is constructed and the ungulates have been removed, the habitat will continue to be degraded. The small number of individuals and the small number of populations make this species very susceptible to the negative effects of stochastic events such as hurricanes and storms. There is a population in captivity that is protected from the effects of unexpected droughts, though the effects of severe storms may still affect this population as evidenced by the loss of snails when a severe flood interrupted the power supply to the University and temperatures increased within the environmental chambers containing the snails. In addition, these

snails are likely subjected to the same concerns of reproductive vigor and loss of genetic variability as the wild population. The magnitude of threats is high because they result in direct mortality or significant population declines to *P. variabilis* rangewide. The threats are ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Langford's tree snail (*Partula langfordi*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, Langford's tree snail is a member of the Partulidae family of snails and is known from one population on the island of Aguiquan. This species is currently threatened by habitat loss and modification and by predation from nonnative predatory snails. In the 1930s, the island of Aguiquan was mostly cleared of native forest to support sugar cane and pineapple production. The abandoned fields and airstrip are now overgrown with alien weeds. The remaining native forest understory has greatly suffered from large and uncontrolled populations of alien goats and the invasion of weeds. Goats (*Capra hircus*) have caused severe damage to native forest vegetation by browsing directly on plants, causing erosion, and retarding forest growth and regeneration. This in turn reduces the quantity and quality of forested habitat for Langford's tree snail. Predation by the alien rosy carnivore snail (*Euglandina rosea*) is also a serious threat to the survival of Langford's tree snail. Field observations have established that the rosy carnivore snail will readily feed on native Pacific island tree snails, including the Partulidae such as those of the Mariana Islands. The rosy carnivore snail has caused the extirpation of many populations and species of native snails throughout the Pacific islands. Predation on native partulid tree snails by the terrestrial Manokwar flatworm (*Platydemus manokwari*) is also a threat to the long-term survival of these snails. The Manokwar flatworm has contributed to the decline of native tree snails, due to its ability to ascend into trees and bushes that support native snails. Areas with populations of the flatworm usually lack partulid tree snails or have declining numbers of snails. All of the threats are occurring rangewide and no efforts to control or eradicate the nonnative predatory snail species or to reduce habitat loss are being undertaken. The magnitude of threats is high because they result in direct

mortality or significant population declines to Langford's tree snail rangewide. These threats are also ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Newcomb's tree snail (*Newcombia cumingi*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The species is endemic to the island of Maui, where it is currently known from a single remaining population. The greatest threats to Newcomb's tree snail are the loss of the only known remaining population due to predation from rats and the rosy carnivore snail (*Euglandina rosea*). There are no efforts in place to reduce the threat from the rosy carnivore snail although discussions are underway with the private landowner to construct a rat proof fence in the area occupied by this snail. Our attempts to raise this species in a captive propagation facility have been unsuccessful. The magnitude of threats is high because they occur within the last known population of the species and result in direct mortality or significant population declines. These threats are also ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Phantom Cave snail (*Cochliopa texana*) and Phantom springsnail (*Tryonia cheatumi*)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Phantom Cave snail and Phantom springsnail are small aquatic snails that occur in three spring outflows in the Toyah Basin in Reeves and Jeff Davis counties, Texas. The primary threat to both species is the loss of surface flows due to declining groundwater levels from drought and pumping for agricultural production. Although much of the land immediately surrounding their habitat is owned and managed by The Nature Conservancy, Bureau of Reclamation, and Texas Parks and Wildlife Department, the water needed to maintain their habitat has declined due to a reduction in spring flows, possibly as a result of private groundwater pumping in areas beyond that controlled by these landowners. As an example, Phantom Lake Spring, one of the sites of occurrence, has already ceased flowing and aquatic habitat is supported only by a pumping system. The magnitude of the threats is high because spring flow loss would result in complete habitat destruction and permanent elimination of all populations of the species. The immediacy of the threats is imminent,

as evidenced by the drastic decline in spring flow at Phantom Lake Spring that is happening now and may extirpate these populations in the near future. Declining spring flows in San Solomon Spring are also becoming evident and will affect that spring site as well within the foreseeable future. Thus, we maintain the LPN of 2 for both species.

Tutuila tree snail (*Eua zebrina*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. A tree-dwelling species, the Tutuila tree snail is a member of the Partulidae family of snails and is endemic to American Samoa. The species is known from 32 populations on the islands of Tutuila, Nuusetoga, and Ofu.

This species is currently threatened by habitat loss and modification and by predation from nonnative predatory snails and rats. All live Tutuila tree snails were found on understory vegetation beneath remaining intact forest canopy. No snails were found in areas bordering agricultural plots or in forest areas that were severely damaged by three hurricanes (1987, 1990, and 1991). Under natural historical conditions, loss of forest canopy to storms did not pose a great threat to the long-term survival of these snails; enough intact forest with healthy populations of snails would support dispersal back into newly regrown canopy forest. However, the presence of alien weeds such as mile-a-minute vine (*Mikania micrantha*) may reduce the likelihood that native forest will re-establish in areas damaged by the hurricanes. This loss of habitat to storms is greatly exacerbated by an expanding agricultural footprint. Agricultural plots on Tutuila have spread from low elevation up to middle and some high elevations, greatly reducing the forest area and thus reducing the resilience of native forests and its populations of native snails. In an effort to eradicate the giant African snail (*Achatina fulica*), the rosy carnivore snail (*Euglandina rosea*) was introduced in 1980 and has spread throughout the main island of Tutuila. Numerous studies show that the rosy carnivore snail feeds on endemic island snails, including the Tutuila snail, and is a major agent in their declines and extirpations. Rats (*Rattus* spp) have also been shown to devastate snail populations and rat-chewed snail shells have been found at sites where the Tutuila snail occurs. At present, the major threat to the long-term survival of the native snail fauna in American Samoa is predation by nonnative predatory snails and rats. The magnitude of threats is high because



they result in direct mortality or significant population declines to the Tutuila tree snail rangewide. The threats are also ongoing and thus are imminent. Therefore, we assigned this species an LPN of 2.

Chupadera springsnail (*Pyrgulopsis chupadera*)—The following summary is based on information contained in our files and the petition we received on November 20, 1985. See also our 12-month petition finding published on October 4, 1988 (53 FR 38969). This aquatic species is endemic to Willow Spring on the Willow Spring Ranch (formerly Cienega Ranch) at the south end of the Chupadera Mountains in Socorro County, New Mexico. The Chupadera springsnail has been documented from two springs that flow through gravels containing sand, mud, and hydrophytic plants. Regional and local groundwater depletion, springrun dewatering, and riparian habitat degradation from livestock grazing represent the principal threats. The survival and recovery of the Chupadera springsnail is contingent upon protection of the riparian corridor immediately adjacent to Willow Spring and the availability of perennial, oxygenated flowing water within the species' thermal range. Due to several factors, including the extremely localized distribution of the snail, its occurrence only on private property, the lack of regulatory protection of its habitat, and the inability of land managers to participate in its management, the threats can cause significant population declines of the Chupadera springsnail. Therefore, the magnitude of the threats to this species is high. There is an imminent threat to this species because the threats are ongoing (e.g., grazing of cattle, water withdrawal, and fire). Due to the continuing high magnitude and imminence of threats to this species, we retain an LPN of 2 for this species.

Elongate mud meadows springsnail (*Pyrgulopsis notidicola*)—The following summary is based on information contained in our files. No new information was provided in the petition received on May 11, 2004. *Pyrgulopsis notidicola* is endemic to Soldier Meadow, which is located at the northern extreme of the western arm of the Black Rock Desert in the transition zone between the Basin and Range Physiographic Province and the Columbia Plateau Province, Humboldt County, Nevada. The type locality, and the only known location of the species, occurs in a stretch of thermal [between 45° Celsius (C) (113° Fahrenheit (F)) and 32° C (90° F)] aquatic habitat that is approximately 300 m (984 ft) long and

2 m (6.7 ft) wide. *Pyrgulopsis notidicola* occurs only in shallow, flowing water on gravel substrate. The species does not occur in deep water (i.e. impoundments) where water velocity is low, gravel substrate is absent, and sediment levels are high. The present or threatened destruction, modification, or curtailment of its habitat or range by recreational bathers in the thermal waters is the greatest threat to the species. The small size of their habitat and their limited range makes them highly susceptible to any factors that negatively affect their habitat. A Recreational Management Plan was established in 2004 and several actions have been implemented, but no monitoring has taken place to evaluate the effectiveness of these actions on removing the threats to the species. Based on imminent threats of high magnitude, we assigned an LPN of 2 for this species.

Gila springsnail (*Pyrgulopsis gilae*)—The following summary is based on information contained in our files and the petition we received on November 20, 1985. Also see our 12-month petition finding published on October 4, 1988 (53 FR 38969). The Gila springsnail is an aquatic species known from 13 populations in New Mexico. The long-term persistence of the Gila springsnail is contingent upon protection of the riparian corridor immediately adjacent to springhead and springrun habitats. Sites on both private and Federal lands are subject to levels of recreational use and livestock grazing that negatively affect this species, thus placing the long-term survival of the Gila springsnail at risk. Natural events such as drought, forest fire, sedimentation, and flooding; wetland habitat degradation by recreational bathing in thermal springs; and poor watershed management practices represent the primary threats to the Gila springsnail. Fire suppression activities and fire retardant chemicals have potentially deleterious effects on this species. Because several of the springs occur on U.S. Forest Service land, management options for the protection of the snail should be possible. However, randomly occurring events, especially fire and drought, could have a major impact on the species. Moderate use by recreationalists and livestock is ongoing. If these uses remain at current or lower levels, they will not pose an imminent threat to the species. Of greater concern is drought, which could affect spring discharge and increases the potential for fire. Although the effect global climate change may have on streams and forests of the Southwest is

unpredictable, mean annual temperature in New Mexico has increased by 0.6 degrees per decade since 1970. Higher temperatures lead to higher evaporation rates which may reduce the amount of runoff and groundwater recharge. Increased temperatures may also increase the extent of area influenced by drought and fire. Large fires have occurred in the Gila National Forest and subsequent floods and ash flows have severely affected aquatic life in streams. If the drought continues or worsens, the imminence of threats from decreased discharge or fire will increase. Based on these nonimminent threats that are currently of a low magnitude, we retain an LPN of 11 for this species.

Gonzales springsnail (*Tryonia circumstriata*)—See paragraph above under Diamond Y Spring snail (*Pseudotryonia adamantina*).

Huachuca springsnail (*Pyrgulopsis thompsoni*)—See above in "Summary of Listing Priority Changes in Candidates." The above is based on information from our files. No new information was provided in the petition we received on May 11, 2004.

New Mexico springsnail (*Pyrgulopsis thermalis*)—The following summary is based on information contained in our files and the petition received on November 20, 1985. Also see our 12-month petition finding published on October 4, 1988 (53 FR 38969). The New Mexico springsnail is an aquatic species known from only two separate populations associated with a series of spring-brook systems along the Gila River in the Gila National Forest in Grant County, New Mexico. The long-term persistence of the New Mexico springsnail is contingent upon protection of the riparian corridor immediately adjacent to springhead and springrun habitats. Although the New Mexico springsnail populations may be stable, the sites inhabited by the species are subject to levels of recreational use and livestock grazing that can negatively affect this species. Moderate use by recreationalists and livestock is ongoing. If these uses remain at the current or lower levels, they will not pose an imminent threat to the species. Of greater concern is drought, which could affect spring discharge and increases the potential for fire. Although the effect global climate change may have on streams and forests of the Southwest is unpredictable, mean annual temperature in New Mexico has increased by 0.6 degrees per decade since 1970. Higher temperatures lead to higher evaporation rates which may reduce the amount of runoff and groundwater recharge. Increased

temperatures may also increase the extent of area influenced by drought and fire. Large fires have occurred in the Gila National Forest and subsequent floods and ash flows have severely affected aquatic life in streams. If the drought continues or worsens, the imminence of threats from decreased discharge and fire will increase. Based on these nonimminent threats of a low magnitude, we retain an LPN of 11 for this springsnail.

Page springsnail (*Pyrgulopsis morrisoni*)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information from our files. No new information was provided in the petition received on May 11, 2004.

Three Forks springsnail (*Pyrgulopsis trivialis*)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Three Forks springsnail is an endemic species with distribution limited to the Three Forks Springs and Boneyard Springs spring complexes in the North Fork East Fork Black River Watershed of east-central Arizona. The springsnail was known from free-flowing spring heads, concrete boxed spring heads, spring runs, and spring seepage at these sites. The primary threats include habitat modification from recreational activities, damage from elk wallowing, and predation from nonnative crayfish. The population at Three Forks appears to be nearly extirpated following a fire retardant drop in 2004. The Arizona Game and Fish Department currently maintains an active monitoring program for the Three Forks springsnail in cooperation with the Service and U.S. Forest Service. This program includes population monitoring, habitat sampling, and removal of nonnative predatory crayfish. However, in the absence of a comprehensive management strategy to effectively address the threat from elk, crayfish, and fire suppression in the long-term, the threats are ongoing and therefore, imminent. The magnitude of threats is high, because limited distribution of this narrow endemic makes any impact from the threats likely to result in the extinction of the species. Therefore, we retain an LPN of 2 for the Three Forks springsnail.

#### Insects

Wekiu bug (*Nysius wekiuicola*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The wekiu bug belongs to the true bug family, Lygaeidae, and is endemic to the

island of Hawaii. This species only occurs on the summit of Mauna Kea and feeds upon other insect species which are blown to the summit of this large volcano. The wekiu bug is primarily threatened by the loss of its habitat from astronomy development. In 2004 and early 2005, surveys were conducted that found multiple new locations of the wekiu bug on the Mauna Kea summit. Several of these cinder cones within the Mauna Kea Science Reserve, as well as two other cinder cones located in the State Ice Age Natural Area Reserve, are not currently undergoing development nor is development planned. With the discovery of these new locations, the threats, though ongoing, do not occur across the entire range of the wekiu bug. The immediacy of the threats is imminent in some parts of the wekiu bug's range because ongoing development is occurring. Although the threats are ongoing and therefore imminent in some areas of wekiu bug habitat, the recent discoveries of new locations of the wekiu bug in areas that are not subject to the primary threat of astronomy development reduces the magnitude of the threat from high to moderate. Therefore, we assigned this species an LPN of 8.

Mariana eight spot butterfly (*Hypolimnas octucula mariannensis*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Mariana eight spot butterfly is a nymphalid butterfly species that feeds upon two host plants, *Procris pedunculata* and *Elatostema calcareum*. Endemic to the islands of Guam and Saipan, the species is now known from ten populations on Guam. This species is currently threatened by predation and parasitism. The Mariana eight spot butterfly has extremely high mortality of eggs and larvae due to predation by alien ants and wasps. Because the threat of parasitism and predation by nonnative insects occur range-wide and can cause significant population declines to this species, they are high in magnitude. The threats are imminent because they are ongoing. Therefore, we assigned an LPN of 3 for this subspecies.

Mariana wandering butterfly (*Vagrans egestina*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Mariana wandering butterfly is a nymphalid butterfly species which feeds upon a single host plant species, *Maytenus thompsonii*. Originally known from and endemic to the islands of Guam and Rota, the species is now known from one population on Rota.

This species is currently threatened by alien predation and parasitism. The Mariana wandering butterfly is likely predated on by alien ants and parasitized by native and nonnative parasitoids. Because the threat of parasitism and predation by nonnative insects occur range-wide and can cause significant population declines to this species, they are high in magnitude. These threats are imminent because they are ongoing. Therefore, we assigned an LPN of 2 for this species.

Miami blue butterfly (*Cyclargus thomasi bethunebakeri*)—The following summary is based on information contained in our files and in the petition we received on June 15, 2000. The Miami blue is endemic to south Florida. Historically, it occurred throughout the Florida Keys, north to Hillsborough and Volusia Counties. None were reported to be found between 1996 and 1999, but it is presently located at two sites in the Keys. In 1999, a population was discovered at Bahia Honda State Park on Bahia Honda Key and in 2006 a second population was discovered on the outer islands of Key West National Wildlife Refuge. The former appears restricted to several 100 individuals at most, while the latter likely includes at least 1,500 individuals. Capacity to expand at either site or successfully emigrate from either site appears to be very low due to the sedentary nature of the butterfly and isolation of habitats. The actual area of occupied habitat has not yet been defined. Captive propagation and reintroduction efforts are continuing with some success. The Miami blue is predominantly a coastal species, occurring in disturbed and early successional habitats such as the edges of tropical hardwood hammock, coastal berm forest, and along trails and other open sunny areas, and historically in pine rocklands. These habitats provide larval host plants and adult nectar sources that are required to occur in close proximity. The magnitude of threat is high for this species, due to interacting risks associated with limited population size and range (and loss of historical range), hurricanes, and mosquito control activities. In addition, illegal collection may also pose a threat. Except for hurricanes, the threats are nonimminent because the current range is within a State park and National Wildlife Refuge, wherein the above threats are substantially controlled. Therefore, the Miami blue is assigned an LPN of 6.

Sequatchie caddisfly (*Glyphopsyche sequatchie*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004.

The Sequatchie caddisfly is known from two spring runs that emerge from caves in Marion County, Tennessee—Owen Spring Branch and Martin Spring run in the Battle Creek system. The Owen Spring Branch population occurs within Sequatchie Cave Park, which is a Class II Natural-Scientific State Natural Area, thus providing statutory protection from collection for the population in Owen Spring Branch. In spite of greater amounts of suitable habitat at the Martin Spring run, Sequatchie caddisflies are more difficult to find at this site. Biologists estimated population sizes at 500 to 5000 individuals for Owen Spring Branch and 2 to 10 times higher at Martin Spring, due to the greater amount of apparently suitable habitat. More recently, Dr. David Etnier reported that the Sequatchie caddisfly was abundant at the Owens Spring Branch location during observations in 2001, while only two individuals were observed at the Martin Spring locale. The primary threats to Sequatchie caddisfly include its extremely limited distribution, apparent small population size, the limited amount of occupied habitat, and the ease of accessibility. These threats are gradual and/or not necessarily imminent but are of a high magnitude; therefore, we assigned this species an LPN of 5.

**Clifton cave beetle** (*Pseudanophthalmus caecus*)—The following summary is based upon information in our files. No new information was provided in the petition we received on May 11, 2004. Clifton cave beetle is a small, eyeless, reddish-brown predatory insect that feeds upon small cave invertebrates. It is cave dependent and is not found outside the cave environment. Clifton cave beetle is only known from two privately owned Kentucky caves. Soon after the species was first collected in 1963, the entrance to the cave was enclosed due to road construction. Other caves in the vicinity of this cave were surveyed for the species during 1995–1996. Only one additional site was found to support the Clifton cave beetle. It can not be determined at this time if the species still occurs at the original location or if the species has been extirpated from the site by the closure of the cave entrance. The limestone caves in which this species are found provide a unique and fragile environment that supports a variety of species that have evolved to survive and reproduce under the demanding conditions found in cave ecosystems. The limited distribution of the species makes it vulnerable to isolated events that would only have a minimal effect

on the more wide-ranging insects. Events such as toxic chemical spills, discharges of large amounts of polluted water or indirect impacts from off-site construction activities, closure of entrances, alteration of entrances, or the creation of new entrances could have serious adverse impacts on this species. The magnitude of threat is high for this species due to its limited distribution. The immediacy of threat is nonimminent because there are no known projects planned that would affect the species in the next 1–2 years; we therefore have assigned an LPN of 5 to this species.

**Icebox cave beetle** (*Pseudanophthalmus frigidus*)—The following summary is based upon information in our files. No new information was provided in the petition we received on May 11, 2004. Icebox cave beetle is a small, eyeless, reddish-brown predatory insect that feeds upon small cave invertebrates. It is cave dependent and is not found outside the cave environment. Icebox cave beetle is only known from one privately owned Kentucky cave. The limestone cave in which this species is found provides a unique and fragile environment that supports a variety of species that have evolved to survive and reproduce under the demanding conditions found in cave ecosystems. The species has not been observed since it was originally collected from the only site known to support the species, but species experts believe that it may still exist there in low numbers. The limited distribution of the species makes it vulnerable to isolated events that would only have a minimal effect on the more wide-ranging insects. Events such as toxic chemical spills or discharges of large amounts of polluted water, or indirect impacts from off-site construction activities, closure of entrances, alteration of entrances, or the creation of new entrances, could have serious adverse impacts on this species. The magnitude of threat is high for this species due to its limited distribution. The immediacy of threat is nonimminent because there are no known projects planned that would affect the species in the next 1–2 years; we therefore have assigned an LPN of 5 to this species.

**Inquirer cave beetle** (*Pseudanophthalmus inquisitor*)—The following summary is based upon information in our files. No new information was provided in the petition we received on May 11, 2004. The inquirer cave beetle is a fairly small, eyeless, reddish-brown predatory insect that feeds upon small cave invertebrates. It is cave dependent and

is not found outside the cave environment. The inquirer cave beetle is only known from one privately owned Tennessee cave. The limestone cave in which this species is found provides a unique and fragile environment that supports a variety of species that have evolved to survive and reproduce under the demanding conditions found in cave ecosystems. The species was last observed in 2006. The limited distribution of the species makes it vulnerable to isolated events that would only have a minimal effect on the more wide-ranging insects. The area around the only known site for the species is in a rapidly expanding urban area and indirect impacts, such as chemical or other pollution, could significantly impact both the cave and the species the cave supports. The entrance to the cave is protected by the landowner through a cooperative management agreement with the Service, The Nature Conservancy and Tennessee Wildlife Resources Agency; however, a sinkhole that drains into the cave system is located away from the protected entrance and is near a highway. Events such as toxic chemical spills, discharges of large amounts of polluted water or indirect impacts from off-site construction activities could adversely affect the species. The magnitude of threat is high for this species due to its limited distribution. The immediacy of threat is nonimminent because there are no known projects planned that would affect the species in the next 1–2 years and it receives some protection under a cooperative management agreement; we therefore have assigned an LPN of 5 to this species.

**Louisville cave beetle** (*Pseudanophthalmus troglodytes*)—The following summary is based upon information in our files. No new information was provided in the petition we received on May 11, 2004. The Louisville cave beetle is a small, eyeless, reddish-brown predatory insect that feeds upon cave invertebrates. It is cave dependent and is not found outside the cave environment. Louisville cave beetle is only known from two privately owned Kentucky caves. The limestone caves in which this species are found provide a unique and fragile environment that supports a variety of species that have evolved to survive and reproduce under the demanding conditions found in cave ecosystems. The limited distribution of the species makes it vulnerable to isolated events that would only have a minimal effect on the more wide-ranging insects. Events such as toxic chemical spills, discharges of large

amounts of polluted water or indirect impacts from off-site construction activities, closure of entrances, alteration of entrances, or the creation of new entrances could have serious adverse impacts on this species. The magnitude of threat is high for this species, given its narrow distribution. The immediacy of threat is nonimminent because there are no known projects planned that would affect the species in the next 1–2 years; we therefore have assigned an LPN of 5 to this species.

**Tatum Cave beetle** (*Pseudanophthalmus parvus*)—The following summary is based upon information in our files. No new information was provided in the petition we received on May 11, 2004. Tatum Cave beetle is a small, eyeless, reddish-brown predatory insect that feeds upon cave invertebrates. It is cave dependent and is not found outside the cave environment. Tatum Cave beetle is only known from one privately owned Kentucky cave. The limestone cave in which this species is found provides a unique and fragile environment that supports a variety of species that have evolved to survive and reproduce under the demanding conditions found in cave ecosystems. The species has not been observed since 1965, but species experts believe that it still exists in low numbers. The limited distribution of the species makes it vulnerable to isolated events that would only have a minimal effect on the more wide-ranging insects. Events such as toxic chemical spills or discharges of large amounts of polluted water, or indirect impacts from off-site construction activities, closure of entrances, alteration of entrances, or the creation of new entrances could have serious adverse impacts on this species. The magnitude of threat is high for this species, because its limited numbers mean that any threats could affect its continued existence. The immediacy of threat is non-imminent because there are no known projects planned that would affect the species in the next 1–2 years; we therefore have assigned an LPN of 5 to this species.

**Taylor's (Whulge, Edith's) checkerspot butterfly** (*Euphydryas editha taylori*)—The following summary is based on information from our files and in the petition received on December 11, 2002. Historically, the Taylor's checkerspot butterfly was known from 70 locations: 23 in British Columbia, 34 in Washington, and 13 in Oregon. Following surveys during the 2007 flight period, 11 populations were known, with a total of about 2,500–3,000 individuals observed rangewide. Currently, eight populations are known

from Washington, two of which are in the Willamette Valley of Oregon, and a new location was discovered in British Columbia, Canada, in 2005. The species had not been detected in Canada since 2000, and many negative surveys were conducted until the species was found at a new location on Denman Island, British Columbia. The size and location of the populations may shift from year to year. Most populations are small, usually with fewer than 5 or 10 butterflies detected; one population on Department of Defense land had more than 1,000 individuals in 2006, but this was an exception.

Threats include degradation and destruction of native grasslands to agriculture, residential and commercial development, encroachment by nonnative plants; succession from grasslands to native shrubs and trees, and fire. The grassland ecosystem on which this subspecies depends requires annual management to maintain suitable grassland habitat for the species. Application of *Bacillus thuringiensis* var. *kurstake* (Btk) for Asian gypsy moth control likely contributed to extirpation of the subspecies at three locations in Pierce County, Washington. The use of Btk continues to be a threat if it is used in areas in proximity to native prairies. The magnitude of threats is high because of the extremely small number of populations, the size of remaining populations, and the collapse in the species' distribution; many of the numerous threats could occur simultaneously and affect most of the populations. Threats are imminent because many are ongoing. We assigned the Taylor's checkerspot butterfly an LPN of 3.

**Blackline Hawaiian damselfly** (*Megalagrion nigrohamatum nigrolineatum*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The blackline Hawaiian damselfly is a stream-dwelling damselfly species endemic to the island of Oahu, Hawaii. Once known from throughout Oahu, the species is now restricted to 16 streams within the Koolau Mountains. This species is threatened by predation from alien aquatic species such as fish and predacious insects and habitat loss through dewatering of streams and invasive nonnative plants. Nonnative fish and insects prey on the naiads of the damselfly and loss of water reduces the amount of suitable naiad habitat available. Invasive plants (e.g. California grass (*Brachiaria mutica*)) also contribute to loss of habitat by forming

dense, monotypic stands that completely eliminate any open water. These threats are occurring in varying degrees rangewide for the blackline Hawaiian damselfly. Although there are no efforts being done to control or eradicate nonnative fish or insects or to stop the loss of habitat, the 16 streams are widely dispersed on both sides of the mountain range and are highly unlikely to experience complete loss of populations at the same time. Therefore the magnitude of the threats is moderate. Threats to the blackline Hawaiian damselfly from loss of habitat and introduced nonnative fish and insects are ongoing and therefore are imminent. Therefore, we assigned this subspecies an LPN of 9.

**Crimson Hawaiian damselfly** (*Megalagrion leptodemas*)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

**Flying earwig Hawaiian damselfly** (*Megalagrion nesiotas*)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

**Oceanic Hawaiian damselfly** (*Megalagrion oceanicum*)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

**Orangeblack Hawaiian damselfly** (*Megalagrion xanthomelas*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Megalagrion xanthomelas* is a stream-dwelling damselfly species endemic to the Hawaiian Islands of Kauai, Oahu, Molokai, Maui, Lanai, and Hawaii. The species is now restricted to 16 populations on the islands of Oahu, Maui, Molokai, Lanai, and Hawaii. This species is threatened by predation from alien aquatic species such as fish and predacious insects and habitat loss through dewatering of streams and invasion by nonnative plants. Nonnative fish and insects prey on the naiads of the damselfly and loss of water reduces the amount of suitable naiad habitat available. Invasive plants (e.g. California grass (*Brachiaria mutica*)) also contribute to loss of habitat by forming dense, monotypic stands that completely eliminate any open water. Nonnative fish and plants are found in all the streams the orangeblack damselfly occur in, except the Oahu location, where there are no nonnative fish. We assigned this species an LPN of 8 because though the threats are ongoing and therefore imminent, they occur in varying degrees throughout the range of

the species and are considered of moderate magnitude.

Pacific Hawaiian damselfly (*Megalagrion pacificum*)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

Picture-wing fly (*Drosophila attigua*)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

Picture-wing fly (*Drosophila digressa*)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004, but new information was provided by one *Drosophila* expert in 2006. This picture-wing fly, a member of the family Drosophilidae, feeds only upon species of *Charpentiera*, and is endemic to the Hawaiian Island of Hawaii. Never abundant in number of individuals observed, *D. digressa* was originally known from 5 population sites and may now be limited to as few as 1 or 2 sites. Due to the small population size of the species and its small known habitat area, *Drosophila* researchers believe this species and its habitat are particularly vulnerable to a myriad of threats. Feral ungulates (pigs, goats, and cattle) degrade and destroy *D. digressa* host plants and habitat by directly trampling plants, facilitating erosion, and spreading nonnative plant seeds. Nonnative plants degrade host plant habitat and compete for light, space, and nutrients. Direct predation of *D. digressa* by nonnative social insects, particularly yellow jacket wasps, is also a serious threat. Additionally, this species faces competition at the larval stage from non-native tipulid flies, which feed within the same portion of the decomposing host plant area normally occupied by the *D. digressa* larvae during their development with a resulting reduction in available host plant material. The threats to the native forest habitat of *Drosophila digressa*, and to individuals of this species, occur throughout its range and are expected to continue or increase without their control or eradication, and are considered imminent, because they are ongoing. No known conservation measures have been taken to date to specifically address these threats, and we have therefore assigned this species an LPN of 2.

Stephan's riffle beetle (*Heterelmis stephani*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information from our files. No new information was provided in the petition received on May 11, 2004.

Dakota skipper (*Hesperia dacotae*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files, including information from the petition received on May 12, 2003.

Mardon skipper (*Polites mardon*)—The following summary is based on information contained in our files and the petition we received on December 24, 2002. The Mardon skipper is a rare northwestern butterfly with a remarkably disjunct range. Currently this species is known from four widely separated regions: south Puget Sound region, southern Washington Cascades, Siskiyou Mountains of southern Oregon, and coastal northwestern California. The number of documented locations for the species has increased from less than 10 in 1997 to more than 50 rangewide in 2007. However, most populations for Mardon skipper are extremely small, and approximately 10 locations have populations with more than 50 individuals. The Mardon skipper spends its entire life cycle in one location, often on the same grassland patch. The dispersal ability for Mardon skipper is restricted. Threats include habitat loss and degradation due to development, overgrazing, use of herbicides and pesticides, encroachment of nonnative and native vegetation, succession from grassland to forest, fire suppression; direct loss of individuals due to fire; recreational activities; insect collecting; and random, naturally occurring events. The species' limited dispersal ability restricts the likelihood of recolonization once a population is lost. The likelihood of Mardon skippers dispersing between suitable habitat patches in a fragmented landscape is low. The magnitude of threats is high because of the small population sizes and disjunct distribution of the species that limits its ability to disperse. Loss of any of the populations could threaten the continued existence of the species within each of its disjunct population centers. It would be unlikely that any threat would affect all known locales simultaneously. Overall, the threats are nonimminent because the threats are not currently occurring at all known population sites. We assign an LPN of 5 to the Mardon skipper.

Coral Pink Sand Dunes tiger beetle (*Cicindela limbata albissima*)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files, including information from the petition we received on April 21, 1994.

Highlands tiger beetle (*Cicindela highlandensis*)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Highlands tiger beetle is narrowly distributed and restricted to areas of bare sand within upland oak scrub and pine vegetation on the ancient sand dunes of the Lake Wales Ridge in Polk and Highlands Counties, Florida. Adult tiger beetles have been found at 40 sites from near Haines City south to Josephine Creek. In 2004–2005 surveys, biologists found a total of 1,574 adults at 40 sites, compared with 643 adults at 31 sites in 1996, 928 adults at 31 sites in 1995, and 742 adults at 21 sites in 1993. Of the 40 sites in the 2004–2005 surveys with one or more adults: 3 sites were found to have large populations of over 100 adults [Catfish Creek Preserve (493), Snell Creek South (193), and Flaming Arrow Scout Camp (175)]; 3 sites had populations of 50–99 adults; 8 sites had 20–49 adults, 13 sites had 10–19 adults, and 13 sites had fewer than 10 adults. Results from a limited removal study at four sites suggest that the actual population size at the various survey sites is likely to be as much as two times as high as indicated by the visual index counts. Lack of fire to create open sand, pesticide use, small population sizes, and over-collecting pose serious threats to this species. Because this species is narrowly distributed with specific habitat requirements and small populations, the magnitude of threats is high. Although the majority of its historic range has been lost, degraded, and fragmented, numerous sites are protected and land managers are implementing prescribed fire, which should restore habitat and help reduce threats. Overall, the threats are nonimminent. Therefore, we assigned the Highlands tiger beetle an LPN of 5.

#### Arachnids

Warton cave meshweaver (*Cicurina wartoni*)—The following summary is based on information from our files. No new information was received since the last Candidate Notice of Review published on September 12, 2006, or was provided in the petition we received on May 11, 2004. Warton Cave meshweaver is an eyeless, cave-dwelling, unpigmented, 0.25-inch long invertebrate known only from female specimens. This meshweaver is known to occur in only one cave (Pickle Pit) in Travis County, Texas. Primary threats to the species and its habitat are predation and competition from fire ants and surface and subsurface effects from runoff from an adjacent subdivision.

The magnitude of threats is considered high, because the single location for this species makes it highly vulnerable to extinction. The threats are imminent, because fire ants are known to occur in the vicinity of the cave, and impacts to the cave from runoff and human activities are an imminent threat. Thus, we assign an LPN of 2 to this species.

#### Crustaceans

**Anchialine pool shrimp (*Metabetaeus lohena*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Metabetaeus lohena* is an anchialine pool-inhabiting species of shrimp belonging to the family Alpheidae. This species is endemic to the Hawaiian Islands and is currently known from populations on the islands of Oahu, Maui, and Hawaii. The primary threats to this species are predation by fish (which do not naturally occur in the pools inhabited by this species) and habitat loss from degradation. The pools where this species occurs on Maui and Hawaii Island are located within State Natural Area Reserves (NAR). Hawaii's State statutes prohibit the collection of the species and the disturbance of the pools in State NARs. The pools where this species occurs on the island of Oahu do not receive protection from collection of the species or disturbance of the pools. Enforcement of collection and disturbance prohibitions is difficult, and the negative effects from the introduction of fish are extensive and happen quickly. Therefore, threats to this species are of a high magnitude. However, we consider the primary threats of predation from fish and loss of habitat due to degradation to be nonimminent, because no fish were observed in any of the pools where this species occurs and there has been no documented dumping in the pools this species occurs in on the islands of Maui or Hawaii. Only one site on Oahu had a dumping instance, and in that case the dumping was cleaned up and the species subsequently returned. No additional dumping events are known to have occurred. Therefore, we assigned this species an LPN of 5.

**Anchialine pool shrimp (*Palaemonella burnsi*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Palaemonella burnsi* is an anchialine pool-inhabiting species of shrimp belonging to the family Palaemonidae. This species is endemic to the Hawaiian Islands and is currently known from

three populations on the island of Maui and one population on the island of Hawaii. The primary threats to this species are predation by fish (which do not naturally occur in the pools inhabited by this species) and habitat loss due to degradation. The pools where this species occurs on Maui are located within a State Natural Area Reserve (NAR). Hawaii's State statutes prohibit the collection of the species and the disturbance of the pools in State NARs. On the island of Hawaii, the species occurs within a National Park, and collection and disturbance are also prohibited. However, enforcement of these prohibitions is difficult, and the negative effects from the introduction of fish are extensive and happen quickly. Therefore, threats to this species are of high magnitude. However, threats are considered nonimminent, because a 2004 survey did not find fish in the pools where these shrimp occur on Maui or the island of Hawaii, and there was no evidence of recent habitat degradation. Therefore, the threats of predation from fish and habitat degradation are nonimminent, and we assigned this species an LPN of 5.

**Anchialine pool shrimp (*Procaris hawaiiiana*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Procaris hawaiiiana* is an anchialine pool-inhabiting species of shrimp belonging to the family Procarididae. This species is endemic to the Hawaiian Islands and is currently known from two populations on the island of Maui and one population on the island of Hawaii. The primary threats to this species are predation from fish (which do not naturally occur in the pools inhabited by this species) and habitat loss due to degradation. The pools where this species occurs on Maui are located within a State Natural Area Reserve (NAR). Hawaii's State statutes prohibit the collection of the species and the disturbance of the pools in State NARs. However, enforcement of these prohibitions is difficult and the negative effects from the introduction of fish are extensive and happen quickly. There are no conservation efforts underway to alleviate the potential for any of these threats in the one pool on the island of Hawaii. Therefore, threats to this species remain at high magnitude. However, the threats to the species are nonimminent because, during a 2004 survey, no fish were observed in the pools where these shrimp occur on Maui and no fish were observed in the one pool on the island of Hawaii during a site visit in 2005. In addition, there

were no signs of dumping or fill in any of the pools where the species occurs. Therefore, we assigned this species an LPN of 5.

**Anchialine pool shrimp (*Vetericaris chaceorum*)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Vetericaris chaceorum* is an anchialine pool-inhabiting species of shrimp belonging to the family Procarididae; it is the only species in its genus. This species is endemic to the Hawaiian Islands and is only known from one population in a single pool on the island of Hawaii. The primary threats to this species are predation from nonnative fish and habitat degradation and contamination from illegal trash dumping. This species would be highly vulnerable to predation by any intentionally or accidentally introduced fish, or contamination from illegal dumping into its single known location. This pool lies within lands administered by the State of Hawaii Department of Hawaiian Home Lands. The threats to *Vetericaris chaceorum* from habitat degradation and destruction, and predation by nonnative fish are of high magnitude, because this species occurs in only one pool. All individuals of this species may be adversely impacted by a single dumping of trash or release of nonnative fish in its only known pool. However, the threats are nonimminent, as fish have not been introduced into the pool (nor is there any reason to believe that introduction is imminent) and a site visit in early 2005 showed there were no signs of dumping or fill. Therefore we assigned this species an LPN of 4 because the threats are of high magnitude though nonimminent, and the species is in a monotypic genus.

**Troglobitic groundwater shrimp (*Typhlatya monae*)**—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files, including information from the petition we received on May 11, 2004.

#### Flowering plants

***Abronia alpina* (Ramshaw Meadows sand-verbena)**—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004.

***Arabis georgiana* (Georgia rockcress)**—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Georgia rockcress grows in a

variety of dry situations, including shallow soil accumulations on rocky bluffs, ecotones of gently sloping rock outcrops, and in sandy loam along eroding river banks. It is occasionally found in adjacent mesic woods, but it will not persist in heavily shaded conditions. Currently a total of 20 populations are known from the Gulf Coastal Plain, Piedmont, and Ridge and Valley physiographic provinces of Alabama and Georgia. Populations of this species typically have a limited number of individuals over a small area. Habitat degradation, more than outright destruction, is the most serious threat to the continued existence of this species. Disturbance, associated with timber harvesting, road building, and grazing has created favorable conditions for the invasion of exotic weeds, especially Japanese honeysuckle (*Lonicera japonica*), in this species' habitat. Eight populations are currently or potentially threatened by the presence of exotics. The heritage programs in Alabama and Georgia have initiated plans for exotic control at several populations. The magnitude of threats to this species is moderate to low due to the number of populations (20) across multiple counties in two states and the nature of the threats. However, since a number of the populations are currently being affected by nonnative plants, the threat is imminent. Thus, we assigned an LPN of 8 to this species.

*Argythamnia blodgettii* (Blodgett's silverbush)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. Blodgett's silverbush is found in open, sunny areas in pine rockland, edges of rockland hammock, edges of coastal berm, and sometimes disturbed areas at the edges of natural areas. Plants can be found growing from crevices on limestone, or on sand. The pine rockland habitat where it occurs in Miami-Dade County and the Florida Keys requires periodic fires to maintain habitat with a minimum amount of hardwoods. Based upon available data, there are approximately 27 extant occurrences, 12 in Monroe County and 15 in Miami-Dade County; many occurrences are on conservation lands; however, 4–5 sites are recently thought to be extirpated or destroyed. The estimated population size of Blodgett's silverbush in the Florida Keys, excluding Big Pine Key, is roughly 11,000; the estimated population in Miami-Dade County is 375 to 13,650 plants. Blodgett's silverbush is threatened by habitat loss, which is exacerbated by habitat degradation due

to fire suppression, the difficulty of applying prescribed fire to pine rocklands, and threats from exotic plants. Remaining habitats are fragmented. Threats such as road maintenance, road enhancement, infrastructure, and illegal dumping threaten some populations. Blodgett's silverbush is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges. Sea level rise is a long-term threat that will continue; it is expected to continue to affect pine rocklands and ultimately reduce the extent of available habitat, especially in the Keys. Overall, the magnitude of threats is moderate and the threats are nonimminent. Thus, we assigned an LPN of 11 to this species.

*Artemisia campestris* var. *wormskioldii* (Northern wormwood)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Historically known from eight sites, northern wormwood is currently known from only two populations in Klickitat and Grant Counties, Washington. This plant is restricted to exposed basalt, cobbly-sandy terraces, and sand habitat along the shore and on islands in the Columbia River. The two sites are separated by 200 miles (322 kilometers) of the Columbia River and three large hydroelectric dams. The Klickitat County population is declining; it is unclear whether the Grant County population is stable or declining, but it is vulnerable to environmental variability. Surveys of apparently suitable habitat along the Hanford Reach have not detected any additional plants.

Threats to northern wormwood include direct loss of suitable habitat through regulation of water levels in the Columbia River and placement of riprap along the river bank; trampling of plants as a result of recreational use; competition with non-native invasive species; burial by wind and water-borne sediments; a small population size that makes both sites susceptible to genetic drift and inbreeding; and the potential for hybridization with two other species of *Artemisia*. Ongoing conservation actions have reduced trampling, but have not eliminated or reduced the other threats at the Grant County site. The magnitude of threat is high for this subspecies, because the only two remaining populations are widely separated and distributed such that one or both populations could be eliminated by a single disturbance. The threats are imminent, because recreational use is ongoing, invasive nonnative species occur at both sites, erosion of the substrate is ongoing at the Klickitat

County site, and high water flows are random, naturally occurring events that may occur unpredictably in any year. Therefore, we have retained an LPN of 3 for this subspecies.

*Astelia waialealae* (Pa'iniu)—We have not updated our candidate assessment as we are currently developing a proposed listing rule for this species.

*Astragalus tortipes* (Sleeping Ute milkvetch)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Sleeping Ute milkvetch is a perennial plant that grows only on the Smokey Hills layer of the Mancos Shale Formation on the Ute Mountain Ute Indian Reservation in Montezuma County, Colorado. In 2000, 3,744 plants were recorded at 24 locations covering 500 acres within an overall range of 64,000 acres. Available information from 2000 indicates that the species remains stable. Recently, the Tribe expressed interest in conducting new surveys and initiating protection for the species. Previous and ongoing threats from borrow pit excavation, off-highway vehicles, irrigation canal construction, and a prairie dog colony have had minor impacts that reduced the range and number of plants by small amounts. Off-highway vehicle use of the habitat is reportedly increasing. Oil and gas development is active in the general area, but we have received no information from the tribe to indicate whether there is development within the habitat for the plants. The threats are moderate in magnitude, since they have had minor impacts and, based on information we have, the population appears to be stable. In addition, the Tribe indicated that it is developing a management plan for the species and has started to implement some protective measures such as installing fencing and removing cattle from the fenced area where the plants occur. Because of the general lack of information on current threats from the Tribe, imminence of threats is not fully known. While ORV use is currently occurring and may be increasing, oil and gas production is not known to currently occur in the areas where this species exists. Overall, we conclude threats are nonimminent. Therefore, we assigned an LPN of 11 to this species.

*Bidens amplexans* (Kookooalu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is an erect perennial or facultative annual herb found in mixed lowland dry shrubland/grassland on Oahu, Hawaii. Known from one

population of 500 to 1,000 individuals in the Waianae Mountains, the threats to this species are nonnative plants that increase the fuel load and fire threat, and compete for habitat. The magnitude of threats continues to be high because no conservation measures have been taken to address them and because of the potential for the elimination of the only known population by a single stochastic or naturally occurring event. Threats continue to be imminent because they are ongoing. We retained an LPN of 2 for this species.

*Bidens campylotheca* ssp. *pentamera* (Kookooolu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This subspecies is an erect, perennial herb found in *Cheirodendron-Metrosideros polymorpha* (olapa-ohia) montane wet forest on Maui, Hawaii. This subspecies is known from four populations with a total of approximately 350 individuals. *Bidens campylotheca* ssp. *pentamera* is threatened by feral pigs that degrade and destroy habitat, and by nonnative plants that compete for habitat. Feral pigs have been fenced out of one population at Kipahulu. The remaining populations on east and west Maui are still affected by these threats. This subspecies is represented in an *ex-situ* collection. However, these on-going conservation efforts benefit only one of the four known populations and therefore threats continue to be of a high magnitude, because they threaten the continued existence of this subspecies. In addition, threats to *B. campylotheca* ssp. *pentamera* are imminent because they are ongoing in three populations. Therefore, we retained an LPN of 3 for this subspecies.

*Bidens campylotheca* ssp. *waihoiensis* (Kookooolu)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Bidens conjuncta* (Kookooolu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Bidens conjuncta* is an erect, perennial herb found in *Metrosideros-Dicranopteris-Cheirodendron* (ohia-uluhe-olapa) lowland to montane wet forest and shrubland on Maui, Hawaii. Seven populations are known, totaling approximately 2,200 individuals scattered throughout upper elevation drainages of west Maui. Although the overall range of the species has not

changed, the number of individuals has declined over the last decade or so. This species is threatened by pigs that degrade and destroy habitat, and eat vegetative parts and fruit of *B. conjuncta*, and by nonnative plants that outcompete and displace it. Feral pigs have been fenced out of portions of the populations of *B. conjuncta*, and nonnative plants have been greatly reduced in the fenced areas. The threats from feral pigs and nonnative plants are, therefore, of a moderate magnitude to this species. However, these threats are imminent because they are ongoing. Therefore, we retained an LPN of 8 for this species.

*Bidens micrantha* ssp. *ctenophylla* (Kookooolu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This subspecies is an erect, perennial herb found in open mixed shrubland to dry *Metrosideros* (ohia) forest on the island of Hawaii, Hawaii. This subspecies is endemic to the island of Hawaii, where it is restricted to an area of less than 10 square miles (26 square kilometers). *Bidens micrantha* ssp. *ctenophylla* is known from three wild and four outplanted populations totaling approximately 2,000 to 3,000 individuals, the majority of which occur in only two (wild) populations. This subspecies is threatened by fire and nonnative plants, and two populations are threatened by residential and commercial development. The threats to *B. micrantha* ssp. *ctenophylla* from fire and nonnative plants are of a high magnitude and imminent because they are occurring range-wide, they threaten the continued existence of the species, and no efforts for their control have been undertaken. In addition, two populations are also threatened by development. Therefore, we retained an LPN of 3 for this subspecies.

*Brickellia mosieri* (Florida brickell-bush)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is restricted to pine rocklands of Miami-Dade County, Florida. This habitat requires periodic prescribed fires to maintain the low understory and prevent encroachment by native tropical hardwoods and exotic plants, such as Brazilian pepper. Only one large population (up to 10,000 individuals) is known to exist, plus 18 other occurrences each containing less than 100 individuals. Ten of these occurrences are on conservation lands. This species is threatened by habitat loss, which is exacerbated by habitat degradation due to fire suppression, the

difficulty of applying prescribed fire to pine rocklands, and threats from exotic plants. Remaining habitats are fragmented. The species is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges. Due to its restricted range and the small sizes of most isolated occurrences, this species is vulnerable to environmental (catastrophic hurricanes), demographic (potential episodes of poor reproduction), and genetic (potential inbreeding depression) threats. Thus, the overall magnitude of threat is moderate. The threats are ongoing and thus imminent. We assigned this species an LPN of 8.

*Calamagrostis expansa* (Maui reedgrass)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is a robust, short-rhizomatous perennial found in wet forest, open bogs, and bog margins on the islands of Maui and Hawaii, Hawaii. Historically rare, *C. expansa* was restricted to wet forest and bogs on Maui. It is unknown what the historical status was on Hawaii. Currently, this species is known from 100 populations totaling approximately 400 individuals on Maui, and was recently discovered in five populations totaling approximately 300 individuals on the island of Hawaii. *Calamagrostis expansa* is threatened by pigs that degrade and destroy habitat and by nonnative plants that outcompete and displace it. Feral pigs have been fenced out of most of the west Maui populations where *C. expansa* currently occurs, and nonnative plants have been reduced in the fenced areas. However, the threats are not controlled and are ongoing in the remaining unfenced populations on Maui and in all of the populations on the island of Hawaii. Therefore, the threats from feral pigs and nonnative plants are of a high magnitude and imminent for *C. expansa* and we retained an LPN of 2 for this species.

*Calamagrostis hillebrandii* (Hillebrand's reedgrass)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Calamagrostis hillebrandii* is a slender, short-rhizomatous perennial found in *Metrosideros-Machaerina* montane wet bog or *Metrosideros-Rhynchospora-Oreobolus* mixed bog on Maui, Hawaii. This species is known from two populations of about 2,000 individuals, restricted to the bogs of west Maui. There is an unconfirmed report of *C. hillebrandii* from central Molokai. This species is currently threatened by pigs



that degrade and destroy habitat and nonnative plants that outcompete and displace it. A portion of one population is protected by an ungulate enclosure fence while the other population may indirectly benefit from conservation actions for ungulate control and control of nonnative plants conducted in a nearby preserve. The threats are imminent because they are ongoing in one of the two known populations. Because they threaten the continued existence of the species, the threats are high in magnitude. Therefore, we retained an LPN of 2 for this species.

*Calliandra locoensis* (no common name)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. *Calliandra locoensis* is a spiny, leguminous shrub currently known from only two localities within the Susúa Commonwealth Forest in the municipalities of Yauco and Sabana Grande, in southwestern Puerto Rico. Twenty-five native species of *Calliandra* have been reported for the Antilles, three of which are native to Puerto Rico, including *Calliandra locoensis*. This species is endemic to Puerto Rico, and was discovered in 1991 during a study of the flora of the Susúa Commonwealth Forest. It was described by García and Kolterman in 1992.

*Calliandra locoensis* is found along one creek in semi-evergreen to deciduous forests on shallow, serpentine soils with low nutrients, high drainage, and low fertility. Much of the vegetation in the forest was cut for wood, cultivation, livestock grazing, and charcoal production, prior to its designation as a public forest. *Calliandra locoensis* exhibits a low degree of self-compatibility in pollination tests. Seeds have a short viability period, do not appear to have a biotic dispersal agent (dispersed by dehiscence—seed pod splits open), and require mesic conditions for germination, which may be factors in the limited distribution of the species. The small number of individuals in the two populations, restricted distribution (two localities), forest management practices (accidental trampling, brush clearing, trail maintenance), forest fires (natural or manmade), and catastrophic natural events (hurricanes, floods, mudslides), threaten this species. We assigned an LPN of 5 to this species because the magnitude of threat to *Calliandra locoensis* is high because the threats can result in direct mortality and further reduce the populations, combined with its restricted distribution, apparent low dispersal capability, and population number (only

two small populations relatively close to one another). The threats are nonimminent given that the populations are found within protected lands and there are no known projects or management activities planned that would destroy the known populations of *Calliandra locoensis*.

*Calochortus persistens* (Siskiyou mariposa lily)—The following summary is based on information contained in our files and the petition we received on September 10, 2001. The Siskiyou mariposa lily is a narrow endemic that is restricted to two disjunct ridge tops in the Klamath-Siskiyou Range on the California-Oregon border. In California, this species is currently found at nine separate sites on approximately 10 hectares (ha) (24.7 acres (ac)) of Klamath National Forest and privately owned lands that stretch for 6 kilometers (km) (3.7 miles (mi)) along the Gunsight-Humbog Ridge. In 1998, five Siskiyou mariposa lily plants were discovered on Bald Mountain, west of Ashland, Jackson County, Oregon.

Major threats include competition and shading by native and nonnative species fostered by suppression of wild fire; increased fuel loading and subsequent risk of wild fire; fragmentation by roads, fire breaks, tree plantations, and radio-tower facilities; maintenance and construction around radio towers and telephone relay stations located on Gunsight Peak and Mahogany Point; and soil disturbance and exotic weed and grass species introduction as a result of heavy recreational use and construction of fire breaks. Dyer's woad (*Isatis tinctoria*), an invasive, nonnative plant that may prevent germination of Siskiyou mariposa lily seedlings, is now found throughout the California population, affecting 90 percent of the known lily habitat. Forest Service staff and the Klamath-Siskiyou Wildlands Center cite competition with dyer's woad as a significant and chronic threat to the survival of Siskiyou mariposa lily.

The combination of restricted range, extremely low numbers (five plants) in one of two disjunct populations, poor competitive ability, short seed dispersal distance, slow growth rates, low seed production, apparently poor survival rates in some years and competition from exotic plants threaten the continued existence of this species. Because of the restricted range and low numbers, the magnitude of threats is high. While some of the threats are ongoing, others are not, and overall the threats are nonimminent. We assigned an LPN of 5 to this species.

*Calyptanthes estremerae* (no common name)—The following summary is based on information from

our files. No new information was provided in the petition we received on May 11, 2004. *Calyptanthes estremerae* is a small tree from the subtropical moist forest of northwestern Puerto Rico, in the municipalities of Camuy, Utuado, and Arecibo. *Calyptanthes estremerae* was only known from several individuals found near the recreation area adjacent to the Camuy Caves, but specimens were later found within the Río Abajo Commonwealth Forest (up to 50 individuals) at a site that was affected by the construction of Highway PR 10 in 1995. At the present time, a minimum of 100 specimens of *Calyptanthes estremerae* are estimated for the Río Abajo Commonwealth Forest and undetermined number in the Camuy area. The magnitude of threat to *Calyptanthes estremerae* is considered high, due to restricted distribution and small number of individuals, catastrophic natural events, and the potential destruction of specimens from expansion of recreational facilities. However, these threats are not imminent, because the largest known population of *Calyptanthes estremerae* is found within protected lands, there are no known projects planned that would destroy the sites, and the species can be transplanted successfully. Therefore, we assign an LPN of 5 to *Calyptanthes estremerae*.

*Canavalia napaliensis* (Awikiwiki)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Canavalia pubescens* (Awikiwiki)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Awikiwiki is a perennial climber found in lowland dryland forest on Maui and Lanai, and is possibly on the island of Niihau, Hawaii. This species is known from eight populations totaling at least 123 individuals. This species is threatened by development (Maui), goats (Maui) and axis deer (Maui and Lanai) that degrade and destroy habitat, and by nonnative plants that outcompete and displace native plants (both islands). An ungulate enclosure fence protects six individuals of *C. pubescens*, and weed control is ongoing at this location on Maui. This species is represented in two *ex situ* collections. Threats to this species from feral goats, axis deer, and nonnative plants are ongoing, or imminent, and of high magnitude because they significantly affect the species throughout its range. Therefore, we retained an LPN of 2 for this species.

*Castilleja christii* (Christ's paintbrush)—The following summary is based on information contained in our files and the petition we received on January 2, 2001. *Castilleja christii* is found in one population on the summit of Mount Harrison in Cassia County, Idaho. This endemic species is considered a hemiparasite, and it grows in association with subalpine meadow and sagebrush habitats. The population found on 85 ha (220 ac) may be large (greater than 10,000 individual plants); however, an accurate current population estimate is not yet available. Monitoring indicates that reproductive stems per plant and plant density decreased significantly between 1995 and 2005. The largest threat to the species is from nonnative invasive plants, the majority of which is smooth brome (*Bromus inermis*). Despite a commitment by the Forest Service and the Service to control smooth brome until our efforts are successful or for the next 10 years, recent control efforts conducted in 2005 and 2006 have not been successful in reducing the smooth brome infestation. Other threats to *Castilleja christii* from recreational use appear to be mostly seasonal and affect only a small portion of the population, although they too are imminent. The magnitude of the threats is moderate at this time, primarily due to the lack of control over the smooth brome infestation. This threat from smooth brome is imminent because the threat still persists in levels that affect the native plant community that provides habitat for *C. christii*. Thus, we assign an LPN of 8 to this species.

*Chamaecrista lineata* var. *keyensis* (Big Pine partridge pea)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. New survey results were attained in March 2006.

*Chamaesyce deltoidea pinetorum* (Pineland sandmat)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Chamaesyce deltoidea* ssp. *serpyllum* (Wedge spurge)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004.

*Chamaesyce eleanoriae* (Akoko)—We have not updated our candidate assessment, as we are currently

developing a proposed listing rule for this species.

*Chamaesyce remyi* var. *kauaiensis* (Akoko)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Chamaesyce remyi* var. *remyi* (Akoko)—We have not updated our candidate assessment for this species as we are currently developing a proposed listing rule.

*Charpentiera densiflora* (Papala)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower)—The following summary is based on information contained in our files and the petition we received on December 14, 1999. *Chorizanthe parryi* var. *fernandina* is a low-growing herbaceous annual plant in the buckwheat family. Germination occurs following the onset of late-fall and winter rains and typically represents different cohorts from the seed bank. Flowering occurs in the spring, generally between April and June. *Chorizanthe parryi* var. *fernandina* grows up to 30 centimeters in height and 5 to 40 centimeters across.

The plant currently is known from two disjunct localities: the first is in the southeastern portion of Ventura County on a site formerly known as Ahmanson Ranch, and the second is in an area of southwestern Los Angeles County known as Newhall Ranch. Investigations of historical locations and seemingly suitable habitat within the range of the species have not revealed any other occurrences.

The threats currently facing San Fernando Valley spineflower include threatened destruction, modification, or curtailment of its habitat or range, and other natural or manmade factors. The threats to *Chorizanthe parryi* var. *fernandina* from habitat destruction or modification are less than they were four years ago. One of the two populations (Ahmanson Ranch) is in permanent, public ownership and is being managed by an agency that is working to conserve the plant. The other population (Newhall Ranch) is under threat of development; however, a Candidate Conservation Agreement (CCA) is being developed with the landowner, and it is possible that the remaining plants can also be conserved. Until such an agreement is finalized, the threat of development and the potential damage to the Newhall Ranch population still exists, as shown by the destruction of some plants during installation of an agave farm.

*Chorizanthe parryi* var. *fernandina* may be threatened by invasive nonnative plants, including grasses, which could potentially displace it from available habitat; compete for light, water, and nutrients; and reduce survival and establishment. *Chorizanthe parryi* var. *fernandina* is particularly vulnerable to extinction due to its concentration in two isolated areas. The existence of only two areas of occurrence, and a relatively small range, makes the variety highly susceptible to extinction or extirpation from a significant portion of its range due to random events such as fire, drought, erosion, or other occurrences. We retained an LPN of 6 for *C. parryi* var. *fernandina* due to high-magnitude, nonimminent threats.

*Chromolaena frustrata* (Cape Sable thoroughwort)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is found most commonly in open sun to partial shade at the edges of rockland tropical hammock and in coastal rock barrens. There are nine extant occurrences located at five islands in the Florida Keys and one small area in Everglades National Park. The plant has been extirpated from half of the islands where it occurred. Prior to Hurricane Wilma in 2005, the population was estimated at roughly 5,000 individuals, with all but 500 occurring on one privately owned island.

This species is threatened by habitat loss and modification, even on public lands, and habitat loss and degradation due to threats from exotic plants at almost all sites. The species is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges. While these factors may also work to maintain coastal rock barren habitat in the long-term, Hurricane Wilma appears to have had severe impacts, at least in the short-term. Plants have not been located in Everglades National Park since Hurricane Wilma and other occurrences probably declined due to inundation of its coastal barren and rockland hammock habitats. The long-term effects of these impacts are unknown. Sea level rise is considered a major threat that will continue. Potential effects from other changes in fresh water deliveries and the construction of the Buttonwood Canal are unknown. Problems associated with small population size and isolation are likely major factors, as occurrences may not be large enough to be viable; this narrowly endemic plant has uncertain viability at most locations, especially following Hurricane Wilma. Thus, these factors constitute a high

magnitude of threat. Threats are imminent as they are ongoing. As a result, we assigned an LPN of 2 to this species.

*Consolea corallicola* (Florida semaphore cactus)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. The Florida semaphore cactus is endemic to the Florida Keys and was discovered on Big Pine Key in 1919 but has since been extirpated there as a result of road building and poaching. This cactus grows close to salt water on bare rock with a minimum of humus soil cover in or along the edges of hammocks near sea level. The species is known to occur naturally only in two areas, Little Torch Key and Biscayne National Park. Outplanting has resulted in the reestablishment of a population in Dagny Johnson Key Largo Hammock Botanical State Park in North Key Largo as well as in some of the lower keys. Outplanting success has been low and more research is needed to determine the requirements of this cactus. Few plants remain in the population at The Nature Conservancy's Torchwood Hammock Preserve on Little Torch Key. Two sexual morphs (males and weak hermaphrodites) comprise the population on Little Torch Key. The female sex morph is absent from the population and sexual reproduction at this site is not possible without human intervention. Regeneration in this population is restricted to clonal propagation. At least 629 plants were discovered on a key in Biscayne National Park in November of 2001. During monitoring work conducted in 2005, a total of 655 plants were documented. Recent studies have found no genetic diversity within the two wild populations. The results were consistent with previous reproductive biology studies that suggested that the cactus does not propagate sexually and that asexual reproduction is the main life history strategy of this species. The causes for the population decline of this species include destruction or modification of habitat, predation from *Cactoblastis cactorum* moths and disease, poaching and vandalism, sea level rise, and hurricanes. Because of low population numbers, lack of variation between and within populations, reproductive problems, and numerous ongoing threats, we assigned this species an LPN of 2.

*Cordia rupicola* (no common name)—See above in "Summary of Listing Priority Changes in Candidates." The above summary is based on information from our files. No new information was

provided in the petition we received on May 11, 2004.

*Cyanea asplenifolia* (Haha)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyanea asplenifolia* is a shrub found in *Acacia-Metrosideros* (koa-ohia) forest on Maui, Hawaii. Currently, this species is known from three populations totaling fewer than 187 individuals. *Cyanea asplenifolia* is threatened by pigs, goats, and cattle that degrade and destroy habitat and by nonnative plants, such as Australian tree fern, that outcompete and displace it. This species is likely threatened by habitat degradation caused by axis deer and by feral ungulates, rats, and slugs that may directly prey upon and defoliate individuals. Pig and goat exclusion fences protect individuals of two of the three known populations of this species and nonnative plants have been reduced in one fenced area; however, continued monitoring of these fences will be necessary, as feral ungulates from surrounding areas can easily access unmaintained fenced areas. This species is represented in three *ex-situ* collections. The threats continue to be of a high magnitude because they significantly affect the species resulting in direct mortality or reduced reproductive capacity. The threats are imminent because they are ongoing in at least two of the three known populations. Therefore, we retained an LPN of 2 for this species.

*Cyanea calycina* (Haha)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is an unbranched shrub found in *Acacia-Metrosideros-Dicranopteris* (koa-ohia-uluhe) montane mesic to wet forest and wet gulches and streambanks on Oahu, Hawaii. *Cyanea calycina* is known from 28 populations totaling approximately 262 individuals. This species is threatened by pigs that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Potential threats to this species include goats that degrade and destroy habitat, and rats and slugs that may directly prey upon and defoliate individuals. Ungulate fences provide protection to five populations of *C. calycina* in the Waianae Mountains, but the fences must be continually maintained to prevent incursion. Nonnative plants are currently being controlled within the fenced areas, and partial control measures are being implemented to address potential threats from rats. There are no other

conservation measures underway in the other 23 populations to alleviate these ongoing, or imminent, threats to *C. calycina*. These threats are of a high magnitude because they significantly affect the species throughout its limited range resulting in direct mortality or reduced reproductive capacity. The threats are imminent in all but five populations. Therefore, we retained an LPN of 2 for this species.

*Cyanea eleeleensis* (Haha)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Cyanea kuhihewa* (Haha)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Cyanea kunthiana* (Haha)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyanea kunthiana* is a shrub found in closed *Metrosideros-Dicranopteris* (ohia-uluhe) montane wet forest on Maui, Hawaii. The historic range of *C. kunthiana* was wet forest on the island of Maui. Currently, *C. kunthiana* is declining throughout its range and is known from 15 populations with a combined total of slightly more than 200 individuals. This species is threatened by pigs that directly prey upon the plants and degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Potential threats to this species include rats and slugs that may directly prey upon and defoliate individuals. While large-scale fencing, ungulate removal, and invasive species control measures are underway in areas in which five of the current populations exist, these efforts have not served to completely remove these threats, and there are no efforts to control the ongoing and imminent threats to the other 10 populations. Therefore, the threats continue to be of a high magnitude to *C. kunthiana*. Because the threats continue to be of a high magnitude and are imminent for 10 of the 15 populations, we retained an LPN of 2 for this species.

*Cyanea lanceolata* (Haha)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyanea lanceolata* is a shrub found in *Acacia koa-Metrosideros polymorpha* (koa-ohia) lowland mesic forest on Oahu, Hawaii. This species is known from six populations totaling fewer than 100 individuals. *Cyanea lanceolata* is threatened by pigs that eat plants and degrade and destroy habitat, and by nonnative plants that outcompete and

displace it. Likely threats to this species include rats and slugs that may directly prey upon and defoliate individuals. This species is represented in an *ex-situ* collection. There are no conservation measures underway to alleviate the ongoing, or imminent, threats to *C. lanceolata*. These threats are of a high magnitude because they are occurring throughout its limited range and they significantly affect species resulting in direct mortality or reduced reproductive capacity. The threats are ongoing, and, therefore, imminent, in all populations. Therefore, we retained an LPN of 2 for this species.

*Cyanea obtusa* (Haha)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyanea obtusa* is a shrub found in *Metrosideros polymorpha* (ohia) mixed mesic forest on Maui, Hawaii. This species is known from three populations with a combined total of fewer than 44 individuals, with 30 of these being possible hybrids. *Cyanea obtusa* is threatened by feral goats, pigs, and cattle that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Potential threats include fire, and rats and slugs that may directly prey upon and defoliate individuals of *C. obtusa*. Feral pigs have been fenced out of one of the three populations of this species. Nonnative plant control is underway in the fenced area. Although one of the three populations of *C. obtusa* has been fenced and is undergoing weed control, there are no efforts to control the ongoing and imminent threats to the other two populations. The threats continue to be of a high magnitude for *C. obtusa* because they significantly affect the species resulting in direct mortality or reduced reproductive capacity. Therefore, we retained an LPN of 2 for this species.

*Cyanea tritomantha* (Aku)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyanea tritomantha* is a palm-like tree found in *Metrosideros-Cibotium* montane wet forest on the island of Hawaii, Hawaii. This species is known from five populations with a total of approximately 135 wild and 373 outplanted individuals in Olaa, Kau, and Laupahoehoe on the island of Hawaii. *Cyanea tritomantha* is threatened by pigs and cattle that degrade and destroy habitat, and nonnative plants that outcompete and displace it. Potential threats to this species include rats and slugs that may

directly prey upon and defoliate individuals, and human trampling of individuals located near trails. Feral pigs and cattle have been fenced out of three populations of *C. tritomantha* and nonnative plants have been reduced in the fenced areas. Although three populations of *C. tritomantha* have been fenced and weeds are being controlled in these fenced areas, there are no efforts to control the ongoing and imminent threats to the other populations. The threats continue to be of a high magnitude to *C. tritomantha* because they significantly affect the species resulting in direct mortality or reduced reproductive capacity. Because the threats continue to be of a high magnitude and are imminent for the unmanaged populations, we retained an LPN of 2 for this species.

*Cyrtandra filipes* (Haiwale)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Haiwale is a shrub found in lowland to montane wet forest on Maui and Molokai, Hawaii. Historically rare, *C. filipes* was found in southeastern Molokai and west Maui. Currently, this species is known from nine populations, three on Molokai and six on west Maui, totaling approximately 2,000 individuals. There is some question as to the true identity of the Maui populations, which do not fit the description of the species precisely. If, upon further taxonomic study, the Maui populations are determined not to be this species, then it is even more rare, with only the Molokai population of a few individuals remaining. *Cyrtandra filipes* is threatened by pigs, goats, and deer that degrade and destroy habitat, by nonnative plants that outcompete and displace it, and potentially by rats that directly prey on it. Feral pigs have been fenced out of one of the populations of *C. filipes*, and strategic fencing for axis deer is under construction on west Maui, but deer are able to jump over most pig exclusion fences so they are still considered a threat. Nonnative plants are being reduced in the population that is fenced but all populations are potentially threatened by rats. The threats from pigs and nonnative plants are of a high magnitude because of their severity and the fact that they occur in eight of the nine known populations. In addition, these threats are imminent because they are ongoing. Therefore, we retained an LPN of 2 for this species.

*Cyrtandra kaulantha* (Haiwale)—The following summary is based on information contained in our files. No new information was provided in the

petition we received on May 11, 2004. *Cyrtandra kaulantha* is a shrub found in moist wooded gulches in dense shade on Oahu, Hawaii. This species is known from four populations with a total of 29 individuals in subgulches in Waiuanu Valley. *Cyrtandra kaulantha* is threatened by pigs that degrade and destroy habitat, nonnative plants that outcompete and displace it, genetic bottlenecks, random demographic fluctuations, and stochastic environmental events such as tree falls and hurricanes. Direct predation by slugs is a potential threat, as well. None of the populations are protected by fences. Nonnative plants have been reduced in the four known populations. There are no other conservation measures being taken to alleviate these ongoing and imminent threats to *C. kaulantha*. These threats are of a high magnitude because of their severity and the fact that they are occurring throughout its limited range. Therefore, we retained an LPN of 2 for this species because the threats continue to be of a high magnitude and are imminent in all populations.

*Cyrtandra oenobarba* (Haiwale)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Cyrtandra oxybapha* (Haiwale)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Cyrtandra oxybapha* is a shrub found in *Metrosideros polymorpha-Cheirodendron trigynum* (ohia-olapa) montane wet forest to mesic *Acacia-Metrosideros* (koa-ohia) forest on Maui, Hawaii. Currently, this species is known only from one population totaling 50 to 100 individuals in the Kahikinui area of east Maui and one additional population of 20 to 30 individuals on west Maui. This species is threatened by pigs, goats, and cattle that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Fire is a likely threat at the Kahikinui population. The individuals within the fence at Kahikinui benefit from management actions; however, the remaining individuals there and on west Maui are threatened by pigs, goats, cattle, and likely threatened by fire. The threats are of a high magnitude because of their severity and are imminent since they are ongoing. Therefore, we retained an LPN of 2 for *C. oxybapha*.

*Cyrtandra sessilis* (Haiwale)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Cyrtrandra sessilis* is a shrub found in wet gulch bottoms and slopes of mesic valleys and wet forests on Oahu, Hawaii. This species is known from two populations totaling approximately 80 individuals in Waikane and Hawaii Loa in the Koolau Mountains. *Cyrtrandra sessilis* is threatened by pigs that degrade and/or destroy habitat, by nonnative plants that outcompete and displace it, and by reduced reproductive vigor. Flooding and landslides are likely threats to one population. No on-the-ground conservation efforts have been initiated, but this species is represented in an *ex-situ* collection. Pigs and nonnative plants are found throughout the mesic and wet forest habitat in which *C. sessilis* occurs, making these threats ongoing and imminent. These threats are of high magnitude because of their severity and because they are occurring throughout its limited range. We retained an LPN of 2 for this species.

*Dalea carthagenensis floridana* (Florida prairie-clover)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Dichanthelium hirstii* (Hirsts’ panic grass)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. *D. hirstii* is a perennial grass that produces erect leafy flowering stems from May to October. *D. hirstii* occurs in coastal plain intermittent ponds, usually in wet savanna or pine barren habitats and is found at only two sites in New Jersey, one site in Delaware, and one site in North Carolina. While all four extant *D. hirstii* populations are located on public land or privately owned conservation lands, natural threats to the species from encroaching vegetation and fluctuations in climatic conditions remain of concern and may be exacerbated by anthropomorphic factors occurring adjacent to the wetland habitat of the species. Given the low numbers of plants found at each site, even minor changes in the habitat of the species could result in local extirpation. Loss of any known sites could result in a serious protraction of the species’ range. However, the most immediate and severe of the threats to this species (i.e., ditching of the Laboundsky Pond site, and encroachment of aggressive vegetative competitors) have been curtailed or are being actively managed by The Nature Conservancy at one New Jersey site and by the Delaware Division of Fish and Wildlife and Delaware Natural Heritage Program at the

Assawoman Pond, Delaware site. Based on threats of a high magnitude but low imminence, we retained an LPN of 5 for this species.

*Digitaria pauciflora* (Florida pineland crabgrass)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. *Digitaria pauciflora* occurs in the pineland/prairie ecotones and prairies in Miami-Dade and Monroe Counties, Florida. Pine rocklands in Miami-Dade County have largely been destroyed by residential, commercial, and urban development and agriculture. Most remaining habitat has been negatively altered, and this species has been extirpated from much of its historical range. Two large occurrences remain within Everglades National Park and Big Cypress National Preserve. While privately owned pine rocklands and prairies are at risk to development, the plants on Federal lands are protected from this threat. This grass is threatened by habitat loss and habitat degradation due to fire suppression, the difficulty of applying prescribed fire to pine rocklands, and exotic plants. Since the only remaining populations are on lands managed by the National Park Service, the threats of fire suppression and exotics are somewhat reduced. The nearby presence of the exotic Old World climbing fern is of particular concern due to its ability to rapidly spread. In Big Cypress National Preserve, plants are currently threatened by off-road vehicle use. Hydrology has been altered within Long Pine Key due to artificial drainage, which lowered ground water, and construction of roads, which either impounded or diverted water. Regional water management intended to restore the Everglades has the potential to have a negative effect on the pinelands of Long Pine Key, where a large population occurs. At this time, it is not known whether Everglades restoration will have a positive or negative effect. This narrow endemic may be vulnerable to catastrophic events and natural disturbances, such as hurricanes. Sea level rise will likely be a factor over the long-term. Overall, the magnitude of threats is considered to be high because this species has been extirpated from all pine rocklands in Miami-Dade County outside of Everglades National Park. However, the more significant threats are not currently occurring (Old World climbing fern is not yet in the area where the species is found and the effects of Everglades restoration are unknown at this time), and are, thus, nonimminent. Therefore, we assigned an LPN 5 for this species.

*Dubautia imbricata* ssp. *imbricata* (Naenae)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Dubautia plantaginea* ssp. *magnifolia* (Naenae)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Dubautia waialealae* (Naenae)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Echinomastus erectocentrus* var. *acunensis* (Acuna cactus)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files and the petition we received on October 30, 2002.

*Erigeron lemmonii* (Lemmon fleabane)—The following summary is based on information contained in our files and the petition we received in July 1975. The species is known from one site in a canyon in the Fort Huachuca Military Reservation of southeastern Arizona. As of 2006, approximately 950 plants were known from this site. The population had not been inventoried since the 1990s, but a complete assessment was completed in 2006; approximately 500 more plants were located and occupied habitat encompasses about 1 square kilometer.

The threats to this species are from catastrophic wildfire in the canyon and on-going drought conditions. We do not know if this species has any adaptations to fire. Due to its location on cliffs, we suspect that fires that may have occurred at more regular intervals and burned at low intensities may have had little to no effect on this species. It may be that the fire intensity and associated heat is only high enough to damage or kill plants on adjacent cliffs, especially near the ground, when an extended absence results in an accumulated fuel load. Even with an accumulated fuel load, the plants that are much higher on the cliff face probably would not be affected. Ft. Huachuca Military Reservation has indicated a willingness to develop a conservation agreement for this species. The magnitude of threats is moderate, because we believe that not all of the population would be adversely affected by a wildfire or drought. The threats are imminent because the likelihood of a fire is high due to the ongoing drought. We retained an LPN of 8 for this species due to moderate, imminent threats.

*Eriogonum codium* (Umtanum Desert buckwheat)—The following summary is based on information from our files. No

new information was provided in the petition we received on May 11, 2004. This species is a long-lived, slow-growing, woody perennial plant that forms low dense mats. The known range of the species is a single location along a ridge on federally owned land in the Hanford National Monument in Washington State. Although it is found exclusively on exposed basalt from the Lolo Flow of the Wanapum Basalt Formation, it is unknown if the close association is related to the chemical composition or physical characteristics of the bedrock or other factors. Individual plants may exceed 100 years of age, based on counts of annual growth rings of dead plants. After its discovery in 1995, the population was counted in 1997. This count reported 5,228 living individuals, and by 2005 the figure had dropped to 4,418, representing a 15 percent decline in the population over eight years. A draft population viability analysis based on 9 years of demographic data was recently completed. This study determined that there is little or no risk of a population decline greater than 90 percent within the next 100 years, but there is a 72 percent chance of a decline of 50 percent over the next century.

The major threats to the species are wildfire, fire-fighting activities, trampling, and invasive weeds. However, the relationship between the current decline in population numbers and the known threats is not clearly understood at this time. With the possible exception of wildfire, the observed decline in population numbers and recruitment since 1997 is not directly attributable to the currently known threats. Because the population is small, limited to a single site, and sensitive to fire and disturbance, the species remains vulnerable to the identified threats. The magnitude of threats is high, because, given the limited range of the species and the degree of uncertainty about its habitat and the cause of its declines, any of the threats could adversely affect its continued existence. The threats are both ongoing and imminent in nature. Because the species continues to be vulnerable to these threats, we assigned an LPN of 2 to this species.

*Eriogonum kelloggii* (Red Mountain buckwheat)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Red Mountain buckwheat is a perennial herb endemic to serpentine habitat of lower montane forests found between 1,900 and 4,100 feet. Its distribution is limited to the Red Mountain and Little Red Mountain areas

of Mendocino County, California, where it occupies 50 acres and 900 square feet, respectively. Occupied habitat at Red Mountain is scattered over 4 square miles. Total population size is estimated at between 20,000 and 30,000 plants, which occur in 44 polygons. Intensive monitoring of permanent plots on three study sites in Red Mountain suggests considerable annual variation in plant density and reproduction, but no discernable population trend was evident in two of three study sites. One study site showed a 65 percent decline in plant density over 11 years.

The primary threat to this species is the potential for surface mining for chromium and nickel. Virtually the entire distribution of Red Mountain buckwheat is either owned by mining interests, or is covered by existing mining claims, that are not currently active. Surface mining would destroy habitat suitability for this species. The species is also believed threatened by tree and shrub encroachment into its habitat, in absence of fire. The species distribution by ownership is described as follows: Federal (Bureau of Land Management)—69 percent (this portion of the distribution was recently included in the South Fork Eel River Wilderness Area, managed by BLM); State of California—1 percent; and private—30 percent. Given the magnitude (high) and immediacy (nonimminent) of the threat to the small, scattered populations, and its taxonomy (species), we assigned an LPN of 5 to this species.

*Festuca hawaiiensis* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This species is a caespitose (growing in dense, low tufts) annual found in dry forest on the island of Hawaii, Hawaii. *Festuca hawaiiensis* is known from four populations totaling approximately 1,000 individuals in and around the Pohakuloa Training Area on the island of Hawaii. Historically, this species was also found on Hualalai and Puu Huluhulu on Hawaii and possibly Ulupalakua on Maui, but it no longer occurs at these sites. *Festuca hawaiiensis* is threatened by pigs, goats, mouflon, and sheep that degrade and destroy habitat; fire; military training activities; and nonnative plants that outcompete and displace it. Feral pigs, goats, mouflon, and sheep have been fenced out of a portion of the populations of *F. hawaiiensis*, and nonnative plants have been reduced in the fenced areas. Firebreaks have been established at two populations. However, these threats are imminent

because they are not controlled and are ongoing in the remaining, unfenced populations. The threats are of a high magnitude because they could adversely affect *F. hawaiiensis* resulting in direct mortality or reduced reproductive capacity. Therefore, we retained an LPN of 2 for this species.

*Festuca ligulata* (Guadalupe fescue)—The following summary is based on information from our files and in the petition we received in 1975. Guadalupe fescue is a member of the Poaceae (Grass family). This species is currently only known from higher elevations in the Chisos Mountains in the Big Bend Area of Texas (one population) and adjacent Coahuila, Mexico (two populations). The population in Big Bend National Park is bisected by a trail and subject to occasional trampling by horses and hikers. The magnitude of threats for Guadalupe fescue is moderate to low because of population monitoring and trail operation by the National Park Service. Based on monitoring results, threats to the U.S. population are nonimminent because of conservation actions at Big Bend National Park to address threats to the species. Thus, we assign an LPN of 11 to this species.

*Gardenia remyi* (Nanu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Nanu is a tree found in mesic to wet forest on islands of Kauai, Molokai, Maui, and Hawaii, Hawaii. *Gardenia remyi* is known from 19 populations totaling between 77 and 104 individuals throughout its range. This species is threatened by pigs, goats, and deer that degrade and destroy habitat and possibly prey upon the species, and by nonnative plants that outcompete and displace it. It is also threatened by landslides on the island of Hawaii. This species is represented in an *ex situ* collection. Feral pigs have been fenced out of the west Maui populations of *G. remyi*, and nonnative plants have been reduced in those areas. However, these threats are not controlled and are ongoing in the remaining, unfenced populations, and are, therefore, imminent. In addition, the threat from goats and deer is ongoing and imminent, because no goat or deer control measures have been undertaken for any of the populations of *G. remyi*. All of the threats are of a high magnitude because they are significant enough that they could adversely affect the species resulting in direct mortality or reduced reproductive capacity. Therefore, we retained an LPN of 2 for this species.

*Geranium hanaense* (Nohoanu)—See above in “Summary of Listing Priority

*Changes in Candidates.*” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Geranium hillebrandii* (Nohoanu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Geranium hillebrandii* is a decumbent subshrub found in bogs on Maui, Hawaii. Previously known from two populations totaling approximately 1,000 to 2,000 individuals, it is currently known, as a result of more thorough surveys, from three populations totaling 10,000 individuals. *Geranium hillebrandii* is moderately threatened by pigs that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. Conservation measures taken to control feral pigs and nonnative plants reduce the impact of these threats to *G. hillebrandii*; however, continued monitoring will be necessary to keep the areas threat-free. The threats from feral pigs and nonnative plants are, therefore, of a moderate magnitude to this species; however, these threats are imminent because they are ongoing in half of the populations. Therefore, we retained an LPN of 8 for this species.

*Geranium kauaiense* (Nohoanu)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Gonocalyx concolor* (no common name)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. *Gonocalyx concolor* is a small evergreen epiphytic shrub. Currently, *G. concolor* is known only from the dwarf or elfin forest type in the Carite Commonwealth Forest (Cerro La Santa), located in the Sierra de Cayey in the municipalities of Guayama, Cayey, Caguas, San Lorenzo, and Patillas in southeastern Puerto Rico. The population previously reported in the Caribbean National Forest is apparently no longer extant. The limited distribution (i.e., the entire population located at one site) and low population numbers (approximately 172 individuals) of *G. concolor*, habitat destruction from construction of roads and telecommunication towers, certain forest management practices such as the development and maintenance of trails, and potential for catastrophic natural events threaten this species. *Gonocalyx concolor* has a restricted distribution that renders this species vulnerable to natural (e.g., hurricanes, landslides) or manmade (e.g., telecommunication

towers, forest management practices) threats to its habitat and population, thus making the threat magnitude high. The Puerto Rico Department of Natural and Environmental Resources developed a management plan for the Carite Commonwealth Forest in 1976. This management plan includes the protection and conservation of species classified under PRDNER regulations as critical, threatened, or endangered. Actions that may impact such species are generally scrutinized, and measures to minimize or avoid impacts to these species are recommended and implemented, if deemed appropriate. Thus, the immediacy of the threats is nonimminent. Therefore, we have assigned an LPN of 5 for the *Gonocalyx concolor*.

*Hazardia orcuttii* (Orcutt's hazardia)—The following summary is based on information contained in our files and the petition we received on March 8, 2001. *Hazardia orcuttii* is an evergreen shrubby species in the Asteraceae (sunflower family). The erect shrubs are 50–100 centimeters (20–40 inches) high. The only known extant native occurrence of this species in the U.S., is in the Manchester Conservation Area in northwestern San Diego County, California. This site is managed by Center for Natural Lands Management. *Hazardia orcuttii* also occurs at a few coastal sites in Mexico, where it has no conservation standing in Mexico. The occurrences in Mexico are threatened by the rapid rate of coastal development from Tijuana to Ensenada. There are approximately 600 native plants remaining in the U.S. and the population in Mexico is estimated at approximately 1,300 plants. Apparent threats to the U.S. population include pedestrian trampling, on- and off-leash dogs, and creation of bicycle trails near *Hazardia orcuttii* plants. Competition from invasive nonnative plants may pose a threat to the reproductive potential of this species. Another significant threat is the apparently low reproductive output of the species. This stems from a recent study that found that 95 percent of the flowers examined were damaged by insects or fungal agents or aborted prematurely, and that insects or fungal agents damaged 50 percent of the seeds produced. The threats are of a high magnitude because they are significant enough that they could adversely affect the continued existence of the species. Overall, the threats are nonimminent since the species occurs in a protected area where some of the threats are not occurring since they are managed. Therefore, we

assigned this species a listing priority of 5.

*Hedyotis fluviatilis* (Kamapuaa)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Kamapuaa is a scandent shrub found in mixed shrubland to wet lowland forest on Oahu and Kauai, Hawaii. This species is known from 12 populations totaling 800 to 1,200 individuals throughout its range. *Hedyotis fluviatilis* is threatened by pigs and goats that degrade and destroy habitat, and by nonnative plants that outcompete and displace it. All of the threats occur range-wide and no efforts for their control or eradication are being undertaken. We retained an LPN of 2 because the severity of the threats is high and are ongoing so are imminent.

*Helianthus verticillatus* (Whorled sunflower)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Hibiscus dasycalyx* (Neches River rose-mallow)—The following summary is based on information from our files. No new information was provided in the petition received on May 11, 2004. Neches River rose-mallow is a perennial woody herb growing 1–2 meters tall with one or more stems per clump and white flowers 7.5–15 centimeters wide, consisting of five 5–10 centimeter-long white petals with deep red or purple at the base. The Neches River rose-mallow appears to be restricted to wetlands, or those portions of wetlands that are exposed to open sun and normally hold standing water early in the growing season, with water levels dropping during late summer and fall. This species appears to have community dominance within the narrow band between high and low water levels in wetlands exposed to open sun. However, historical habitat has been affected by drainage or filling of floodplain depressions and oxbows, stream channelization, road construction, timber harvesting, agricultural activities (primarily mowing and grazing), and herbicide use. Threats that continue to potentially affect the species include wetland alteration, herbicide use, grazing, mowing during the species' growing and flowering period, and genetic swamping by other *Hibiscus* species.

A 1995 status survey of 10 counties resulted in confirmation or discovery of the species in only three sites, but in three separate counties and three different watersheds, suggesting a

relatively wide historical range. These three populations—Ponta site in Cherokee County, Lovelady in Houston County, and Highway 94 in Trinity County—were all within highway rights-of-way and somewhat protected by a management agreement between Texas Parks and Wildlife Department and Texas Department of Transportation. Because these sites were still vulnerable to herbicides and adjacent agricultural activities, they supported relatively low population numbers: In 2005, Ponta (Highway 204) had declined to 0 plants; Lovelady (Highway 230), to 0 plants; and Highway 94, to 20 plants. Continued surveys for *H. dasycalyx* have resulted in new populations. About 300 plants were found on land owned by the Temple-Inland Corporation in east Trinity County. A Candidate Conservation Agreement was developed for this site, but smaller plant numbers have been seen in recent years, possibly due to changes in the wetland's hydrology. Another site discovered on land previously owned by Champion International Corporation (near White Rock Creek in west Trinity County) once supported 300–400 plants. However, the status of this population is currently unknown due to a change in ownership.

In west Houston County, a population of 300 to 400 plants discovered on private land has been purchased by the Natural Area Preservation Association, a land trust organization, in order to protect this land in perpetuity. In east Houston County, a population discovered in Compartment 55 in Davy Crockett National Forest numbered over 1,000 in 2006. Davy Crockett National Forest represents the only public land within the range of *H. dasycalyx*. In 2000, nearly 800 plants were introduced into Compartments 16 and 20 of Davy Crockett National Forest as part of a reintroduction effort. One population has retained high numbers (350 in 2006), but the second was affected by a change in hydrology and has declined to 50 plants in 2006. In 2004, 200 plants were placed in a wetland in Compartment 11 of Davy Crockett National Forest. This attempt has not been successful; only 10 plants were seen in 2006 and all showed evidence of wilt and insect predation. Four unconfirmed reports of the Neches River rose-mallow in Davy Crockett National Forest will be investigated in 2008.

The threats to the species continue to be of a high magnitude because they can severely affect the survival and reproductive capacity of the species. Overall the threats are nonimminent since they are not currently affecting or likely to affect the majority of the

populations of this species in the immediate future. Thus, we have retained an LPN of 5 for the Neches River rose-mallow.

*Indigofera mucronata keyensis* (Florida indigo)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Florida indigo occurs in coastal rock barrens, ecotone rock barren areas, and scraped areas mimicking rock barren habitat. Based upon available data, there are 12 occurrences of Florida indigo on eight islands in the upper and middle Florida Keys, in Monroe County; half of the original occurrences in the Keys are now extirpated, as are historic occurrences on mainland Florida in Collier and Miami-Dade Counties. Most occurrences are small; total population size is probably close to 3,000 individuals. One of the largest occurrences (500 individuals) is on private lands. Florida indigo is threatened by habitat loss, even on public lands, as well as habitat loss and degradation from exotic plants on all sites. Shading by hardwoods is a problem at approximately half of the sites. Planned restoration activities, illegal dumping, and trespass have also been identified as threats. Florida indigo is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges; however, these factors may also work to maintain coastal rock barren habitat in the long-term. Sea level rise is considered a long-term threat that will continue. Overall, the threats are moderate in magnitude because most populations occur on public land where there is some work being done to manage for this species. The threats are ongoing, and therefore, imminent. Thus, we assigned an LPN of 9 to this plant variety.

*Ivesia webberi* (Webber ivesia)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Ivesia webberi* is a low, spreading, perennial herb that occurs very infrequently in Lassen, Plumas, and Sierra Counties, California, and in Douglas and Washoe Counties, Nevada. The species is restricted to sites with sparse vegetation and shallow, rocky soils composed of volcanic ash or derived from andesitic rock. Occupied sites generally occur on mid-elevation flats, benches, or terraces on mountain slopes above large valleys along the transition zone between the eastern edge of the northern Sierra Nevada and the northwestern edge of the Great Basin Desert. Currently, the global population

is estimated at approximately 4.8 million individuals at 15 known sites. The Nevada sites support nearly 98 percent of the total number of individuals (4.7 million) on about 30 acres of occupied habitat. The California sites are larger in area, totaling about 156 acres, but support fewer individuals (approximately 115,000).

The primary threats to Webber ivesia include urban development, authorized and unauthorized roads, off-road vehicle activities and other dispersed recreation, livestock grazing and trampling, fire and fire suppression activities including fuels reduction and prescribed fires, and displacement by noxious weeds. Despite the high numbers of individuals, observations in 2002 and 2004 confirmed that direct and indirect impacts to the species and its habitat, specifically from urban development and off-highway vehicle activity remain high and are likely to increase. The threats are therefore of a high magnitude. However, the U.S. Forest Service has committed to develop a conservation strategy and monitoring program to protect this species on National Forest lands, and the State of Nevada has listed the species as critically endangered, which provides a mechanism to track future impacts on private lands. In addition, both the Forest Service and State of Nevada have agreed to coordinate closely on all activities that may affect this species. For these reasons, we determined that the threats to Webber ivesia are nonimminent and we maintained an LPN of 5 for this species.

*Joinvillea ascendens* ssp. *ascendens* (Ohe)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Ohe is an erect herb found in wet to mesic *Metrosideros polymorpha-Acacia koa* (ohia-koa) forest on the islands of Kauai, Oahu, Molokai, Maui, and Hawaii, Hawaii. *Joinvillea ascendens* ssp. *ascendens* is known from 37 populations totaling approximately 200 individuals throughout its range. Plants are typically found as only one or two individuals, with miles between populations. This subspecies is threatened by pigs, goats, and deer that degrade and destroy habitat, and by nonnative plants that outcompete and displace native plants. Predation by pigs, goats, deer, and rats is a likely threat to this species. Seedlings have rarely been observed in the wild. Seeds germinate in cultivation, but most die soon thereafter. It is uncertain if this rarity of reproduction is typical of this subspecies, or if it is related to habitat disturbance. Feral pigs



have been fenced out of a few of the populations of *J. ascendens* ssp. *ascendens*, and nonnative plants have been reduced in a few populations that are fenced. However, these threats are not controlled and are ongoing in the remaining, unfenced populations. The threats to this species are of high magnitude because habitat degradation, nonnative plants and predation could affect the ability of the species to survive. The threats are on-going, and thus are imminent. Therefore, we retained an LPN of 3 for this subspecies.

*Keysseria erici* (no common name)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Keysseria helenae* (no common name)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Korthalsella degeneri* (Hulumoa)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Hulumoa is a parasitic subshrub found on two species of native trees, *Sapindus oahuensis* and *Nestegis sandwicensis*, only in diverse mesic forests on Oahu, Hawaii. Recent surveys indicate that the species is known only from one population of 900 to 1,000 individuals in Makua Valley. *Korthalsella degeneri* is threatened by pigs and goats that degrade and destroy habitat, fire, and nonnative plants that outcompete and displace native plants. Goats and pigs may prey upon the plant species *K. degeneri* is dependent on. Goats and pigs have been partially fenced out of the area in Makua Valley where *K. degeneri* currently occurs, but some goats are still present. Fires resulting from military activities have been minimized but not completely eliminated. Threats continue to be of a high magnitude and imminent, because they are ongoing and because of the potential for the elimination of the only known population by a single fire event. Therefore, we retained an LPN of 2 for this species.

*Labordia helleri* (Kamakahala)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Labordia pumila* (Kamakahala)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Leavenworthia crassa* (Gladeless)—The following information is based on information contained in our files. No

new information was provided in the petition we received on May 11, 2004. This species of gladeless is a component of glade flora, occurring in association with limestone outcroppings. *Leavenworthia crassa* is endemic to a 13-mile radius area in north central Alabama in Lawrence and Morgan Counties, Alabama, where only six populations of this species are documented. Glade habitats today have been reduced to remnants fragmented by agriculture and development. Populations of this species are now located in glade-like areas exhibiting various degrees of disturbance including pastureland, roadside rights-of-way, and cultivated or plowed fields. The most vigorous populations of this species are located in areas which receive full, or near full, sunlight with limited herbaceous competition. The magnitude of threat is high for this species, because with the limited number of populations, the threats could result in direct mortality or reduced reproductive capacity of the species. The immediacy of threat is nonimminent since there are no known projects planned that would destroy any sites and the species is able to withstand some disturbance. Thus, we assigned an LPN of 5 to this species.

*Leavenworthia texana* (Texas golden gladeless)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. The Texas golden gladeless is a small annual member of the mustard family, with deep, yellow petals only 7–10 mm long; flowering is February through March. The gladeless occurs only on the Weches outcrops of east Texas in San Augustine and Sabine counties. The Weches geologic formation consists of a layer of calcareous sediment, lying above a layer of glauconite clay deposited up to 50 million years ago. Erosion of this complex has produced topography of steep, flat-topped hills and escarpments, as well as the unique ecology of Weches glades: islands of thin, loamy, seepy, alkaline soils that support open-sun, herbaceous, and highly diverse and specialized plant communities.

The gladeless was historically recorded at eight sites, all in a narrow region along north San Augustine and Sabine counties, following the Weches formation. All sites are on private land. Two historic locations have been lost to glauconite mining. A nearby glauconite mine has probably altered the water regime at another historic site. Two sites are currently closed to visitors, so biologists could not evaluate the number of plants they could support. However, the Sabine County site

supported 1000 plants within 9 square meters in 2007. The Tiger Creek site in San Augustine County (less than 0.1 ha in size) was found to have about 200 gladeless in 2007. The Kardell site (less than 9 square meters) has supported 400–500 plants in past years, but none in 2005. An introduced population in Nacogdoches County numbered about 1000 within an area of about 18 square meters in 2007.

Historic gladeless habitat has been affected by highway construction, residential development, conversion to pasture and cropland, widespread use of herbicide, overgrazing, and glauconite mining. However, the primary threat to existing gladeless populations is the invasion of nonnative and weedy shrubs and vines (primarily Macartney rose (*Rosa bracteata*) and Japanese honeysuckle (*Lonicera japonica*)). All known sites are undergoing severe degradation by the incursion of nonnative shrubs and vines, which restrict both growth and reproduction of the gladeless. Brushclearing carried out in 1995 resulted in the reappearance of gladeless after a 10-year absence at one site. However, nonnative shrubs have again invaded this area. More effective control measures, such as burning and selective herbicide use, need to be tested and monitored. The small number of known sites also makes the gladeless vulnerable to extreme natural disturbance events. A severe drought in 1999 and 2000 had a pronounced adverse effect on gladeless reproduction. Since the threat from nonnative plants severely affects all known sites, the magnitude is high. The threats are imminent since they are ongoing. Therefore, we retain an LPN of 2 for the Texas golden gladeless.

*Lesquerella globosa* (Desvaux) Watson (Short's bladderpod)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Short's bladderpod is a perennial member of the mustard family that occurs in Indiana (1 location), Kentucky (6 locations), and Tennessee (18 locations). It grows on steep, rocky, wooded slopes, talus areas, along cliff tops and bases, and on cliff ledges. It is usually associated with south to west facing calcareous outcrops adjacent to rivers or streams. Road construction and road maintenance have played a significant role in the decline of *Lesquerella globosa*. Specific activities that have affected the species in the past and potentially threaten it now, include bank stabilization, herbicide use, mowing during the growing season, grading of road shoulders, and road

widening or repaving. Sediment deposition during road maintenance or from other activities also potentially threatens the species. Interruption of natural processes that maintained habitat suitability and competition from invasive nonnative vegetation necessitates active habitat management at many locations. Given the number of threats that could adversely affect the ability of this species to survive, the magnitude of threat is high. Based upon the number of populations and the anticipation that most of these threats will not be realized in the next 1–2 years, the threats are nonimminent. We have therefore assigned an LPN of 5 to this species.

*Linum arenicola* (Sand flax)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. Based upon available data, there are 10 extant occurrences of sand flax; 11 others are extirpated or destroyed. Only small and isolated occurrences remain in a restricted range of southern Florida and the Florida Keys. Habitat loss and degradation due to development is a major threat—most of the remaining occurrences are on private land or non-conservation public land. However, much of the pine rocklands on Big Pine Key are protected. Nearly all remaining populations are threatened by fire suppression, difficulty in applying prescribed fire, road maintenance activities, exotic species, or illegal dumping. However, some efforts are underway to use prescribed fire and control exotics on conservation lands. Sand flax is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges; Hurricane Wilma inundated most of its habitat on Big Pine Key in 2005, and plants were not found 8–9 weeks post-storm. We also consider sea level rise to be a substantial threat that will reduce the extent of upland habitats. Due to the small and fragmented nature of the current population, stochastic events, disease, or genetic bottlenecks may strongly affect this species. Reduced pollinator activity and suppression of pollinator populations from pesticides used in mosquito control and decreased seed production due to increased seed predation in a fragmented wildland-urban interface may also affect sand flax; however, not enough information is known on this species' reproductive biology or life history to assess these potential threats. Viability is uncertain. Overall, the magnitude of threats is high and most threats are ongoing and thus

are imminent. Therefore, we assigned an LPN of 2 to this species.

*Linum carteri* var. *carteri* (Carter's small-flowered flax)—The following summary is based on information in our files. No new information was provided in the petition we received on May 11, 2004. This plant occupies open sites in pinelands of Miami-Dade County, Florida. Occurrences with fewer than 100 individuals are located on three county-owned preserves. An occurrence with more than 100 plants is on a non-conservation site owned by the U.S. government. The 10 existing occurrences are small and vulnerable to habitat loss, which is exacerbated by habitat degradation due to fire suppression, the difficulty of applying prescribed fire to pine rocklands, and threats from exotic plants. Remaining habitats are fragmented. Non-compatible management practices are also a threat at most protected sites; several sites are mowed during the flowering and fruiting season. The species is vulnerable to natural disturbances, such as hurricanes, tropical storms, and storm surges. This species exists in such small numbers at so few sites, that it may be difficult to develop viable occurrences on the available conservation lands. Although no population viability analysis has been conducted for this plant, indications are that existing occurrences are at best marginal and none are truly viable. As a result, the magnitude of threats is high. Because no viable populations of this plant exist, threats are imminent, so we assigned an LPN of 3 to this plant variety.

*Lysimachia daphnoides* (Lehua makanoe)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Melicope christophersenii* (Alani)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Melicope christophersenii* is a long-lived perennial shrub or tree found in *Metrosideros tremuloides* montane wet forest in the Waianae Mountains on Oahu, Hawaii. Currently, this species is known from one wide-spread area totaling approximately 300 individuals. *Melicope christophersenii* is threatened by feral pigs that may eat it and degrade and destroy habitat, and nonnative plants that compete for light and nutrients. The black twig borer may pose a threat to *M. christophersenii* because it is known to infest other species of *Melicope* on Oahu and it occurs throughout the Waianae Mountains. Only a few individuals may

benefit from fencing that the U.S. Army has constructed. The threats to *M. christophersenii* from feral pigs, nonnative plants, and the black twig borer are imminent and of a high magnitude because they represent severe threats to the species throughout its limited range and they are ongoing; therefore, we retained an LPN of 2 for this species.

*Melicope degeneri* (Alani)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Melicope hiakae* (Alani)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Melicope makahae* (Alani)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Melicope makahae* is a shrub or shrubby tree found in mesic forest in the Waianae Mountains on Oahu, Hawaii. Currently *M. makahae* is known from two populations on two discrete ridges, totaling approximately 200 individuals. This species is threatened by goats and pigs that degrade and destroy habitat, and likely prey upon the plants, and nonnative plants that compete for light and nutrients. The black twig borer is a likely threat to *M. makahae*, because it is known to infest other species of *Melicope* on Oahu and it occurs throughout the Waianae Mountains. Portions of both populations are within fenced and managed areas; however, the threats to *M. makahae* from goats, pigs, nonnative plants, and the black twig borer are of a high magnitude because they pose a severe threat to all unmanaged individuals range-wide. The threats are imminent, since they are ongoing. Therefore, we retained an LPN of 2 for this species.

*Melicope paniculata* (Alani)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Melicope puberula* (Alani)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Myrsine fosbergii* (Kolea)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Myrsine fosbergii* is a branched shrub or small tree found in cloud swept ridges and wet forest on Kauai and Oahu, Hawaii. This species is currently known from 9 populations totaling approximately 56 individuals on Kauai and from 8 populations totaling between

73 and 83 individuals in the Koolau mountains of Oahu. *Myrsine fosbergii* is threatened by feral pigs and goats that degrade and destroy habitat and may prey upon the plant, and nonnative plants that compete for light and nutrients. Although there are plans to fence and remove ungulates from the Helemano area of Oahu, which may benefit this species, no conservation measures have been taken to date to alleviate these threats for this species. Feral pigs and goats are found throughout the known range of *M. fosbergii*, as are nonnative plants. The threats from feral pigs, goats, and nonnative plants are of a high magnitude because they pose a severe threat throughout the limited range of this species and are on-going and therefore imminent. We retained an LPN of 2 for this species.

*Myrsine mezii* (Kolea)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Myrsine vaccinioides* (Kolea)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Myrsine vaccinioides* is a small branched shrub found in shrubby bogs on Maui, Hawaii. This species is found scattered throughout the bogs of west Maui, totaling fewer than 1,000 individuals. *Myrsine vaccinioides* is threatened by feral pigs that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. Pig exclusion fences protect some individuals of this species, and nonnative plants have been reduced around some individuals that are fenced. However, these ongoing conservation efforts benefit only a small number of the known individuals. Further, nonnative plants will probably never be completely eradicated because new propagules are constantly being dispersed into the fenced areas from surrounding, unmanaged lands. The threats are of a high magnitude because they pose a severe threat throughout the limited range of the species and are ongoing, and thus imminent. Therefore, we retained an LPN of 2 for this species.

*Nartheceum americanum* (Bog asphodel)—The following summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004. Bog asphodel is a perennial herb that is found in savannah areas, usually with water moving through the substrate, as well as in sandy bogs along streams and rivers. The historic range of bog asphodel include New York, New Jersey, Delaware, North Carolina, and

South Carolina, but is now only found within the Pine Barrens region of New Jersey.

As an obligate wetland species, *N. americanum* is threatened by changes in hydrology, loss of habitat due to filling or draining of wetlands, flooding as a result of reservoir construction, and conversion of natural wetlands to commercial cranberry bogs. This species occurs in the Pine Barrens region, and the Pinelands Commission issues the State-assumed Clean Water Act Section 404 permits. The Pinelands Commission grants wetland exemptions to cranberry production and other agricultural uses. Illegal wetland filling is occurring. For example, a cranberry expansion was illegally completed without a State permit. In addition, activities not needing State or federal permits are occurring in uplands that are indirectly affecting the wetlands. Natural succession of vegetation in wetlands supporting bog asphodel from emergent (herbaceous) to forested wetlands may also be contributing to the decline of the species. Suppression of natural wildfires that would retard succession or created open wetland savannahs may be a factor in the decline of the species. Other factors adversely affecting *N. americanum* include trampling, erosion, and siltation caused by recreationists on foot or using off-road vehicles. Approximately 70 percent of known extant populations occur on State-owned lands. We are working with the New Jersey Department of Environmental Protection to abate known moderate threats at these sites from recreational use and erosion. Approximately 30 percent of the known extant sites are on privately owned lands, many of which are threatened by habitat degradation from on-site or adjacent residential or commercial development. Overall, the threats are moderate due to the protection provided by the State on State-owned lands. The threats are ongoing and therefore are imminent. Therefore, we retained an LPN of 8 for this species.

*Nothocestrum latifolium* (Aiea)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Aiea is a small tree found in dry to mesic forest and diverse mesic forests on Kauai, Oahu, Maui, Molokai, and Lanai, Hawaii. *Nothocestrum latifolium* is known from 19 populations totaling fewer than 1,100 individuals. This species is threatened by feral pigs, goats and axis deer that degrade and destroy habitat and may prey upon it, by nonnative plants that compete for light and nutrients, and by the loss of

pollinators that negatively affect the reproductive viability of the species. Ungulates have been fenced out of some areas where *N. latifolium* currently occurs, and nonnative plants have been reduced in some populations that are fenced. However, these ongoing conservation efforts for this species benefit only a few of the known populations. The threats are not controlled and are ongoing in the remaining unfenced populations. In addition, little regeneration is observed in this species. Therefore, the threats are of a high magnitude since they are severe enough to affect the continued existence of the species. The threats are imminent since they are ongoing. Therefore, we retained an LPN of 2 for this species.

*Ochrosia haleakalae* (Holei)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Holei is a tree found often on lava in dry to mesic forest on the islands of Hawaii and Maui, Hawaii. This species is currently known from 9 wild and outplanted populations totaling fewer than 500 individuals. *Ochrosia haleakalae* is threatened by fire; by feral pigs, goats, and cattle that degrade and destroy habitat and may directly prey upon holei; and by nonnative plants that compete for light and nutrients. Feral pigs, goats, and cattle have been fenced out of one wild and one outplanted population on private lands on the island of Maui and one outplanted population in Hawaii Volcanoes National Park on the island of Hawaii. Nonnative plants have been reduced in the fenced areas. No known conservation measures have been taken to date for the other populations on the islands of Maui and Hawaii. The threat from fire is of a high magnitude and imminent because no control measures have been undertaken to address this threat that could adversely affect *O. haleakalae* as a whole. The threats from feral pigs, goats, and cattle are ongoing to the unfenced populations of *O. haleakalae*. The threat from nonnative plants is ongoing and imminent, and of a high magnitude to the wild populations on both islands since this threat has the potential to adversely affect the continued existence of this species. Therefore, we retained an LPN of 2 for this species.

*Pediocactus peeblesianus* var. *fickeiseniae* (Fickeisen plains cactus)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. The Fickeisen plains cactus is a small

cactus known from the Gray Mountain vicinity to the Arizona strip in Coconino and Mohave counties, Arizona. The cactus grows on exposed layers of Kaibab limestone on canyon margins and well-drained hills in Navajoan desert or grassland. In 1999, Arizona Game and Fish Department noted 23 occurrences of the species, including historical ones. The species is located on Bureau of Land Management, U.S. Forest Service, tribal, and possibly State lands. Recent reports from the Bureau of Land Management and Navajo Nation describe populations of the species as being in decline.

The main human-induced threats to this cactus are off-road vehicles and trampling associated with livestock grazing. Monitoring data has detected mortality associated with livestock grazing. Illegal collection of this species has been noted in the past, but we do not know if it is a continuing threat. The populations that have been monitored have been affected, in part, by the continuing drought. There has been very low recruitment, and rabbits and rodents have consumed adult plants since there is reduced forage available during these dry conditions. The threats are high magnitude because they adversely affect the plant resulting in direct mortality or reduced reproductive capacity. The threats are imminent because they are ongoing. The LPN for this plant variety remains a 3.

*Penstemon debilis* (Parachute beardtongue)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Penstemon debilis* is an extremely rare plant endemic to oil shale outcrops on the Roan Plateau escarpment in Garfield County, Colorado. Total estimated number of plants is approximately 3800 individuals. About 62 percent of the plants are on private land owned by Occidental Petroleum. Most of the remaining 38 percent occur in one population on Bureau of Land Management land that will soon be open to leasing under a new Resource Management Plan amendment. Pressure to develop energy reserves in this area is intense. Threats include habitat destruction caused by heavy equipment use of access roads through plant populations. These threats are high magnitude because they present a significant threat to the parachute beardtongue resulting in direct mortality or reduced reproductive capacity. We maintained an LPN 2 for this species based on a dramatic increase in the intensity of energy exploration in the

last three years along the Roan Plateau escarpment.

*Penstemon scariosus* var. *albifluvis* (White River beardtongue)—The following summary is based on information contained in our files and the petition we received on October 27, 1983. The White River beardtongue is restricted to calcareous soils derived from oil shale barrens of the Green River Formation in the Uinta Basin of northeastern Utah and adjacent Colorado. There are 14 occurrences known in Utah and 1 in Colorado. Most of the occupied habitat of the White River beardtongue is within developed and expanding oil and gas fields. The location of the species' habitat exposes it to destruction from road, pipeline, and well-site construction in connection with oil and gas development. Recreational off-road vehicle use, heavy grazing by livestock, and wildlife and livestock trampling are additional threats. Based on current information, we retained an LPN of 6 because these nonimminent threats present a significant risk to this plant variety.

*Peperomia subpetiolata* (Ala ala wai nui)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Ala ala wai nui* is a short-lived perennial herb found in montane mesic forest on Maui, Hawaii. This species is known from one occurrence consisting of two subpopulations on windward east Maui, totaling 23 individuals. Further study of the occurrence indicates that the plants may actually represent clones of only six genetically distinct individuals. *Peperomia subpetiolata* is threatened by feral pigs that may eat this plant and degrade and destroy habitat, and by nonnative plants that compete for light and nutrients. Individuals that occur within the Waikamoi Preserve may benefit from fencing and management actions; however, all of the threats occur range-wide. We retained an LPN of 2 because the threats are of a high magnitude because they pose a significant threat to the species resulting in direct mortality or reduced reproductive capacity, and are ongoing so are imminent.

*Phacelia submutica* (DeBeque phacelia)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *DeBeque phacelia* is an annual flowering plant endemic to clay soils derived from the Atwell Gulch and Shire members of the Wasatch Formation in Mesa and Garfield Counties, Colorado. There are approximately 40 populations, all less

than five acres. The number of plants varies from none to thousands each year, depending on precipitation. The habitat coincides with high quality oil and gas reserves of the Piceance Basin, mostly on federal lands. The primary threats are gas field development and associated construction and transportation activities, as well as increased access for all-terrain vehicles. Substantial surface disturbance alters the unique soil structure and destroys seed banks that are critical to the survival of this species. These threats are ongoing, therefore imminent. They are of moderate magnitude because the threat from oil and gas construction and transportation activities only affects a little over half of the land area where this plant occurs. We retained an LPN of 8 for this species.

*Phyllostegia bracteata* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Phyllostegia bracteata* is a scandent perennial herb found in *Metrosideros-Cheirodendron-Dicranopteris* (ohia-olapa-uluhe) montane wet forest. Currently this species is known from five populations totaling no more than 19 individuals on east and west Maui. *Phyllostegia bracteata* is threatened by feral pigs that may directly prey upon it and degrade and destroy habitat, nonnative plants that compete for light and nutrients, and reduced reproductive vigor and randomly occurring natural events. The threats to *P. bracteata* from pigs and nonnative plants are of a high magnitude and imminent because in light of their severity, they pose a risk to the species range-wide, are ongoing, and are not subject to any control efforts. Therefore, we retained an LPN of 2 for this species.

*Phyllostegia floribunda* (no common name)—See above in "Summary of Listing Priority Changes in Candidates." No new information was provided in the petition we received on May 11, 2004.

*Phyllostegia hispida* (no common name)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Physaria tuplashensis* (White Bluffs bladder-pod)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *White Bluffs bladder-pod* is a low-growing, herbaceous, short-lived, perennial plant in the Brassicaceae (mustard) family. Historically and currently, *White Bluffs*

bladder-pod has only been known from a single population that occurs along the White Bluffs of the Columbia River in Franklin County, Washington. The entire range of the species is a narrow band, approximately 33 feet (10 meters) wide by 10.6 miles (17 kilometers) long, at the upper edge of the bluffs. The species occurs only on cemented, highly alkaline, calcium carbonate paleosol (a "caliche" soil) and is believed to be a "calciphile." Approximately 35 percent of the known range of the species has been moderately to severely affected by landslides, an apparently permanent destruction of the habitat. The entire population of the species is down-slope of irrigated agricultural land, the source of the water seepage causing the mass failures and landslides. Other significant threats include the presence of invasive plants, and some potential use of the habitat by recreational off road vehicles. While *P. tuplashensis* is inherently vulnerable because it is a narrow endemic, the threats are nonimminent since they are unlikely to occur in the immediate future, except the threat from invasive plants. Invasive plants are present in the vicinity, but have not yet been described as a significant problem. Currently, we know of no plans to expand or significantly modify the existing agriculture activities in areas adjacent to the population. In addition, deliberate modification of the species' immediate habitat is unlikely due to its location and 85 percent Federal ownership. However, because the threats could negatively affect the only known population of this species, the threats are high in magnitude. Therefore we assigned an LPN of 5 to this species.

*Pittosporum napaliense* (Hoawa)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Platanthera integrilabia* (Correll) Leur (White fringeless orchid)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Platanthera integrilabia* is a perennial herb that grows in partially, but not fully, shaded, wet, boggy areas at the head of streams and on seepage slopes in Alabama, Georgia, Kentucky and Tennessee. Historically, there were at least 90 populations of *Platanthera integrilabia*. Currently there are only 53 extant sites supporting the species.

Several populations have been lost to road, residential and commercial construction, and to projects that altered soil and site hydrology and thereby reduced site suitability for the species.

Several of the known populations are in or adjacent to powerline rights-of-way. Mechanical clearing of these areas may benefit the species by maintaining adequate light levels; however, the use of herbicides could pose a significant threat to the species. All-terrain vehicles have damaged several sites and pose a threat to most sites. Most of the known sites for the species occur in areas that are managed specifically for timber production. Timber management is not necessarily incompatible with the protection and management of the species. However, care must be taken during timber management to ensure that the hydrology of the bogs that supports the species is not altered. Natural succession can result in decreased light levels. Because of the dependence of the species upon moderate to high light levels, some type of active management to prevent complete canopy closure is required at most locations. Collecting for commercial and other purposes is a threat. Herbivory (primarily deer) threatens the species at several sites. Protection and recovery of this species is dependent upon active management rather than just preservation of its habitat. Invasive, nonnative plants such as Japanese honeysuckle and kudzu threaten several sites. Given the number and severity of current threats to this species, the magnitude of threat is high. Based upon the number of populations and the anticipation that most of these threats will not be realized in the next 1–2 years, the threats are nonimminent. We, therefore, assigned an LPN of 5 to this species.

*Platydesma cornuta* var. *cornuta* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This variety is an erect palmoid shrub found in mesic forest on Oahu, Hawaii. This variety is known from 9 populations with a combined total of approximately 36 individuals in the Koolau Mountains on the island of Oahu. Limited monitoring has shown that this population is declining. The threats to *P. cornuta* var. *cornuta* include feral pigs that degrade and destroy habitat and possibly prey upon it, and nonnative plants that compete for light and nutrients. All of the threats occur range-wide and no efforts for their control or eradication are being undertaken. We retained an LPN of 3 for this variety. The threats are of a high magnitude because they are sufficiently severe to result in direct mortality or significantly reduce the reproductive

capacity of this plant variety. In addition, they are ongoing, so are imminent.

*Platydesma cornuta* var. *decurrens* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. This variety is an erect palmoid shrub found in mesic forest on Oahu, Hawaii. This variety is known from several populations totaling a few hundred individuals in the Waianae Mountains. *Platydesma cornuta* var. *decurrens* is threatened by feral pigs and goats that degrade and destroy habitat and possibly prey upon the plants, and by nonnative plants that compete for light and nutrients. All of the threats occur range-wide, and no efforts for their control or eradication are being undertaken, other than the current protection of 5 individuals within a fenced enclosure maintained by The Nature Conservancy of Hawaii. We retained an LPN of 3 for this variety. The threats are high in magnitude because the threats are sufficiently severe to result in direct mortality or significantly reduce the reproductive capacity of this plant variety particularly given its small population size. In addition, the threats are ongoing, so are imminent.

*Platydesma remyi* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Platydesma remyi* is a shrub or shrubby tree found in wet forests on old volcanic slopes on the island of Hawaii, Hawaii. This species is known from two populations totaling fewer than 50 individuals. *Platydesma remyi* is threatened by feral pigs and cattle that degrade and destroy habitat, nonnative plants that compete for light and nutrients, reduced reproductive vigor, and stochastic extinction due to naturally occurring events. Only one individual is included in a rare plant enclosure in the Laupahoehoe Natural Area Reserve. These threats are ongoing and therefore imminent, and of a high magnitude because of their severity; the threats cause direct mortality or significantly reduce the reproductive capacity of the species throughout its limited range. Therefore, we retained an LPN of 2 for this species.

*Platydesma rostrata* (Pilo kea lau lii)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Pleomele forbesii* (Hala pepe)—The following summary is based on

information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Pleomele forbesii* is a tree found in diverse mesic and dry forests on Oahu, Hawaii. This species is currently known from 16 populations totaling 500 individuals. *Pleomele forbesii* is threatened by predation by rats, habitat degradation and destruction by feral pigs and goats, fire, and nonnative plants that compete for light and nutrients. One population is protected within a fenced area by the U.S. Navy and the species is represented in an ex situ collection; however, no other conservation efforts are being implemented to alleviate the threats to *P. forbesii*. The threats are of a high magnitude because of their severity and their potential to adversely affect this plant throughout its range in all 16 populations. The threats are ongoing and therefore, imminent. Thus, we retained an LPN of 2 for this species.

*Potentilla basaltica* (Soldier Meadow cinquefoil or basalt cinquefoil)—The following summary is based on information contained in our files; the petition we received on May 11, 2004, provided no additional information on the species. Soldier Meadow cinquefoil is a low-growing, rhizomatous, herbaceous perennial that is associated with alkali meadows, seeps, and occasionally marsh habitats bordering perennial thermal springs, outflows, and meadow depressions. In Humboldt County, Nevada, the species is known only from Soldier Meadow. In northeastern California, a single population occurs in Lassen County. At Soldier Meadow, there are 10 discrete known occurrences within an area of about 70 acres that support about 130,000 individuals. The California population occupies less than an acre on private lands and supports fewer than 1,000 plants.

The species and its habitat are threatened by recreational use in the areas where it occurs, as well as the ongoing impacts of past water diversions and livestock grazing and current off-highway vehicle travel. Conservation measures implemented recently by the Bureau of Land Management include the installation of fencing to exclude livestock, wild horses, burros and other large mammals; closing of access roads to spring, riparian, and wetland areas and the limiting of vehicles to designated routes; the establishment of a designated campground away from the habitats of sensitive species; the installation of educational signage; and, an increased staff presence, including law enforcement and a volunteer site

steward during the six-month period of peak visitor use. These conservation measures have reduced the magnitude of threat to the species to moderate; all remaining threats are nonimminent and involve long-term changes to the habitat for the species resulting from past impacts. Until a monitoring program is in place that allows us to assess the long-term trend of the species, we continue to assign this species an LPN of 11.

*Pritchardia hardyi* (Loulou)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Pseudognaphalium* (*Gnaphalium*) *sandwicensium* var. *molokaiense* (Enaena)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Pseudognaphalium sandwicensium* var. *molokaiense* is a perennial herb found in strand vegetation in dry consolidated dunes on Molokai and Maui, Hawaii. This variety is known from a total of four populations with several hundred individuals in the Moomomi area on the island of Molokai, and a single population of 25 individuals at Puu Kahulianapa on west Maui.

*Pseudognaphalium sandwicensium* var. *molokaiense* is threatened by axis deer and cattle that degrade and destroy habitat and possibly prey upon it, and by nonnative plants that compete for light and nutrients. Potential threats also include collection for lei and off-road vehicles that directly damage plants and degrade habitat. While ungulate exclusion fences protect the three populations of *P. sandwicensium* var. *molokaiense* on Molokai and nonnative plant control has been implemented in these populations, no conservation efforts have been initiated to date for the individuals on Maui. The ongoing threats from axis deer, cattle, nonnative plants, collection, and off-road vehicles are of a high magnitude because no control measures have been undertaken for the Maui population and the threats therefore pose a significant threat to this plant. Therefore, we retained an LPN of 3 for this variety.

*Psychotria grandiflora* (Kopiko)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Psychotria hexandra* ssp. *oahuensis* var. *oahuensis* (Kopiko)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Psychotria hexandra* ssp. *oahuensis* var.

*oahuensis* is a tree or shrub found in mesic and wet forests on Oahu, Hawaii. This variety is known from three populations of fewer than 20 individuals. Two other varieties of this subspecies, var. *hosakana* and var. *rockii*, are extinct. *Psychotria hexandra* ssp. *oahuensis* var. *oahuensis* is threatened by feral pigs and rats that consume this plant and degrade and destroy habitat, rats that consume its fruit, and nonnative plants that compete for light and nutrients. All of the threats occur range-wide, and no efforts for their control or eradication are being undertaken. We retained an LPN of 3 because the threats are of a high magnitude because they could adversely affect this plant variety resulting in direct mortality or reduced reproductive capacity, and are ongoing, so are imminent.

*Psychotria hobbyi* (Kopiko)—We have not updated our candidate assessment for this species, as we are currently developing a proposed listing rule.

*Pteralyxia macrocarpa* (Kaula)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Kaula is a tree found in valleys and slopes in diverse mesic forest on Oahu, Hawaii. This species is known from 20 populations totaling less than 300 individuals. This species is threatened by feral pigs and goats that degrade and destroy habitat; nonnative plants that compete for light and nutrients; and possibly by predation from feral pigs, goats, rats, and the two-spotted leafhopper. These threats are of a high magnitude because in light of their severity and the absence of control or eradication efforts, they have the potential to adversely affect this plant species throughout its limited range. The threats are also imminent because they are ongoing. We retained an LPN of 2 for this species.

*Ranunculus hawaiiensis* (Makou)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Ranunculus hawaiiensis* is an erect or ascending perennial herb found in mesic to wet forest dominated by *Metrosideros polymorpha* and *Acacia koa* with scree substrate on Maui and the island of Hawaii, Hawaii. Populations formerly within Haleakala National Park have been extirpated. This species is known from fewer than 300 individuals in six populations. Four wild populations occur on Hawaii, and three outplanted populations and two wild populations occur on Maui, one on east Maui at Kahikinui and one on west

Maui at Lihau. *Ranunculus hawaiiensis* is threatened by direct predation by slugs, feral pigs, goats, cattle, mouflon, and sheep; by pigs, goats, cattle, mouflon and sheep that degrade and destroy habitat; and by nonnative plants that compete for light and nutrients. Three populations have been outplanted into protected enclosures; however, feral ungulates and nonnative plants are not controlled in the remaining, unfenced populations. In addition, the threat from slugs is of a high magnitude because slugs occur throughout the limited range of this species and no effective measures have been undertaken to control them or prevent them from causing significant adverse impacts to this species. Therefore, the threats from pigs, goats, cattle, mouflon, sheep, slugs, and nonnative plants are of a high magnitude and ongoing and imminent for *R. hawaiiensis*. We retained an LPN of 2 for this species.

*Ranunculus mauiensis* (Makou)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Ranunculus mauiensis* is an erect to weakly ascending perennial herb found in open sites in mesic to wet forest and along streams on the islands of Maui, Kauai, and Molokai, Hawaii. This species is currently known from fewer than 200 individuals on Molokai, more than 100 individuals on Maui, and approximately 76 individuals on Kauai. *Ranunculus mauiensis* is threatened by feral pigs, goats, deer and slugs that consume it; by habitat degradation and destruction by feral pigs, goats and deer; and by nonnative plants that compete for light and nutrients. Feral pigs have been fenced out of the Maui populations of *R. mauiensis*, and nonnative plants have been reduced in the fenced areas. One individual occurs in the Kamakou Preserve on Molokai, managed by The Nature Conservancy of Hawaii. However, these ongoing conservation efforts benefit only the Maui and Molokai individuals and absent conservation efforts for the Kauai individuals, these threats present a significant risk to the continued existence of *R. mauiensis*. Therefore, the threats continue to be of a high magnitude to this species on Kauai. Threats to the species overall are also of a high magnitude, since half of the individuals are found on Kauai. In addition, threats to *R. mauiensis* are imminent because they are ongoing in the Kauai and the majority of the Maui populations. Therefore, we retained an LPN of 2 for this species.

*Rorippa subumbellata* (Tahoe yellow cress)—The following summary is based

on information contained in our files and the petition we received on December 27, 2000. Tahoe yellow cress is a small perennial herb known only from the shores of Lake Tahoe in California and Nevada. Data collected over the last 25 years generally indicate that species occurrence fluctuates yearly as a function of both lake level and the amount of exposed habitat. Records kept since 1900 show a preponderance of years with high lake levels that would isolate and reduce Tahoe yellow cress occurrences at higher beach elevations. From the standpoint of the species, less favorable peak years have occurred almost twice as often as more favorable low-level years. Annual surveys are conducted to determine population numbers, site occupancy, and general disturbance regime. During the 2003 and 2004 annual survey period, the lake level was approximately 6,224 ft (1,898 m); 2004 was the fourth consecutive year of low water. Tahoe yellow cress was present at 45 of the 72 sites surveyed (65 percent occupied), up from 15 sites (19 percent occupied) in 2000 when the lake level was high at 6,228 ft. Approximately 25,200 stems were counted or estimated in 2003, whereas during the 2000 annual survey, the estimated number of stems was 4,590. Lake levels began to rise again in 2005 and less habitat was available; intermediate lake levels are expected in 2007.

Many Tahoe yellow cress sites are intensively used for commercial and public purposes and are subject to various activities such as erosion control, marina developments, pier construction, and recreation. The U.S. Forest Service, California Tahoe Conservancy, and California Department of Parks and Recreation have management programs for Tahoe yellow cress that include monitoring, fenced enclosures, and transplanting efforts when funds and staff are available. Public agencies (including the Service), private landowners, and environmental groups collaborated to develop a Memorandum of Understanding/Conservation Agreement. The conservation strategy, completed in 2003, contains goals and objectives for recovery and survival, a research and monitoring agenda, and serves as the foundation for an adaptive management program. Because of the continued commitments to conservation demonstrated by regulatory and land management agencies participating in the conservation strategy, we have determined the threats to Tahoe yellow cress from various land uses have been

reduced to a moderate magnitude. In high lake level years such as 2005, however, recreational use is concentrated within Tahoe yellow cress habitat, and we consider this threat in particular to be ongoing and imminent. Therefore, we maintained an LPN of 8 for this species.

*Schiedea attenuata* (no common name)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Schiedea pubescens* (Maolioli)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Schiedea pubescens* is a reclining or weakly climbing vine found in diverse mesic to wet forest on Maui and Molokai, Hawaii. Currently, this species is known from six populations totaling approximately 100 individuals on Maui and Molokai. *Schiedea pubescens* is threatened by feral goats that consume it and degrade and destroy habitat, and by nonnative plants that compete for light and nutrients. Feral ungulates have been fenced out of the population of *S. pubescens* on Hawaii, and feral goats have been fenced out of a few of the west Maui populations of *S. pubescens*. Nonnative plants have been reduced in the populations that are fenced on Maui. However, the threats are not controlled and are ongoing in the remaining unfenced populations on Maui and the three populations on Molokai. In light of the extremely low number of individuals of this species, the threats from goats and nonnative plants are of a high magnitude because they pose a significant threat to the species, and imminent because they are ongoing. Therefore, we retained an LPN of 2 for this species.

*Schiedea salicaria* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Schiedea salicaria* is an erect subshrub or shrub found on ridges and steep slopes in dry shrubland on Maui, Hawaii. Currently, this species is declining throughout its range, and is known from six populations totaling 100 to 300 individuals, typically of 25 individuals per population. This species is threatened by cattle that may directly prey upon it and degrade and destroy habitat, fire, and nonnative plants that compete for light and nutrients. This species is represented in an *ex-situ* collection. All of the threats occur range-wide, and no efforts for their control or eradication are being undertaken. We retained an LPN of 2.

The threats are imminent because they are ongoing, and are of a high magnitude, because in light of their severity and the small size of the population, they have the potential to adversely affect the species.

*Sedum eastwoodiae* (Red Mountain stonecrop)—The following summary is based on information contained in our files and information provided by the California Department of Fish and Game. The petition we received on May 11, 2004 provided no new information on the species. Red Mountain stonecrop is a perennial succulent which occupies relatively barren, rocky openings and cliffs in lower montane coniferous forests, between 1,900 and 4,000 feet elevation. Its distribution is limited to Red Mountain, Mendocino County, California, where it occupies 30 acres scattered over 4 square miles. Total population size is estimated at between 5,300 and 23,000 plants, contained within 27 habitat polygons. Intensive monitoring suggests considerable annual variation in plant seedling success and inflorescence production; stonecrop density varied from year-to-year. The primary threat to the species is the potential for surface mining for chromium and nickel. The entire distribution area of Red Mountain stonecrop is either owned by mining interests or covered by mining claims that are not currently active. Surface mining would destroy habitat suitability for this species. The species is also believed threatened by tree and shrub encroachment into its habitat, in absence of fire. The species distribution by ownership is described as follows: Federal (Bureau of Land Management)—95 percent (this portion of the distribution was recently included in the South Fork Eel River Wilderness Area, managed by BLM); and private—5 percent. Given the magnitude (high, because mining of the area would put the continued existence of the species at risk) and immediacy (nonimminent, because there are no known plans to mine the area) of the threat to the small, scattered populations, and its taxonomy (species), we assigned an LPN of 5 to this species.

*Sicyos macrophyllus* (Anunu)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Sicyos macrophyllus* is a perennial vine found in wet *Metrosideros polymorpha* (ohia) forest and subalpine *Sophora chrysophylla-Myoporum sandwicense* (mamane-naio) forest on the island of Hawaii, Hawaii. This species is known from six populations totaling a few hundred individuals in the Kohala and

Mauna Kea areas and in Hawaii Volcanoes National Park (Puna area) on the island of Hawaii. It appears that a naturally occurring population at Kipuka Ki in Hawaii Volcanoes National Park is reproducing by seeds, but seeds have not been successfully germinated under nursery conditions. This species is threatened by feral pigs and sheep that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. Feral pigs have been fenced out of some of the areas where *S. macrophyllus* currently occurs, but the fences do not exclude sheep. Nonnative plants have been reduced in the populations that are fenced. However, the threats are not controlled and are ongoing in the remaining, unfenced populations, and are, therefore, imminent. Similarly the threat from sheep is ongoing and imminent in all populations, because the current fences do not exclude sheep. In addition, all of the threats are of a high magnitude, because habitat degradation and competition from nonnative plants present a risk to the species, resulting in direct mortality or significantly reducing the reproductive capacity. Therefore, we retained an LPN of 2 for this species.

*Solanum nelsonii* (popolo)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004.

*Stenogyne cranwelliae* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Stenogyne cranwelliae* is a creeping vine found in wet forest dominated by *Metrosideros polymorpha* on the island of Hawaii, Hawaii. *Stenogyne cranwelliae* is known from 10 populations totaling 100 individuals. This species is threatened by feral pigs that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. In addition, this species is potentially threatened by rats that may directly prey upon it, and by randomly occurring natural events such as hurricanes and landslides. All of the threats occur range-wide and no efforts for their control or eradication are being undertaken. These threats are sufficient to adversely affect the species particularly in light of its small population size. We retained an LPN of 2 because the threats are of a high magnitude and are ongoing, so are imminent.

*Stenogyne kealiae* (no common name)—We have not updated our

candidate assessment for this species, as we are currently developing a proposed listing rule.

*Symphotrichum georgianum* (Georgia aster)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information from our files. No new information was provided in the petition we received on May 11, 2004.

*Zanthoxylum oahuense* (Ae)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. *Zanthoxylum oahuense* is a small tree found in mesic to wet forest habitat on Oahu, Hawaii. Currently this species is known from 11 populations totaling fewer than 40 individuals on Oahu. *Zanthoxylum oahuense* is threatened by feral pigs that directly prey upon it and degrade and destroy habitat, nonnative plants that compete for light and nutrients, and the two-spotted leafhopper. All of the threats occur range-wide and no efforts for their control or eradication are being undertaken. These threats are sufficient to adversely affect the species particularly in light of its small population size. We retained an LPN of 2 for this species, because the threats are of a high magnitude and are ongoing, so are imminent.

#### Ferns and Allies

*Christella boydiae* (no common name)—See above in “Summary of Listing Priority Changes in Candidates.” The above summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004.

*Doryopteris takeuchii* (no common name)—We have not updated our candidate assessment, as we are currently developing a proposed listing rule for this species.

*Huperzia stemmermanniae* (no common name)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Waewaeiole, a pendant clubmoss, is found in mesic to wet *Metrosideros polymorpha-Acacia koa* (ohia-koa) forests on the islands of Maui and Hawaii, Hawaii. Only four populations are known, totaling fewer than 30 individuals on Hawaii and Maui. *Huperzia stemmermanniae* is threatened by feral pigs, goats, cattle, and deer that degrade and/or destroy habitat, and by nonnative plants that compete for light, space, and nutrients. *Huperzia stemmermanniae* is also threatened by randomly occurring



natural events due to its small population size. One population at Waikamoi Preserve may benefit from fencing for deer and pigs. The threats to *H. stemmermanniae* from pigs, goats, cattle, deer, and nonnative plants are of a high magnitude because they are sufficiently severe to adversely affect the species throughout its range, resulting in direct mortality or significantly reducing reproductive capacity. They are imminent because they are ongoing. Therefore, we retained an LPN of 2 for this species.

*Microlepia strigosa* var. *mauiensis* (Palapalai)—The following summary is based on information contained in our files. No new information was provided in the petition we received on May 11, 2004. Palapalai is a fern found in mesic to wet forests. It is currently found on the islands of Maui, Hawaii, and Oahu, from at least 11 populations totaling more than 35 individuals. There is a possibility that the range of this plant variety could be larger and include the other main Hawaiian Islands.

*Microlepia strigosa* var. *mauiensis* is threatened by feral pigs that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. Pigs have been fenced out of areas on east and west Maui, and on Hawaii, where *M. strigosa* var. *mauiensis* currently occurs, and nonnative plants have been reduced in the fenced areas. However, the threats are not controlled and are ongoing in the remaining unfenced populations on Maui, Hawaii, and Oahu. Therefore, the threats from feral pigs and nonnative plants are imminent. They are also of a high magnitude because they are sufficiently severe to adversely affect the species throughout its range, resulting in direct mortality or significantly reducing reproductive capacity. We therefore retained an LPN of 3 for *M. strigosa* var. *mauiensis*.

#### Petitions To Reclassify Species Already Listed

We previously made warranted-but-precluded findings on five petitions seeking to reclassify threatened species to endangered status. Because these species are already listed, they are not technically candidates for listing and are not included in Table 1. However, this notice and associated species assessment forms also constitute the resubmitted petition findings for these species. For the three grizzly bear populations, we have not updated our resubmitted petition findings through this notice as explained below. For the other two species (spikedace and loach minnow), we find that reclassification to endangered status is currently

warranted but precluded by work identified above (see “*Petition Findings for Candidate Species*” above). One of the primary reasons that the work identified above is higher priority is that these species are currently listed as threatened under the Act, and therefore they already receive certain protections under the Act. The Service promulgated regulations extending take prohibitions for endangered species under section 9 to threatened species (50 CFR 17.31). Prohibited actions under section 9 include, but are not limited to, take (i.e., harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such activity). Other protections include those under section 7(a)(2) of the Act whereby Federal agencies must insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species.

(1) Grizzly bear (*Ursus arctos horribilis*) North Cascades ecosystem, Cabinet-Yaak, and Selkirk populations (Region 6)—We have not updated our finding with regard to the grizzly bear populations in the North Cascade, the Cabinet-Yaak, or the Selkirk Ecosystems in this notice. Between 1991 and 1999, we issued warranted but precluded findings to reclassify grizzly bears as endangered in the North Cascades (56 FR 33892–33894, July 24, 1991; 63 FR 30453–30454, June 4, 1998), the Cabinet-Yaak (58 FR 8250–8251, February 12, 1993; 64 FR 26725–26733, May 17, 1999), and the Selkirk Ecosystems (64 FR 26725–26733, May 17, 1999). We also made previous resubmitted petition findings that uplisting these three populations to endangered was warranted but precluded through previous CNORS (most recently on September 12, 2006; 71 FR 53755). However, none of the findings included a formal analysis under our 1996 Policy Regarding the Recognition of Distinct Vertebrate Population Segments (DPS) under the Endangered Species Act (61 FR 4722–4725, February 7, 1996). Under this policy a formal analysis of discreteness and significance is necessary to determine if the entity is a “listable entity.” While our 1999 revised 12-month finding performed a preliminary DPS analysis, it appears to have incorrectly analyzed significance to the listed entity (i.e., grizzly bears in the lower 48 States) instead of significance to the taxon (*Ursus arctos horribilis*) as required by our DPS policy (64 FR 26725–26733, May 17, 1999; 61 FR 4722–4725, February 7, 1996; *National Association of Home Builders v. Norton*,

340 F. 3d 835, 852 (9th Cir. 2003)). Additionally, emerging biological information now suggests increasing levels of connectivity among some of these populations, casting doubt on their discreteness.

Also relevant is the March 16, 2007, Department of Interior Office of the Solicitor memorandum (available at: <http://www.doi.gov/solicitor/M37013.pdf>) regarding the meaning of “significant portion of [a species] range.” This memorandum states that “whenever the Secretary concludes because of the statutory five-factor analysis that a species is ‘in danger of extinction throughout \* \* \* a significant portion of its range,’ it is to be listed and the protections of the ESA applied to the species in that portion of its range.” The memorandum goes on to say, “the Secretary has broad discretion in defining what portion of a range is ‘significant.’” To date, the Service has not determined whether the North Cascade, the Cabinet-Yaak, or the Selkirk Ecosystems each constitutes a significant portion of the grizzly bear’s range or whether they only represent significant portions of the species’ range when combined with other units.

On April 18, 2007, the Service initiated a 5-year review to evaluate the current status of grizzly bears in the lower 48-States outside of the Greater Yellowstone Area (72 FR 19549–19551). This status review will fully evaluate the status of each population and the appropriate application of the DPS policy and the solicitor memorandum regarding recognition and listing of significant portions of range. We expect this 5-year review to be completed in 2008.

(2) Spikedace (*Meda fulgida*) (Region 2) (see 59 FR 35303, July 11, 1994, and the species assessment form (see ADDRESSES) for additional information on why reclassification to endangered is warranted-but-precluded)—The spikedace, a small fish species in a monotypic genus, is found in moderate-to-large perennial waters, where it inhabits shallow riffles with sand, gravel, and rubble substrates, and moderate-to-swift currents and swift pools over sand or gravel substrates. This species is now common only in Aravaipa Creek and portions of the upper Gila River in New Mexico. Smaller, less stable populations occur in some areas of the upper Gila, as well as in the Verde River.

The threats to this species are primarily from nonnative aquatic species and water withdrawals, including groundwater pumping. Other threats include grazing, road construction, and recreation. Spikedace

occur in only 5 to 10 percent of their historical range, and threats occur over the majority of their range, to varying degrees. Threats are exacerbated by ongoing drought. In addition, different threats can interact with each other to further cause decline. For example, drought and water withdrawals may decrease the amount of habitat available to all species within a given stream, forcing natives and nonnatives into closer proximity to one another. Effects from nonnative species introductions are permanent, unless streams are actively renovated and/or barriers installed to preclude further recolonization by nonnatives. Grazing pressures have eased somewhat as Federal agencies remove cattle from streams directly, but upland conditions continue to degrade watersheds in general. Groundwater withdrawals or exchanges that affect streamflow are not reversible. For these reasons, the magnitude of the threat to this species is high. In addition, most of the threats to this species are already ongoing, in particular grazing, water withdrawals, nonnative stocking programs, recreational use, and drought. Because threats have gone on for many years in the past, are associated with irreversible commitments (i.e., water exchanges), or are not easily reversed (i.e., nonnative stocking and impacts from grazing), the threats to the species are imminent. Therefore, we assigned this species an LPN of 1 for uplisting to endangered.

(3) Loach minnow (*Tiaroga cobitis*) (Region 2) (see 59 FR 35303, July 11, 1994, and the species assessment form (see ADDRESSES) for additional information on why reclassification to endangered is warranted-but-precluded)—This small fish, the only species within the genus, is found in small-to-large perennial streams and uses shallow, turbulent riffles with primarily cobble substrate and swift currents. This species is now common only in Aravaipa Creek and the Blue River in Arizona, and limited portions of the San Francisco, upper Gila, and Tularosa rivers in New Mexico. Smaller, less stable populations occur in some areas of the upper Gila, such as the Middle Fork and in small areas of several tributary streams to Aravaipa Creek and the Blue and Tularosa rivers, such as Pace, Frieborn, Negrito, Turkey, and Deer creeks. Small populations are also present in Eagle Creek and the Black River.

The threats to this species are primarily from nonnative aquatic species and water withdrawals, including groundwater pumping. Other threats include grazing, road construction, and recreation. Loach

minnow occur in only 10 to 15 percent of their historic range, and threats occur over the majority of their range, to varying degrees. Threats are exacerbated by ongoing drought. In addition, different threats can interact with each other to further cause decline. For example, drought and water withdrawals may decrease the amount of habitat available to all species within a given stream, bringing natives and nonnatives into closer contact. Effects from nonnative species introductions are permanent, unless streams are actively renovated and/or barriers installed to preclude further recolonization by nonnatives. Grazing pressures have eased somewhat as Federal agencies remove cattle from streams directly, but upland conditions continue to degrade watersheds in general. Groundwater withdrawals or exchanges that affect streamflow are not reversible. For these reasons, the magnitude of the threats to this species is high. In addition, most of the threats to this species are already ongoing, in particular grazing, water withdrawals, nonnative stocking programs, recreational use, and drought. Because threats have gone on for many years in the past, are associated with irreversible commitments (i.e., water exchanges), or are not easily reversed (i.e., nonnative stocking and impacts from grazing), the threats to this species are imminent. Therefore, we assigned this species an LPN of 1 for uplisting to endangered.

#### Current Notice of Review

We gather data on plants and animals native to the U.S. that appear to merit consideration for addition to the Lists of Endangered and Threatened Wildlife and Plants. This notice identifies those species that we currently regard as candidates for addition to the Lists. These candidates include species and subspecies of fish, wildlife, or plants and DPSs of vertebrate animals. This compilation relies on information from status surveys conducted for candidate assessment and on information from State Natural Heritage Programs, other State and Federal agencies, knowledgeable scientists, public and private natural resource interests, and comments received in response to previous notices of review.

Tables 1 and 2 list animals arranged alphabetically by common names under the major group headings and list plants alphabetically by names of genera, species, and relevant subspecies and varieties. Animals are grouped by class or order. Plants are subdivided into two groups: (1) Flowering plants and (2) ferns and their allies. Useful synonyms and subgeneric scientific names appear

in parentheses with the synonyms preceded by an “equals” sign. Several species that have not yet been formally described in the scientific literature are included; such species are identified by a generic or specific name (in italics), followed by “sp.” or “ssp.” We incorporate standardized common names in these notices as they become available. We sorted plants by scientific name due to the inconsistencies in common names, the inclusion of vernacular and composite subspecific names, and the fact that many plants still lack a standardized common name.

Table 1 lists all candidate species and all species proposed for listing under the Act. We emphasize that we are not proposing these candidate species for listing by this notice, but we anticipate developing and publishing proposed listing rules for these species in the future. We encourage State agencies, other Federal agencies, and other parties to give consideration to these species in environmental planning.

In Table 1, the “category” column on the left side of the table identifies the status of each species according to the following codes:

PE—Species proposed for listing as endangered. Proposed species are those species for which we have published a proposed rule to list as endangered or threatened in the **Federal Register**. This category does not include species for which we have withdrawn or finalized the proposed rule.

PT—Species proposed for listing as threatened.

PSAT—Species proposed for listing as threatened due to similarity of appearance.

C—Candidates: Species for which we have on file sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened. Issuance of proposed rules for these species is precluded at present by other higher-priority listing actions. This category includes species for which we made a 12-month warranted-but-precluded finding on a petition to list. We made new findings on all petitions for which we previously made “warranted-but-precluded” findings. We identify the species for which we made a continued warranted-but-precluded finding on a resubmitted petition by the code “C\*” in the category column (see “Findings on Resubmitted Petitions” section for additional information).

The “Priority” column indicates the LPN for each candidate species which we use to determine the most appropriate use of our available

resources. The lowest numbers have the highest priority. We assign LPNs based on the immediacy and magnitude of threats as well as on taxonomic status. We published a complete description of our listing priority system in the **Federal Register** (48 FR 43098, September 21, 1983).

The third column, "Lead Region," identifies the Regional Office to which you should direct comments or questions (see addresses at the end of the **SUPPLEMENTARY INFORMATION** section).

Following the scientific name (fourth column) and the family designation (fifth column) is the common name (sixth column). The seventh column provides the known historic range for the species or vertebrate population (for vertebrate populations, this is the historic range for the entire species or subspecies and not just the historic range for the distinct population segment), indicated by postal code abbreviations for States and U.S. territories. Many species no longer occur in all of the areas listed.

Species in Table 2 of this notice are species we included either as proposed species or as candidates in the previous CNOR (published May 11, 2005) that are no longer proposed species or candidates for listing. Since May 11, 2005, we removed two species from proposed status and removed six species from candidate status for the reasons indicated by the codes. The first column indicates the present status of the species, using the following codes (not all of these codes may have been used in this CNOR):

E—Species we listed as endangered.

T—Species we listed as threatened.

Rc—Species we removed from the candidate list because currently available information does not support a proposed listing.

Rp—Species we removed from the candidate list because we have withdrawn the proposed listing.

The second column indicates why we no longer regard the species as a candidate or proposed species using the following codes (not all of these codes may have been used in this CNOR):

A—Species that are more abundant or widespread than previously believed and species that are not subject to the degree of threats sufficient to warrant continuing candidate status, or issuing a proposed or final listing.

F—Species whose range no longer includes a U.S. territory.

I—Species for which we have insufficient information on biological vulnerability and threats to support issuance of a proposed rule to list.

L—Species we added to the Lists of Endangered and Threatened Wildlife and Plants.

M—Species we mistakenly included as candidates or proposed species in the last notice of review.

N—Species that are not listable entities based on the Act's definition of "species" and current taxonomic understanding.

U—Species not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

X—Species we believe to be extinct.

The columns describing lead region, scientific name, family, common name, and historical range include information as previously described for Table 1.

### Request for Information

We request you submit any further information on the species named in this notice as soon as possible or whenever it becomes available. We are particularly interested in any information:

(1) Indicating that we should add a species to the list of candidate species;

(2) Indicating that we should remove a species from candidate status;

(3) Recommending areas that we should designate as critical habitat for a species, or indicating that designation of critical habitat would not be prudent for a species;

(4) Documenting threats to any of the included species;

(5) Describing the immediacy or magnitude of threats facing candidate species;

(6) Pointing out taxonomic or nomenclature changes for any of the species;

(7) Suggesting appropriate common names; and

(8) Noting any mistakes, such as errors in the indicated historical ranges.

Submit your comments regarding a particular species to the Regional Director of the Region identified as having the lead responsibility for that species. The regional addresses follow:

Region 1. Hawaii, Idaho, Oregon, Washington, American Samoa, Guam, and Commonwealth of the Northern Mariana Islands. Regional Director (TE), U.S. Fish and Wildlife Service, Eastside Federal Complex, 911 N.E. 11th Avenue, Portland, OR 97232-4181 (503/231-6158).

Region 2. Arizona, New Mexico, Oklahoma, and Texas. Regional Director (TE), U.S. Fish and Wildlife Service, 500 Gold Avenue SW., Room 4012, Albuquerque, NM 87102 (505/248-6920).

Region 3. Illinois, Indiana, Iowa,

Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Regional Director (TE), U.S. Fish and Wildlife Service, Bishop Henry Whipple Federal Building, One Federal Drive, Fort Snelling, MN 55111-4056 (612/713-5334).

Region 4. Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the U.S. Virgin Islands. Regional Director (TE), U.S. Fish and Wildlife Service, 1875 Century Boulevard, Suite 200, Atlanta, GA 30345 (404/679-4156).

Region 5. Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Regional Director (TE), U.S. Fish and Wildlife Service, 300 Westgate Center Drive, Hadley, MA 01035-9589 (413/253-8615).

Region 6. Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Regional Director (TE), U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, CO 80225-0486 (303/236-7400).

Region 7. Alaska. Regional Director (TE), U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503-6199 (907/786-3505).

Region 8. California and Nevada. Regional Director (TE), U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W2606, Sacramento, CA 95825.

We will provide comments received in response to the previous CNOR to the Region having lead responsibility for each candidate species mentioned in the comment. We will likewise consider all information provided in response to this CNOR in deciding whether to propose species for listing and when to undertake necessary listing actions (including whether emergency listing pursuant to section 4(b)(7) of the Act is appropriate). Comments we receive will become part of the administrative record for the species, which we maintain at the appropriate Regional Office.

Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home addresses from the rulemaking record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the

record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment, but you should be aware that the Service may be required to disclose your name and address pursuant to the Freedom of

Information Act. However, we will not consider anonymous comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Authority

This notice of review is published under the authority of the Endangered Species Act (16 U.S.C. 1531 et seq.).

Dated: November 27, 2007.

H. Dale Hall,

Director, Fish and Wildlife Service.

TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS) [Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Table with columns: Status (Category, Priority), Lead region, Scientific name, Family, Common name, and Historic range. Rows include Mammals (Emballeonura semicaudata, Ursidae, Sylvilagus, Martes, Zapus, Thomomys, Spermophilus) and Birds (Porzana, Oreomystis, Coccyzus, Gallicolumba, Eremophila, Calidris, Brachyramphus, Synthliboramphus).

TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS)—Continued  
 [Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status		Lead region	Scientific name	Family	Common name	Historic range
Category	Priority					
C*	8	R2	<i>Tympanuchus pallidicinctus</i>	Phasianidae	Prairie-chicken, lesser	U.S.A. (CO, KA, NM, OK, TX).
C*	6	R1	<i>Centrocercus urophasianus</i>	Phasianidae	Sage-grouse, greater (Columbia Basin DPS).	U.S.A. (AZ, CA, CO, ID, MT, ND, NE, NV, OR, SD, UT, WA, WY), Canada (AB, BC, SK).
C*	3	R1	<i>Oceanodroma castro</i>	Hydrobatidae	Storm-petrel, band-rumped (Hawaii DPS).	U.S.A. (HI), Atlantic Ocean, Ecuador (Galapagos Islands), Japan.
C*	5	R4	<i>Dendroica angelae</i>	Emberizidae	Warbler, elfin-woods	U.S.A. (PR).
REPTILES						
C*	2	R2	<i>Sceloporus arenicolus</i>	Iguanidae	Lizard, sand dune	U.S.A. (TX, NM).
C*	9	R3	<i>Sistrurus catenatus catenatus</i>	Viperidae	Massasauga (= rattlesnake), eastern.	U.S.A. (IA, IL, IN, MI, MO, MN, NY, OH, PA, WI), Canada.
C*	3	R4	<i>Pituophis melanoleucus lodingi</i>	Colubridae	Snake, black pine	U.S.A. (AL, LA, MS).
C*	5	R4	<i>Pituophis ruthveni</i>	Colubridae	Snake, Louisiana pine	U.S.A. (LA, TX).
C*	3	R2	<i>Kinosternon sonoriense longifemorale</i>	Kinosternidae	Turtle, Sonoyta mud	U.S.A. (AZ), Mexico.
AMPHIBIANS						
C*	9	R8	<i>Rana luteiventris</i>	Ranidae	Frog, Columbia spotted (Great Basin DPS).	U.S.A. (AK, ID, MT, NV, OR, UT, WA, WY), Canada (BC).
C*	3	R8	<i>Rana muscosa</i>	Ranidae	Frog, mountain yellow-legged (Sierra Nevada DPS).	U.S.A. (CA, NV).
C*	2	R1	<i>Rana pretiosa</i>	Ranidae	Frog, Oregon spotted	U.S.A. (CA, OR, WA), Canada (BC).
C*	11	R8	<i>Rana onca</i>	Ranidae	Frog, relict leopard	U.S.A. (AZ, NV, UT).
C*	3	R3	<i>Cryptobranchus alleganiensis bishopi</i>	Cryptobranchidae	Hellbender, Ozark	U.S.A. (AR, MO).
C*	2	R2	<i>Eurycea waterlooensis</i>	Plethodontidae	Salamander, Austin blind	U.S.A. (TX).
C*	2	R2	<i>Eurycea naufragia</i>	Plethodontidae	Salamander, Georgetown	U.S.A. (TX).
C*	2	R2	<i>Eurycea chisholmensis</i>	Plethodontidae	Salamander, Salado	U.S.A. (TX).
C*	11	R8	<i>Bufo canorus</i>	Bufo	Toad, Yosemite	U.S.A. (CA).
C	3	R2	<i>Hyla wrightorum</i>	Hylidae	Treefrog, Arizona (Huachuca/Canelo DPS).	U.S.A. (AZ), Mexico (Sonora).
C*	8	R4	<i>Necturus alabamensis</i>	Proteidae	Waterdog, black warrior (= Sipsey Fork)	U.S.A. (AL).
FISHES						
C*	2	R2	<i>Gila nigra</i>	Cyprinidae	Chub, headwater	U.S.A. (AZ, NM).
C	5	R4	<i>Phoxinus saylori</i>	Cyprinidae	Dace, laurel	U.S.A. (TN).
C*	11	R6	<i>Etheostoma cragini</i>	Percidae	Darter, Arkansas	U.S.A. (AR, CO, KS, MO, OK).
C*	5	R4	<i>Etheostoma susanae</i>	Percidae	Darter, Cumberland	U.S.A. (KY, TN).
C*	5	R4	<i>Percina aurora</i>	Percidae	Darter, Pearl	U.S.A. (LA, MS).
C*	2	R4	<i>Etheostoma phytophilum</i>	Percidae	Darter, rush	U.S.A. (AL).
C*	2	R4	<i>Etheostoma moorei</i>	Percidae	Darter, yellowcheek	U.S.A. (AR).
C*	2	R4	<i>Noturus crypticus</i>	Ictaluridae	Madtom, chunky	U.S.A. (TN).
C	5	R4	<i>Moxostoma</i> sp.	Catostomidae	Redhorse, sicklefin	U.S.A. (GA, NC, TN).
C*	2	R3	<i>Cottus</i> sp.	Cottidae	Sculpin, grotto	U.S.A. (MO).
C*	5	R2	<i>Notropis oxyrinchus</i>	Cyprinidae	Shiner, sharpnose	U.S.A. (TX).
C*	5	R2	<i>Notropis buccula</i>	Cyprinidae	Shiner, smalleye	U.S.A. (TX).
C*	3	R2	<i>Catostomus discobolus yarrowi</i>	Catostomidae	Sucker, Zuni bluehead	U.S.A. (AZ, NM).
PSAT	N/A	R1	<i>Salvelinus malma</i>	Salmonidae	Trout, Dolly Varden	U.S.A. (AK, WA), Canada, East Asia.
CLAMS						
C	5	R4	<i>Villosa choctawensis</i>	Unionidae	Bean, Choctaw	U.S.A. (AL, FL).
C	2	R3	<i>Villosa fabalis</i>	Unionidae	Bean, rayed	U.S.A. (IL, IN, KY, MI, NY, OH, TN, PA, VA, WV), Canada (ON).
C	2	R4	<i>Fusconaia rotulata</i>	Unionidae	Ebonyshele, round	U.S.A. (AL, FL).
C*	2	R2	<i>Popenaias popei</i>	Unionidae	Hornshell, Texas	U.S.A. (NM, TX), Mexico.
C*	2	R4	<i>Ptychobranchnus subtentum</i>	Unionidae	Kidneyshell, fluted	U.S.A. (AL, KY, TN, VA).
C	2	R4	<i>Ptychobranchnus jonesi</i>	Unionidae	Kidneyshell, southern	U.S.A. (AL, FL).
C*	5	R4	<i>Lampsilis rafinesqueana</i>	Unionidae	Mucket, Neosho	U.S.A. (AR, KS, MO, OK).
C	2	R3	<i>Plethobasus cyphus</i>	Unionidae	Mussel, sheepnose	U.S.A. (AL, IA, IL, IN, KY, MN, MO, MS, OH, PA, TN, VA, WI, WV).
C*	2	R4	<i>Margaritifera marrianae</i>	Margaritiferidae	Pearlshell, Alabama	U.S.A. (AL).
C*	5	R4	<i>Lexingtonia dolabellodes</i>	Unionidae	Pearlymussel, slabside	U.S.A. (AL, KY, TN, VA).
C	5	R4	<i>Pleurobema strodeanum</i>	Unionidae	Pigtoe, fuzzy	U.S.A. (AL, FL).
C*	2	R4	<i>Pleurobema hanleyianum</i>	Unionidae	Pigtoe, Georgia	U.S.A. (AL, GA, TN).

TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS)—Continued  
 [Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status		Lead region	Scientific name	Family	Common name	Historic range
Category	Priority					
C	5	R4	<i>Fusconaia escambia</i>	Unionidae	Pigtoe, narrow	U.S.A. (AL, FL).
C	11	R4	<i>Quincuncina burkei</i>	Unionidae	Pigtoe, tapered	U.S.A. (AL, FL).
C	5	R4	<i>Hamiota (= Lampsilis) australis</i>	Unionidae	Sandshell, southern	U.S.A. (AL, FL).
C	4	R3	<i>Cumberlandia monodonta</i>	Margaritiferidae	Spectaclecase	U.S.A. (AL, AR, IA, IN, IL, KS, KY, MO, MN, NE, OH, TN, VA, WI, WV).
C*	2	R4	<i>Elliptio spinosa</i>	Unionidae	Spinymussel, Altamaha	U.S.A. (GA).
SNAILS						
C	2	R4	<i>Pleurocera foremani</i>	Pleuroceridae	Hornsnail, rough	U.S.A. (AL).
C	8	R4	<i>Elimia melanoides</i>	Pleuroceridae	Mudalia, black	U.S.A. (AL).
C*	9	R6	<i>Oreohelix peripherica wasatchensis</i>	Oreohelicidae	Mountainsnail, Ogden	U.S.A. (UT).
C*	8	R6	<i>Stagnicola bonnevillensis</i>	Lymnaeidae	Pondsnail, fat-whorled (= Bonneville)	U.S.A. (UT).
C*	2	R4	<i>Leptoxis foremani (= downei)</i>	Pleuroceridae	Rocksnail, Interrupted (= Georgia)	U.S.A. (GA, AL).
C*	2	R1	<i>Ostodes strigatus</i>	Potariidae	Sisi snail	U.S.A. (AS).
C*	2	R2	<i>Pseudotryonia adamantina</i>	Hydrobiidae	Snail, Diamond Y Spring	U.S.A. (TX).
C*	2	R1	<i>Samoana fragilis</i>	Partulidae	Snail, fragile tree	U.S.A. (GU, MP).
C*	2	R1	<i>Partula radiolata</i>	Partulidae	Snail, Guam tree	U.S.A. (GU).
C*	2	R1	<i>Partula gibba</i>	Partulidae	Snail, Humped tree	U.S.A. (GU, MP).
C*	2	R1	<i>Partulina semicarinata</i>	Achatinellidae	Snail, Lanai tree	U.S.A. (HI).
C*	2	R1	<i>Partulina variabilis</i>	Achatinellidae	Snail, Lanai tree	U.S.A. (HI).
C*	2	R1	<i>Partula langfordi</i>	Partulidae	Snail, Langford's tree	U.S.A. (MP).
C*	2	R2	<i>Cochliopa texana</i>	Hydrobiidae	Snail, Phantom cave	U.S.A. (TX).
C*	2	R1	<i>Newcombia cumingi</i>	Achatinellidae	Snail, Newcomb's tree	U.S.A. (HI).
C*	2	R1	<i>Eua zebrina</i>	Partulidae	Snail, Tutuila tree	U.S.A. (AS).
C*	2	R2	<i>Pyrgulopsis chupaderae</i>	Hydrobiidae	Springsnail, Chupadera	U.S.A. (NM).
C*	2	R8	<i>Pyrgulopsis notidicola</i>	Hydrobiidae	Springsnail, elongate mud meadows.	U.S.A. (NV).
C*	11	R2	<i>Pyrgulopsis gilae</i>	Hydrobiidae	Springsnail, Gila	U.S.A. (NM).
C*	2	R2	<i>Tryonia circumstriata (= stocktonensis)</i>	Hydrobiidae	Springsnail, Gonzales	U.S.A. (TX).
C*	8	R2	<i>Pyrgulopsis thompsoni</i>	Hydrobiidae	Springsnail, Huachuca	U.S.A. (AZ), Mexico.
C*	11	R2	<i>Pyrgulopsis thermalis</i>	Hydrobiidae	Springsnail, New Mexico	U.S.A. (NM).
C*	2	R2	<i>Pyrgulopsis morrisoni</i>	Hydrobiidae	Springsnail, Page	U.S.A. (AZ).
C*	2	R2	<i>Tryonia cheatumi</i>	Hydrobiidae	Springsnail (= Tryonia), Phantom.	U.S.A. (TX).
C*	2	R2	<i>Pyrgulopsis bernardina</i>	Hydrobiidae	Springsnail, San Bernardino.	U.S.A. (AZ), Mexico (Sonora).
C*	2	R2	<i>Pyrgulopsis trivialis</i>	Hydrobiidae	Springsnail, Three Forks	U.S.A. (AZ).
INSECTS						
C*	8	R1	<i>Nysius wekiuicola</i>	Lygaeidae	Bug, Wekiu	U.S.A. (HI).
C	3	R4	<i>Strymon acis bartrami</i>	Lycaenidae	Butterfly, Bartram's hairstreak.	U.S.A. (FL).
C	3	R4	<i>Anaea troglodyta floralidis</i>	Nymphalidae	Butterfly, Florida leafwing	U.S.A. (FL).
C*	3	R1	<i>Hypolimnas octocula mariannensis</i>	Nymphalidae	Butterfly, Mariana eight-spot.	U.S.A. (GU, MP).
C*	2	R1	<i>Vagrans egestina</i>	Nymphalidae	Butterfly, Mariana wandering.	U.S.A. (GU, MP).
C*	6	R4	<i>Cyclargus thomasi bethunebakeri</i>	Lycaenidae	Butterfly, Miami blue	U.S.A. (FL), Bahamas.
C*	5	R4	<i>Glyphopsyche sequatchie</i>	Limnephilidae	Caddisfly, Sequatchie	U.S.A. (TN).
C	5	R4	<i>Pseudanopthalmus insularis</i>	Carabidae	Cave beetle, Baker Station (= insular).	U.S.A. (TN).
C*	5	R4	<i>Pseudanopthalmus caecus</i>	Carabidae	Cave beetle, Clifton	U.S.A. (KY).
C	11	R4	<i>Pseudanopthalmus colemanensis</i>	Carabidae	Cave beetle, Coleman	U.S.A. (TN).
C	5	R4	<i>Pseudanopthalmus fowlerae</i>	Carabidae	Cave beetle, Fowler's	U.S.A. (TN).
C*	5	R4	<i>Pseudanopthalmus frigidus</i>	Carabidae	Cave beetle, icebox	U.S.A. (KY).
C	5	R4	<i>Pseudanopthalmus tirsias</i>	Carabidae	Cave beetle, Indian Grave Point (= Soothsayer).	U.S.A. (TN).
C*	5	R4	<i>Pseudanopthalmus inquisitor</i>	Carabidae	Cave beetle, inquirer	U.S.A. (TN).
C*	5	R4	<i>Pseudanopthalmus troglodytes</i>	Carabidae	Cave beetle, Louisville	U.S.A. (KY).
C	5	R4	<i>Pseudanopthalmus paulus</i>	Carabidae	Cave beetle, Noblett's	U.S.A. (TN).
C*	5	R4	<i>Pseudanopthalmus parvus</i>	Carabidae	Cave beetle, Tatum	U.S.A. (KY).
C*	3	R1	<i>Euphydryas editha taylori</i>	Nymphalidae	Checkerspot butterfly, Taylor's (= Whulge).	U.S.A. (OR, WA), Canada (BC).

TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS)—Continued

[Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status		Lead region	Scientific name	Family	Common name	Historic range
Category	Priority					
C*	9	R1	<i>Megalagrion nigrohamatum nigrolineatum.</i>	Coenagrionidae	Damselfly, blackline Hawaiian.	U.S.A. (HI).
C*	2	R1	<i>Megalagrion leptodemas</i>	Coenagrionidae	Damselfly, crimson Hawaiian.	U.S.A. (HI).
C*	2	R1	<i>Megalagrion nesiotes</i>	Coenagrionidae	Damselfly, flying earwig Hawaiian.	U.S.A. (HI).
C*	2	R1	<i>Megalagrion oceanicum</i>	Coenagrionidae	Damselfly, oceanic Hawaiian.	U.S.A. (HI).
C*	8	R1	<i>Megalagrion xanthomelas</i>	Coenagrionidae	Damselfly, orangeblack Hawaiian.	U.S.A. (HI).
C*	2	R1	<i>Megalagrion pacificum</i>	Coenagrionidae	Damselfly, Pacific Hawaiian.	U.S.A. (HI).
C*	2	R8	<i>Dinacoma caseyi</i>	Scarabidae	June beetle, Casey's	U.S.A. (CA).
C	5	R8	<i>Ambrysus funebris</i>	Naucoridae	Naucorid bug (= Furnace Creek), Nevares Spring.	U.S.A. (CA).
C*	2	R1	<i>Drosophila attigua</i>	Drosophilidae	fly, Picture-wing	U.S.A. (HI).
C*	2	R1	<i>Drosophila digressa</i>	Drosophilidae	fly, Picture-wing [unnamed].	U.S.A. (HI).
C*	8	R2	<i>Heterelmis stephani</i>	Elmidae	Rifle beetle, Stephan's	U.S.A. (AZ).
C*	8	R3	<i>Hesperia dacotae</i>	Hesperiidae	Skipper, Dakota	U.S.A. (MN, IA, SD, ND, IL), Canada.
C*	5	R1	<i>Polites mardon</i>	Hesperiidae	Skipper, Mardon	U.S.A. (CA, OR, WA).
C*	8	R6	<i>Cicindela albissima</i>	Cicindelidae	Tiger beetle, Coral Pink Sand Dunes.	U.S.A. (UT).
C*	5	R4	<i>Cicindela highlandensis</i>	Cicindelidae	Tiger beetle, highlands	U.S.A. (FL).
ARACHNIDS						
C*	2	R2	<i>Cicurina wartoni</i>	Dictynidae	Meshweaver, Warton cave.	U.S.A. (TX).
CRUSTACEANS						
C	2	R2	<i>Gammarus hyalleloides</i>	Gammaridae	Amphipod, diminutive	U.S.A. (TX).
C*	5	R1	<i>Metabetaeus lohena</i>	Alpheidae	Shrimp, anchialine pool	U.S.A. (HI).
C*	5	R1	<i>Palaemonella burnsi</i>	Palaemonidae	Shrimp, anchialine pool	U.S.A. (HI).
C*	5	R1	<i>Procaris hawaiana</i>	Procarididae	Shrimp, anchialine pool	U.S.A. (HI).
C*	4	R1	<i>Vetericaris chaceorum</i>	Procaridae	Shrimp, anchialine pool	U.S.A. (HI).
C*	11	R4	<i>Typhlatya monae</i>	Atyidae	Shrimp, troglobitic groundwater.	U.S.A. (PR), Barbuda, Dominican Republic.
FLOWERING PLANTS						
C*	11	R8	<i>Abronia alpina</i>	Nyctaginaceae	Sand-verbena, Ramshaw Meadows.	U.S.A. (CA).
C*	8	R4	<i>Arabis georgiana</i>	Brassicaceae	Rockcress, Georgia	U.S.A. (AL, GA).
C*	11	R4	<i>Argythamnia blodgettii</i>	Euphorbiaceae	Silverbush, Blodgett's	U.S.A. (FL).
C*	3	R1	<i>Artemisia campestris</i> var. <i>wormskioldii</i> .	Asteraceae	Wormwood, northern	U.S.A. (OR, WA).
C*	2	R1	<i>Astelia waialealae</i>	Liliaceae	Pa'iniu	U.S.A. (HI).
C*	11	R6	<i>Astragalus tortipes</i>	Fabaceae	Milk-vetch, Sleeping Ute	U.S.A. (CO).
C*	2	R1	<i>Bidens amplexans</i>	Asteraceae	Ko'oko'olau	U.S.A. (HI).
C*	3	R1	<i>Bidens campylotheca pentamera.</i>	Asteraceae	Ko'oko'olau	U.S.A. (HI).
C*	3	R1	<i>Bidens campylotheca waihoiensis.</i>	Asteraceae	Ko'oko'olau	U.S.A. (HI).
C*	8	R1	<i>Bidens conjuncta</i>	Asteraceae	Ko'oko'olau	U.S.A. (HI).
C*	3	R1	<i>Bidens micrantha ctenophylla.</i>	Asteraceae	Ko'oko'olau	U.S.A. (HI).
C*	8	R4	<i>Brickellia mosieri</i>	Asteraceae	Brickell-bush, Florida	U.S.A. (FL).
C*	2	R1	<i>Calamagrostis expansa</i>	Poaceae	Reedgrass, Maui	U.S.A. (HI).
C*	2	R1	<i>Calamagrostis hillebrandii</i>	Poaceae	Reedgrass, Hillebrand's	U.S.A. (HI).
C*	5	R4	<i>Calliandra locoensis</i>	Mimosaceae	No common name	U.S.A. (PR).
C*	5	R8	<i>Calochortus persistens</i>	Liliaceae	Mariposa lily, Siskiyou	U.S.A. (CA, OR).
C*	5	R4	<i>Calyptanthes estremerae</i>	Myrtaceae	No common name	U.S.A. (PR).
C*	2	R1	<i>Canavalia napaliensis</i>	Fabaceae	'Awikiwiki	U.S.A. (HI).
C*	2	R1	<i>Canavalia pubescens</i>	Fabaceae	'Awikiwiki	U.S.A. (HI).
C*	8	R1	<i>Castilleja christii</i>	Scrophulariaceae	Paintbrush, Christ's	U.S.A. (ID).
C*	9	R4	<i>Chamaecrista lineata</i> var. <i>keyensis.</i>	Fabaceae	Pea, Big Pine partridge	U.S.A. (FL).
C*	12	R4	<i>Chamaesyce deltoidea pinetorum.</i>	Euphorbiaceae	Sandmat, pineland	U.S.A. (FL).
C*	9	R4	<i>Chamaesyce deltoidea serpyllum.</i>	Euphorbiaceae	Spurge, wedge	U.S.A. (FL).
C*	2	R1	<i>Chamaesyce eleanoriae</i>	Euphorbiaceae	'Akoko	U.S.A. (HI).
C*	3	R1	<i>Chamaesyce remyi</i> var. <i>kauaiensis.</i>	Euphorbiaceae	'Akoko	U.S.A. (HI).
C*	3	R1	<i>Chamaesyce remyi</i> var. <i>remyi.</i>	Euphorbiaceae	'Akoko	U.S.A. (HI).
C*	2	R1	<i>Charpentiera densiflora</i>	Amaranthaceae	Papala	U.S.A. (HI).

TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS)—Continued  
 [Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status Category	Priority	Lead re- gion	Scientific name	Family	Common name	Historic range
C*	6	R8	<i>Chorizanthe parryi</i> var. <i>fernandina</i> .	Polygonaceae	Spineflower, San Fer- nando Valley.	U.S.A. (CA).
C*	2	R4	<i>Chromolaena frustrata</i>	Asteraceae	Thoroughwort, Cape Sable.	U.S.A. (FL).
C*	2	R4	<i>Consolea corallicola</i>	Cactaceae	Cactus, Florida sema- phore.	U.S.A. (FL).
C*	5	R4	<i>Cordia rupicola</i>	Boraginaceae	No common name	U.S.A. (PR), Anegada.
C*	2	R1	<i>Cyanea asplenifolia</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea calycina</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea eleeleensis</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea kuhihewa</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea kunthiana</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea lanceolata</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea obtusa</i>	Campanulaceae	Haha	U.S.A. (HI).
C*	2	R1	<i>Cyanea tritomantha</i>	Campanulaceae	'aku 'aku	U.S.A. (HI).
C*	2	R1	<i>Cyrtandra filipes</i>	Gesneriaceae	Ha'iwale	U.S.A. (HI).
C*	2	R1	<i>Cyrtandra kaulantha</i>	Gesneriaceae	Ha'iwale	U.S.A. (HI).
C*	2	R1	<i>Cyrtandra oenobarba</i>	Gesneriaceae	Ha'iwale	U.S.A. (HI).
C*	2	R1	<i>Cyrtandra oxybapha</i>	Gesneriaceae	Ha'iwale	U.S.A. (HI).
C*	2	R1	<i>Cyrtandra sessilis</i>	Gesneriaceae	Ha'iwale	U.S.A. (HI).
C*	3	R4	<i>Dalea carthagenensis</i> var. <i>floridana</i> .	Fabaceae	Prairie-clover, Florida	U.S.A. (FL).
C*	5	R5	<i>Dichanthelium hirstii</i>	Poaceae	Panic grass, Hirsts'	U.S.A. (DE, GA, NC, NJ).
C*	5	R4	<i>Digitaria pauciflora</i>	Poaceae	Crabgrass, Florida pine- land.	U.S.A. (FL).
C*	3	R1	<i>Dubautia imbricata</i> <i>imbricata</i> .	Asteraceae	Na'ena'e	U.S.A. (HI).
C*	3	R1	<i>Dubautia plantaginea</i> <i>magnifolia</i> .	Asteraceae	Na'ena'e	U.S.A. (HI).
C*	2	R1	<i>Dubautia waialealae</i>	Asteraceae	Na'ena'e	U.S.A. (HI).
C*	3	R2	<i>Echinomastus</i> <i>erectocentrus</i> var. <i>acunensis</i> .	Cactaceae	Cactus, Acuna	U.S.A. (AZ), Mexico.
C*	8	R2	<i>Erigeron lemmonii</i>	Asteraceae	Fleabane, Lemmon	U.S.A. (AZ).
C*	2	R1	<i>Eriogonum codium</i>	Polygonaceae	Buckwheat, Umtanum Desert.	U.S.A. (WA).
C	6	R8	<i>Eriogonum corymbosum</i> var. <i>nilesii</i> .	Polygonaceae	Buckwheat, Las Vegas	U.S.A. (NV).
C	2	R8	<i>Eriogonum diatomaceum</i>	Polygonaceae	Buckwheat, Churchill Nar- rows.	U.S.A. (NV).
C*	5	R8	<i>Eriogonum kelloggii</i>	Polygonaceae	Buckwheat, Red Mountain	U.S.A. (CA).
C*	2	R1	<i>Festuca hawaiiensis</i>	Poaceae	No common name	U.S.A. (HI).
C*	11	R2	<i>Festuca ligulata</i>	Poaceae	Fescue, Guadalupe	U.S.A. (TX), Mexico.
C*	2	R1	<i>Gardenia remyi</i>	Rubiaceae	Nanu	U.S.A. (HI).
C*	8	R1	<i>Geranium hanaense</i>	Geraniaceae	Nohoanu	U.S.A. (HI).
C*	8	R1	<i>Geranium hillebrandii</i>	Geraniaceae	Nohoanu	U.S.A. (HI).
C*	5	R1	<i>Geranium kauaiense</i>	Geraniaceae	Nohoanu	U.S.A. (HI).
C*	5	R4	<i>Gonocalyx concolor</i>	Ericaceae	No common name	U.S.A. (PR).
C	5	R4	<i>Harrisia aboriginum</i>	Cactaceae	Pricklyapple, aboriginal (shellmound applecactus).	U.S.A. (FL).
C*	5	R8	<i>Hazardia orcuttii</i>	Asteraceae	Orcutt's hazardia	U.S.A. (CA), Mexico.
C*	2	R1	<i>Hedyotis fluviatilis</i>	Rubiaceae	Kampua'a	U.S.A. (HI).
C*	5	R4	<i>Helianthus verticillatus</i>	Asteraceae	Sunflower, whorled	U.S.A. (AL, GA, TN).
C*	5	R2	<i>Hibiscus dasycalyx</i>	Malvaceae	Rose-mallow, Neches River.	U.S.A. (TX).
C*	9	R4	<i>Indigofera mucronata</i> var. <i>keyensis</i> .	Fabaceae	Indigo, Florida	U.S.A. (FL).
C	2	R6	<i>Ipomopsis polyantha</i>	Polemoniaceae	Skyrocket, Pagosa	U.S.A. (CO).
C*	5	R8	<i>Ivesia webberi</i>	Rosaceae	Ivesia, Webber	U.S.A. (CA, NV).
C*	3	R1	<i>Joinvillea ascendens</i> <i>ascendens</i> .	Joinvilleaceae	'Ohe	U.S.A. (HI).
C*	2	R1	<i>Keysseria</i> (= <i>Lagenifera</i> ) <i>erici</i> .	Asteraceae	No common name	U.S.A. (HI).
C*	8	R1	<i>Keysseria</i> (= <i>Lagenifera</i> ) <i>helenae</i> .	Asteraceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Korthalsella degeneri</i>	Viscaceae	Hulumoa	U.S.A. (HI).
C*	2	R1	<i>Labordia helleri</i>	Loganiaceae	Kamakahala	U.S.A. (HI).
C*	2	R1	<i>Labordia pumila</i>	Loganiaceae	Kamakahala	U.S.A. (HI).
C*	5	R4	<i>Leavenworthia crassa</i>	Brassicaceae	Gladecress, unnamed	U.S.A. (AL).
C*	2	R2	<i>Leavenworthia texana</i>	Brassicaceae	Gladecress, Texas golden	U.S.A. (TX).
C*	5	R4	<i>Lesquerella globosa</i>	Brassicaceae	Bladderpod, Short's	U.S.A. (IN, KY, TN).
C*	2	R4	<i>Linum arenicola</i>	Linaceae	Flax, sand	U.S.A. (FL).
C*	3	R4	<i>Linum carteri</i> var. <i>carteri</i>	Linaceae	Flax, Carter's small-flow- ered.	U.S.A. (FL).
C*	8	R1	<i>Lysimachia daphnoides</i>	Primulaceae	Lehua makanoe	U.S.A. (HI).
C*	2	R1	<i>Melicope christophersenii</i>	Rutaceae	Alani	U.S.A. (HI).
C*	2	R1	<i>Melicope degeneri</i>	Rutaceae	Alani	U.S.A. (HI).



TABLE 1.—CANDIDATE NOTICE OF REVIEW (ANIMALS AND PLANTS)—Continued

[Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status		Lead region	Scientific name	Family	Common name	Historic range
Category	Priority					
C*	2	R1	<i>Melicope hiiakae</i>	Rutaceae	Alani	U.S.A. (HI).
C*	2	R1	<i>Melicope makahae</i>	Rutaceae	Alani	U.S.A. (HI).
C*	2	R1	<i>Melicope paniculata</i>	Rutaceae	Alani	U.S.A. (HI).
C*	2	R1	<i>Melicope puberula</i>	Rutaceae	Alani	U.S.A. (HI).
C*	2	R1	<i>Myrsine fosbergii</i>	Myrsinaceae	Kolea	U.S.A. (HI).
C*	2	R1	<i>Myrsine mezii</i>	Myrsinaceae	Kolea	U.S.A. (HI).
C*	2	R1	<i>Myrsine vaccinioides</i>	Myrsinaceae	Kolea	U.S.A. (HI).
C*	8	R5	<i>Narthecium americanum</i>	Liliaceae	Asphodel, bog	U.S.A. (DE, NC, NJ, NY, SC).
C*	2	R1	<i>Nothoecstrum latifolium</i>	Solanaceae	'Aiea	U.S.A. (HI).
C*	2	R1	<i>Ochrosia haleakalae</i>	Apocynaceae	Holei	U.S.A. (HI).
C*	3	R2	<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i> .	Cactaceae	Cactus, Fickeisen plains	U.S.A. (AZ).
C*	2	R6	<i>Penstemon debilis</i>	Scrophulariaceae	Beardtongue, Parachute	U.S.A. (CO).
C*	6	R6	<i>Penstemon scariosus</i> var. <i>albifluvis</i> .	Scrophulariaceae	Beardtongue, White River	U.S.A. (CO, UT).
C*	2	R1	<i>Peperomia subpetiolata</i>	Piperaceae	'Ala 'ala wai nui	U.S.A. (HI).
C	5	R8	<i>Phacelia stellaris</i>	Hydrophyllaceae	Phacelia, Brand's	U.S.A. (CA), Mexico.
C*	8	R6	<i>Phacelia submutica</i>	Hydrophyllaceae	Phacelia, DeBeque	U.S.A. (CO).
C*	2	R1	<i>Phyllostegia bracteata</i>	Lamiaceae	No common name	U.S.A. (HI).
C*	8	R1	<i>Phyllostegia floribunda</i>	Lamiaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Phyllostegia hispida</i>	Lamiaceae	No common name	U.S.A. (HI).
C*	5	R1	<i>Physaria tuplashensis</i>	Brassicaceae	Bladderpod, White Bluffs	U.S.A. (WA).
C*	2	R1	<i>Pittosporum napaliense</i>	Pittosporaceae	Ho'awa	U.S.A. (HI).
C*	5	R4	<i>Platanthera integrilabia</i>	Orchidaceae	Orchid, white fringeless	U.S.A. (AL, GA, KY, MS, NC, SC, TN, VA).
C*	3	R1	<i>Platydesma cornuta</i> var. <i>cornuta</i> .	Rutaceae	No common name	U.S.A. (HI).
C*	3	R1	<i>Platydesma cornuta</i> var. <i>decurrens</i> .	Rutaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Platydesma remyi</i>	Rutaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Platydesma rostrata</i>	Rutaceae	Pilo kea lau li'i	U.S.A. (HI).
C	2	R1	<i>Pleomele fernaldii</i>	Agavaceae	Hala pepe	U.S.A. (HI).
C*	2	R1	<i>Pleomele forbesii</i>	Agavaceae	Hala pepe	U.S.A. (HI).
C*	11	R8	<i>Potentilla basaltica</i>	Rosaceae	Cinquefoil, Soldier Meadow.	U.S.A. (NV).
C*	2	R1	<i>Pritchardia hardyi</i>	Asteraceae	Lo'ulu	U.S.A. (HI).
C*	3	R1	<i>Pseudognaphalium</i> (= <i>Gnaphalium</i> ) <i>sandwicensium</i> var. <i>molokaiense</i> .	Asteraceae	'Ena'ena	U.S.A. (HI).
C*	2	R1	<i>Psychotria grandiflora</i>	Rubiaceae	Kopiko	U.S.A. (HI).
C*	3	R1	<i>Psychotria hexandra</i> ssp. <i>oahuensis</i> var. <i>oahuensis</i> .	Rubiaceae	Kopiko	U.S.A. (HI).
C*	2	R1	<i>Psychotria hobdyi</i>	Rubiaceae	Kopiko	U.S.A. (HI).
C*	2	R1	<i>Pteralyxia macrocarpa</i>	Apocynaceae	Kaulu	U.S.A. (HI).
C*	2	R1	<i>Ranunculus hawaiiensis</i>	Ranunculaceae	Makou	U.S.A. (HI).
C*	2	R1	<i>Ranunculus mauiensis</i>	Ranunculaceae	Makou	U.S.A. (HI).
C*	8	R8	<i>Rorippa subumbellata</i>	Brassicaceae	Cress, Tahoe yellow	U.S.A. (CA, NV).
C*	2	R1	<i>Schiedea attenuata</i>	Caryophyllaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Schiedea pubescens</i>	Caryophyllaceae	Ma'oli'oli	U.S.A. (HI).
C*	2	R1	<i>Schiedea salicaria</i>	Caryophyllaceae	No common name	U.S.A. (HI).
C*	5	R8	<i>Sedum eastwoodiae</i>	Crassulaceae	Stonecrop, Red Mountain	U.S.A. (CA).
C*	2	R1	<i>Sicyos macrophyllus</i>	Cucurbitaceae	'Anunu	U.S.A. (HI).
C	12	R4	<i>Sideroxylon reclinatum</i> ssp. <i>austroroidense</i> .	Sapotaceae	Bully, Everglades	U.S.A. (FL).
C*	8	R1	<i>Solanum nelsonii</i>	Solanaceae	Popolo	U.S.A. (HI).
C	8	R4	<i>Solidago plumosa</i>	Asteraceae	Goldenrod, Yadkin River	U.S.A. (NC).
C*	2	R1	<i>Stenogyne cranwelliae</i>	Lamiaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Stenogyne kealiae</i>	Lamiaceae	No common name	U.S.A. (HI).
C*	8	R4	<i>Symphyotrichum georgianum</i> .	Asteraceae	Aster, Georgia	U.S.A. (AL, FL, GA, NC, SC).
C*	2	R1	<i>Zanthoxylum oahuense</i>	Rutaceae	A'e	U.S.A. (HI).
FERNS AND ALLIES						
C*	8	R1	<i>Christella boydiae</i> (= <i>Cyclosorus boydiae</i> var. <i>boydiae</i> + <i>Cyclosorus boydiae</i> <i>kipahuluensis</i> ).	Thelypteridaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Doryopteris takeuchii</i>	Pteridaceae	No common name	U.S.A. (HI).
C*	2	R1	<i>Huperzia</i> (= <i>Phlegmariurus</i> ) <i>stemmermanniae</i> .	Lycopodiaceae	Wawae'ole	U.S.A. (HI).
C*	3	R1	<i>Microlepia strigosa</i> var. <i>mauiensis</i> (= <i>Microlepia mauiensis</i> ).	Dennstaedtiaceae	Palapalai	U.S.A. (HI).

TABLE 2.—ANIMALS AND PLANTS FORMERLY CANDIDATES OR FORMERLY PROPOSED FOR LISTING

[Note: See end of Supplementary Information for an explanation of symbols used in this table.]

Status		Lead region	Scientific name	Family	Common name	Historical range
Code	Expl.					
FISHES						
Rp	A	R8	<i>Gila bicolor vaccaceps</i>	Cyprinidae	Chub, Cowhead tui chub	U.S.A. (CA).
Rc	N	R6	<i>Thymallus arcticus</i>	Salmonidae	Grayling, Fluvial arctic (upper Missouri River DPS).	U.S.A. (MT, WY).
INSECTS						
Rc	U	R4	<i>Pseudanopthalmus major</i>	Carabidae	Cave beetle, Beaver	U.S.A. (KY).
Rc	A, U	R4	<i>Pseudanopthalmus inexpectatus</i>	Carabidae	Cave beetle, surprising	U.S.A. (KY).
Rc	U	R6	<i>Zaitzevia thermae</i>	Elmidae	Beetle, Warm Spring Zaitzevian riffle.	U.S.A. (MT).
FLOWERING PLANTS						
Rp	A	R6	<i>Penstemon grahamii</i>	Scrophulariaceae	Beardtongue, Graham	U.S.A. (CO, UT).
Rc	A	R1	<i>Erigeron basalticus</i>	Asteraceae	Daisy, basalt	U.S.A. (WA).
FERNS AND ALLIES						
Rc	A, I	R1	<i>Botrychium lineare</i>	Ophioglossaceae	Moonwort, slender	U.S.A. (AK, CA, CO, ID, MT, OR, WA), Canada (AB, BC, NB, QC).

[FR Doc. E7-23416 Filed 12-5-07; 8:45 am]

BILLING CODE 4310-55-P