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Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Jollyville Plateau salamander (Eurycea tonkawae) as Endangered With Critical Habitat; Proposed Rule

DEPARTMENT OF THE INTERIOR

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Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Jollyville Plateau salamander (Eurycea tonkawae) as Endangered With Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Jollyville Plateau salamander (*Eurycea tonkawae*) as endangered and to designate critical habitat under the Endangered Species Act of 1973, as amended (Act). After review of all available scientific and commercial information, we find that listing the Jollyville Plateau salamander as threatened or endangered is warranted. Currently, however, listing of the Jollyville Plateau salamander is precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. Upon publication of this 12-month petition finding, we will add Jollyville Plateau salamander to our candidate species list. We will develop a proposed rule to list this species as our priorities allow. We will make any determination on critical habitat during development of the proposed listing rule.

DATES: We made the finding announced in this document on December 13, 2007.

ADDRESSES: The supporting file for this finding is available for public inspection, by appointment, during normal business hours at the Austin Ecological Services Office, U.S. Fish and Wildlife Service, 10711 Burnet Road, Suite 200, Austin, TX 78758. The finding is available via the Internet at *www.fws.gov/endangered/.* Please submit any new information, materials, comments, or questions concerning this finding to the above address or via electronic mail (e-mail) at *fw2_jps@fws.gov*.

FOR FURTHER INFORMATION CONTACT: Adam Zerrenner, Field Supervisor, Austin Ecological Services Office (see **ADDRESSES**); by telephone at 512–490–0057; or by facsimile at 512–490–0974. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Act (16 U.S.C. 1531 et seq.) requires that, for any petition to revise the Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific and commercial information indicating that listing may be warranted, we make a finding within 12 months of the date of our receipt of the petition on whether the petitioned action is: (a) Not warranted, (b) warranted, or (c) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether any species is threatened or endangered. Such 12-month findings are to be published promptly in the **Federal Register**. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, and we must make a subsequent finding within 12 months.

Previous Federal Action

On June 13, 2005, we received a petition, dated June 10, 2005, from Save Our Springs Alliance (SOSA), requesting that the Jollyville Plateau salamander (*Eurycea tonkawae*) be listed as an endangered species in accordance with section 4 of the Act.

Action on this petition was precluded by court orders and settlement agreements for other listing actions that required all of our listing funds for fiscal year 2005 and a substantial portion of our listing funds for fiscal year 2006. On September 29, 2005, we received a 60-day notice of intent to sue from SOSA for failing to make a timely 90-day finding. On December 1, 2005, we sent a letter to SOSA informing them that we would not likely make a petition finding during fiscal year 2006 due to higher priority actions.

Subsequently, in fiscal year 2006, funding became available to act on the petition. We began working on the 90-day finding at that time. On August 10, 2006, SOSA filed a complaint against the Service for failure to issue a 90-day petition finding under section 4 of the Act for the Jollyville Plateau salamander. In our December 11, 2006, motion for summary judgment, we informed the court that based on current funding and workload projections, we believed that we could complete a 90-day finding by February 6, 2007, and if we determined that the petition provided substantial scientific or commercial information, we could make a 12-month warranted or not warranted finding by December 1, 2007. On February 13, 2007, we published a 90-day petition finding (72 FR 6699) in which we concluded that the petition presented substantial information indicating that listing may be warranted. This notice constitutes the 12-month finding on the June 10, 2005, petition to list the Jollyville Plateau salamander as endangered.

Taxonomy and Species Description

The Jollyville Plateau salamander was recently described as *Eurycea tonkawae* by Chippendale, *et al.* (2000, pp. 1–48), based on morphology and mitochondrial DNA tests. The Jollyville Plateau salamander is a neotenic (does not transform into a terrestrial form) member of the family Plethodontidae. As neotenic salamanders, they retain external gills and inhabit aquatic habitats (springs, spring-runs, and wet caves) throughout their lives (City of Austin (COA) 2001, p. 3). Water for the salamanders is provided by infiltration of surface water through the soil into the aquifer which discharges from springs as groundwater (Schram 1995, p. 91). Juvenile Jollyville Plateau salamanders are less than 1.5 inches (3.8 centimeters); adults are typically 1.5 to 2 inches (3.8–5 centimeters) long (COA 2001a, p. 5). Those salamanders occurring in spring habitat have large, well-developed eyes; wide, yellowish heads; blunt, rounded snouts; dark greenish-brown bodies; and bright yellowish-orange tails (Chippendale, *et al.* 2000, pp. 33–34). Some cave forms of Jollyville Plateau salamanders exhibit cave-associated morphologies, such as eye reduction, flattening of the head, and dullness or loss of color (Chippendale, *et al.* 2000, p. 37).

Genetic analysis suggests that Jollyville Plateau salamanders occurring in caves may actually be separate species from the surface-dwelling forms, but more study is needed to confirm this, because sample sizes from the caves were small (Chippendale, *et al.* 2000, pp. 36–37). For the purposes of this finding, we are considering all of the Jollyville Plateau salamanders described in Chippendale, *et al.* (2000, pp. 32–37) as one species.

Distribution

The Jollyville Plateau salamander occurs in the Jollyville Plateau and Brushy Creek areas of the Edwards Plateau in Travis and Williamson Counties, Texas (Chippendale, *et al.* 2000, pp. 35–36; Bowles, *et al.* 2006, p. 112; Sweet 1982, p. 433). Upon classification as a species, Jollyville Plateau salamanders were known from Brushy Creek and, within the Jollyville Plateau, from Bull Creek, Cypress Creek, Long Hollow Creek, Shoal Creek, and Walnut Creek drainages (Chippendale, *et al.* 2000, p. 36). Since it was described, the Jollyville Plateau salamander has been documented within the Lake Creek watershed (COA 2006, p. 1).

Cave dwelling Jollyville Plateau salamanders are known from 1 cave in the Cypress Creek drainage and 12 caves in the Buttercup Creek cave system in the Brushy Creek drainage (Chippendale, *et al.* 2000, p. 49; Russell 1993, p. 21; Service 1999, p. 6; HNTB 2005, p. 60). While the entrances to these caves are located within particular watersheds, the subsurface waters could move in a different direction from the surface waters. For example, dyes injected into three of the Buttercup Creek caves later surfaced at one spring (proving subsurface connection of these caves) to the south in the Long Hollow Creek drainage (Hauwert and Warton 1997, pp. 11, 13), rather than to the east where Brushy Creek flows. No further subsurface flow studies have been completed in caves inhabited by Jollyville Plateau salamanders.

Habitat

The Jollyville Plateau salamander's spring-fed tributary habitat is typically characterized by a depth of less than 1 foot (0.3 meters) of cool, well oxygenated water (COA 2001a, p. 128; Bowles, *et al.* 2006, p. 118) supplied by the underlying Edwards Aquifer (Cole, *et al.* 1995, p. 33). Jollyville Plateau salamanders are typically found near springs or seep outflows, and are thought to require constant temperatures (Sweet 1982, pp. 433–434; Bowles, *et al.* 2006, p. 117). Salamander densities are higher in pools and riffles and in areas with rubble, cobble, or boulder substrates rather than on solid bedrock (COA 2001a, p. 128; Bowles, *et al.* 2006, pp. 114–116).

Surface-dwelling Jollyville Plateau salamanders also occur in subsurface habitat within the underground aquifer (COA 2001a, p. 65; Bowles, *et al.* 2006, p. 118). While no one has physically observed these salamanders in the aquifer, there are observations that support this behavior. For example, City of Austin biologists have observed Jollyville Plateau salamanders at spring sites where the springs and associated spring runs had previously ceased flowing, particularly during the 2006 drought, and the surrounding area dried (COA 2006, pp. 5–6). Additionally, City of Austin biologists have noted low counts for small juveniles followed by high counts for large (presumably older) juveniles at several monitoring sites, indicating small juveniles spent time within the subsurface habitat (COA 2001a, pp. 65–66).

Biology

Jollyville Plateau salamander breeding events have not been observed. Eggs have also not been observed in or around springs or in spring runs, indicating egg laying and early development likely occurs in the subsurface aquifer (COA 2001a, p. 4). Bowles, *et al.* (2006, p. 114) observed gravid females (those with eggs visible through the abdominal wall) between November and February and noted the number of juvenile salamanders was higher from March to August. In an effort to learn more about the reproductive biology of Jollyville Plateau salamander, the City of Austin collected salamanders from the wild to start a captive breeding program (COA 2006, pp. 17–18).

Eurycea species in Texas have been found to eat a variety of benthic macroinvertebrates (insects in their larval stage that are found at the bottom of a body of water), such as amphipods and chironomid larvae (midges) (COA 2001a, pp. 5–6). These small invertebrates are also dependant on aquatic habitats for their survival (Price, *et al.* 1999, p. 2).

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations at 50 CFR 424 set forth procedures for adding species to the Federal List of Endangered and Threatened Wildlife. In making this finding, we summarize below information regarding the status and threats to this species in relation to the five factors in section 4(a)(1) of the Act. In making our 12-month finding, we considered all scientific and commercial information in our files, including information received during the comment period that ended April 16, 2006 (72 FR 6699).

This status review found threats to the Jollyville Plateau salamander related to Factors A, C, and D. The primary threat to the species is from habitat modification (Factor A) in the form of declining water quality due to the effects of current and future urban development. Other less significant threats to the species' habitat include declining water quantity in groundwater aquifers that support spring flows, direct habitat alterations from human disturbance, and habitat modification from nonnative feral pig activity. Some threats exist from predation by fish and infections of chytrid fungus on salamander appendages (Factor C), but neither of these threats appears to result in a substantial negative response by the species overall. In addition, State regulations and local ordinances intended to protect water quality integrity are not currently adequate to prevent habitat degradation in the aquatic environments occupied by the salamander (Factor D).

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Habitat modification, in the form of degraded water quality, is the primary threat to the Jollyville Plateau salamander. The range of the salamander is largely within the urban environment of the Austin, Texas, metropolitan area (Cole 1995, p. 28; COA 2006, pp. 45–50). Urban development upstream of salamander habitat provides sources of various pollutants from construction and maintenance of residential and commercial structures and associated roads and pipelines. These sources contribute pollutants such as sediments, fertilizers, pesticides, and petroleum products into salamander habitat. During rainstorms, water runs off these urban areas, mobilizing and transporting pollutants into the aquatic habitat of the Jollyville Plateau salamander decreasing water quality. Degraded water quality has been linked to deformities in salamanders in some locations (COA 2006, p. 26) and declines in abundance and lower densities of salamanders in some locations with developed watersheds, compared to areas that are undeveloped.

Water quality degradation in salamander habitat has been cited as a substantial concern in several studies (Chippendale, *et al.* 2000, p. 36; Bowles, *et al.* 2006, pp. 118–119; COA 2006, pp. 45–50). The majority of the discussion under factor A will focus on evaluating the nature and extent of decreased water quality and its correlation to the level of urban development, the primary source of this threat. Additionally, we will address the possible threat due to declining water quantity (loss of spring flows) in Jollyville Plateau salamander habitat. Although lack of water quantity is a concern, there is not sufficient information currently available to determine how significant the threat to the salamander from spring flow losses may be, other than this threat likely exacerbates threats from degraded water quality. Other minor threats to habitat include direct alteration from human disturbance and activities by non-native feral hogs *(Sus scrofa).*

City of Austin Monitoring Data

We relied heavily on data provided by the City of Austin in this status review of the Jollyville Plateau salamander. The City of Austin has been monitoring this species' abundance at many locations since 1996. At the same time, the City of Austin has been measuring various water quality and flow parameters within the salamander's habitats. In June 2001, they published a comprehensive report of the initial results of their monitoring efforts between 1996 and 1999 (COA 2001a). The City of Austin continued to collect information on the Jollyville Plateau salamander and its habitat and produced other interim reports. Following publication of our 90-day finding for the salamander, the City of Austin completed a report that summarized monitoring efforts from 1996 through 2006 (COA 2006).

We particularly focused on the results of the data collected by the City of Austin on salamander abundance and water quality at long-term monitoring sites. We found this dataset robust in evaluating the abundance of salamanders based on visual counts at nine locations representative of the salamander's range. Overall, the dataset contained 357 independent counts of salamanders between December 1996 and January 2007 (10 years). The results show that 4 of the 9 sites had statistically significant declines in salamander abundance over the last 10 years (COA 2006, p. 4). The average number of salamanders counted at these 4 sites declined from 27 salamanders counted during surveys from 1996 to 1999 to an average of 4 salamanders counted during surveys from 2004 to 2007. The City reports that these declines are related to degraded water quality from urban development in the contributing watersheds of the monitoring sites (COA 2006, p. 48). Quantifying the nature and extent of the impacts from urban development was a key part of this status review because it characterizes the extent and magnitude of the primary threats to Jollyville Plateau salamander.

Source of Water

Jollyville Plateau salamanders are dependent upon a constant supply of clean water from the northern segment of the Edwards Aquifer (COA 2001a, p. 3). This segment of the Edwards Aquifer extends from the Colorado River in Travis County north to the Lampasas River in southern Bell County (TWD 2003, p. 3). Water quality at springs that provide habitat for Jollyville Plateau salamanders is influenced by both groundwater and surface water interdependently. Surface water can directly supply water to salamander habitats during storm water runoff and also serves as the source for recharge to groundwater aquifers that later discharge to the surface through springs. The northern segment of the Edwards Aquifer where these salamanders occur is not well-studied compared to other parts of the Edwards Aquifer (TWDB (Texas Water Development Board) 2003, p. 1) and, therefore, the recharge areas and flow paths have not been thoroughly described.

Groundwater recharge in the Jollyville Plateau area is described as occurring primarily by filtration of water through the surface soils (rather than through larger, more direct faults and fissures as in other segments of the Edwards Aquifer) (Schram 1995, p. 91). This recharge mechanism was predicted to result in urbanization impacts to water quality over long-term periods (as opposed to short-term responses as in other segments of the Edwards Aquifer), depending on the extent and type of development patterns that occur in the area (Schram 1995, p. 91). Our analysis of threats to habitat focuses on the status of urban development and, therefore, the potential sources for pollutants, in the surface watersheds that drain into stream segments where salamanders occur. The base flow issuing from springs in these stream segments (that is, the portion of stream flow not directly resulting from storm water runoff) is supported by aquifer-dependent spring flows. Groundwater in this area can move in directions independent of surface water flows (Hauwert and Warton 1997, pp. 11, 13). Although specific aquifer sources and recharge areas for the groundwater are not well documented, information available has shown that both groundwater (based on analysis of water from immediate spring discharge) (COA 2001a, pp. 54–56) and surface water (based on observations of increased sedimentation) (COA 2006, pp. 37, 45–47) are affected by urban development.

Urban Development as a Source of Pollutants

The range of the Jollyville Plateau salamander is limited to northwest Travis County and southwest Williamson County, Texas, an area of rapid human population growth. For example, the population of the City of Austin grew from 251,808 people in 1970 to 656,562 people in 2000. By 2007, the population had grown to 735,088 people (COA 2007a, p. 1). This represents a 192 percent increase over the 37-year period. Within the range of the areas that contribute storm water runoff to salamander habitats, urban development has included residential and commercial structures, golf courses, and the associated roads and utility pipelines (Cole 1995, p. 28; COA 2001a, pp.10–12).

As development increases (see Extent of Development in the Foreseeable Future below) more opportunities exist for the chronic, long-term introduction of non-point source pollutants into the environments. For example, the ongoing application of pesticides and fertilizers to lawns is a constant source of pollutants (Menzer and Nelson 1980, pp. 663, 637–652). Petroleum products are also inherent components of urban environments from automobile operation and maintenance (Van Metre, *et al.* 2000, p. 4069). During rain events, these chemical pollutants, which accumulate in soils and on impervious surfaces (such as roofs, parking lots, and roads) during dry periods, are transported by water downstream into areas where salamanders occur. This process can occur either through direct surface water runoff or through infiltration into groundwater that later discharges through springs (Schram 1995, p. 91). Elevated mobilization of sediment (soils of sand, silt, or clay) also occurs as a result of increased velocity of water running off impervious surfaces in the urban environment (Schram 1995, p. 88; Arnold and Gibbons 1996, pp. 244–245). Increased rates of storm water runoff causes erosion by scouring in headwater areas and sediment deposition in downstream channels (Booth 1991, pp. 93, 102–105; Schram 1995, p. 88).

Acute short-term increases in pollutants, particularly sediments, can occur during construction of new development. When vegetation is removed and rain falls on unprotected soils, large discharges of suspended sediments result and can have immediate effects of increased sedimentation in downstream drainage channels (Schueler 1987, p. 1.4; COA 2003, p. 24).

A number of point-sources of pollutants exist in the range of the salamander and result in accidental discharges from utility structures such as storage tanks or pipelines (particularly gas and sewer lines). Leaking underground storage tanks have been documented as a problem within the salamander's range (COA 2001a, p. 16). Sewage spills from pipelines have been documented in watersheds supporting the salamander (COA 2001a, pp. 16, 21, 74). As an example, during this status review, a sewage line overflowed an estimated 50,000 gallons

(190,000 liters) of raw sewage into the Stillhouse Hollow drainage area of Bull Creek (COA 2007b, pp. 1–3). The location of the spill was a short distance downstream of currently known salamander locations, and no salamanders were thought to be affected.

Water Quality Degradation and Jollyville Plateau Salamander Responses

As early as 1995, water quality deterioration, including increases in nutrient levels as a product of urban development, was cited for the Bull Creek watershed, where half of the drainage areas with Jollyville Plateau salamanders occur (Schram 1995, p. 87). The pollutants considered most problematic in Jollyville Plateau salamander habitats (discussed in more detail below) include sediments, ions (such as chlorides and sulfates) and dissolved solids (as measured by conductivity), nutrients (particularly nitrates and ammonia), and petroleum compounds (primarily polycylic aromatic hydrocarbons). Other pollutants such as heavy metals are also possible sources causing water quality degradation from urban runoff, but have not been documented as elevated in the salamander's habitat.

Amphibians, especially their eggs and larvae (which are usually restricted to a small area within an aquatic environment), are sensitive to many different aquatic pollutants (Harfenist, *et al.* 1989, pp. 4–57). Contaminants found in aquatic pollutants may interfere with a salamander's ability to develop, grow, or reproduce (Burton and Ingersoll 1994, pp. 120, 125). In addition, macroinvertebrates, such as small freshwater crustaceans, that the Jollyville Plateau salamander feeds on are especially sensitive to water pollution (Phipps, *et al.* 1995, p. 282; Miller, *et al.* 2007, p. 74). Studies in the Bull Creek watershed found a loss of some sensitive macroinvertebrate species, potentially due to nutrient enrichment and sediment accumulation (COA 2001b, p. 15).

Excess sedimentation is a form of water pollution found in Jollyville Plateau salamander habitats (COA 2006, p. 46). Sediments are mixtures of silt, sand, clay, and organic debris that are washed into streams or aquifers during storm events either as deposited sediment layers or suspended sediments (Ford and Williams 1989, p. 537; Mahler and Lynch 1999, p. 13). Sediment derived from soil erosion has been cited by Menzer and Nelson (1980, p. 632) as the greatest single source of pollution of surface waters by volume. Due to high organic carbon content, sediments eroded from contaminated soil surfaces can concentrate and transport contaminants (Mahler and Lynch 1999, p. 1). Sediment can affect aquatic organisms in a number of ways. Sediments suspended in water can clog gill structures, which impairs breathing of aquatic organisms, and can reduce their ability to avoid predators or locate food sources due to decreased visibility (Schueler 1987, p. 1.5).

Excessive deposition of sediment in streams will physically reduce the amount of available habitat and protective cover for aquatic organisms, by filling in the interstitial spaces of the larger substrates (such as gravel and rocks) surrounding the spring outlets that offer protective cover and an abundant supply of well-oxygenated water for respiration. As an example, a California study found that densities of two salamander species were significantly lower in streams that experienced a large infusion of sediment from road construction after a storm event. The vulnerability of the salamander species in this California study was attributed to their reliance on interstitial spaces in the streambed habitats (Welsh and Ollivier 1998, p. 1,128). The loss of interstitial spaces in stream substrates can be measured as the percent embeddedness. Embeddedness reflects the degree to which rocks (which provide cover for salamanders) are surrounded or covered by fine sediment. Increased sedimentation from urban development is a major water quality threat to the Jollyville Plateau salamander because it fills interstitial spaces and eliminates resting places and also reduces habitat of its prey base (small aquatic invertebrates) (COA 2006, p. 34).

Excess sedimentation may have contributed to declines in Jollyville Plateau salamander populations in the past. The City of Austin monitoring found that, as sediment deposition increased at several monitoring sites, salamander abundances significantly decreased (COA 2001a, pp. 101, 126). As an example, the City of Austin found that sediment deposition and embeddedness estimates have increased significantly along one of the long-term monitoring sites as a result of recent construction activities upstream (COA 2006, p. 34). This site has had significant declines in salamander abundance, based on 10 years of monitoring, and the City of Austin attributes this decline to the increases in sedimentation (COA 2006, pp. 34–35). The location of this monitoring site is within a large preserved tract. However, the headwaters of this drainage are outside the preserve and the development in this area increased sedimentation downstream and impacted salamander habitats.

One practical measure of water quality in freshwater springs, such as those where the Jollyville Plateau salamanders occur, is conductivity. Conductivity is a measure of the electrical conductivity in water and is used to approximate salinity in terrestrial and aquatic environments. Water salinity reflects the concentration of dissolved inorganic solids (that is, salts such as chlorides or sulfates) in water that can affect the internal water balance in aquatic organisms. As ion concentrations such as chlorides, sodium, sulfates, and nitrates rise, conductivity will increase. These compounds are the chemical products, or byproducts, of many common pollutants that originate from urban environments as fertilizers and pesticides (Menzer and Nelson 1980, p. 633).

Conductivity measurements by the City of Austin between 1997 and 2006 found that conductivity measurements averaged between 550 and 650 μS/cm (microsiemens per centimeter) at rural springs with low or no development and averaged between 900 and 1000 μS/cm at monitoring sites in watersheds with urban development (COA 2006, p. 37). These results indicate that developed watersheds contribute to higher levels of water pollution in habitats of the Jollyville Plateau salamander.

High conductivity has been associated with declining salamander abundance. For example, 3 of the 4 sites with statistically significantly declining salamander abundance over the last 10 years are cited as having high conductivity readings (COA 2006, p. 37). Similar correlations were shown in studies comparing developed and undeveloped sites from 1996 to 1998 (Bowles, *et al.* 2006, pp. 117–118). This analysis found significantly lower numbers of salamanders and significantly higher measures of specific conductance at developed sites as compared to undeveloped sites (Bowles, *et al.* 2006, pp. 117–118). However, developed sites also had a higher proportion of bedrock substrate, which is not used by salamanders and may have also contributed to the results of lower salamanders in this study. Poor water quality, as measured by high specific conductance and elevated levels of ion concentrations, is cited as one of the likely factors leading to the statistically significant declines in salamander abundance at City of Austin long-term monitoring sites (COA 2006, p. 46).

Excessive nutrient input to Jollyville Plateau salamander habitat is another form of pollution. Sources of nutrients (which are elements or compounds, such as phosphorus or nitrogen, that fuel abnormally high organic growth in aquatic ecosystems) in water include human and animal wastes, municipal sewage treatment systems, decaying plant material, and fertilizers used on croplands (Garner and Mahler, p. 29). Excessive nutrient levels typically cause algal blooms that ultimately die back and cause progressive decreases in dissolved oxygen concentration in the water from decomposition (Schueler 1987, pp. 1.5–1.6). Increased nitrate levels, which are often associated with fertilizer use, have been known to affect amphibians by altering feeding activity and by causing disequilibrium and physical abnormalities (Marco, *et al.* 1999, p. 2837). Elevated nutrient levels, particularly nitrogen in the forms of nitrates and ammonia, have been documented by the City of Austin in both surface water (COA 2006, p. 37) and groundwater (COA 2001a, pp. 54–56) at several salamander locations with high levels of development.

Water quality monitoring in streams occupied by the Jollyville Plateau salamander has shown that, overall, streams with developed watersheds have statistically significant higher levels of pollutants compared with rural watersheds (COA 2001a, p. 59). The City of Austin defines rural sites as streams draining watersheds with less than 10 percent impervious cover (impervious cover defined below in the Current Impervious Cover Analysis section); developed sites had impervious cover greater than 10 percent (COA 2001a, p. 12). Similar analysis of samples from seven springs also found water quality measures of pollutants in groundwater significantly higher in developed sites compared to rural sites (COA 2001a, pp. 54–56). Developed tributary streams also experienced significantly lower mean adult and juvenile Jollyville Plateau salamander abundances per square meter of wetted surface when compared to undeveloped tributary streams (COA 2001a, p. 99).

An assessment of water quality trends also found that measures of sodium had significant increases between 1997 and 2006 at one site and significant increases in conductivity measurements at three other sites (COA 2006, p. 29). The drainage areas to each of these sites have high levels of urban development (COA 2001a, pp. 29–33; COA 2006, pp. 3, 46).

Poor water quality, particularly elevated nitrates, may also be a cause of morphological deformities in individual Jollyville Plateau salamanders. The City of Austin has documented very high levels of nitrates (averaging over 6 mg/L with some samples exceeding 10 mg/L) and high conductivity at two monitoring sites in the Stillhouse Hollow drainage area (COA 2006, pp. 26, 37). For comparison, nitrate levels in undeveloped Edwards Aquifer springs (watersheds without high levels of urbanization) are typically close to 1 mg/L (milligram per liter) (COA 2006, p. 26). Salamanders observed at the Stillhouse Hollow monitoring sites have shown high incidences of deformities, such as curved spines, missing eyes, missing limbs or digits, and eye injuries (COA 2006, p. 26). The Stillhouse Hollow location was also cited as having the highest observation of dead salamanders (COA 2001a, p. 88). Although no statistical correlations were found between the number of deformities and nitrate concentrations (COA 2006, p. 26), environmental toxins are the suspected cause of salamander deformities (COA 2006, p. 25). Nitrate toxicity studies have indicated that salamanders and other amphibians are sensitive to these pollutants (Marco, *et al.* 1999, p. 2837).

In an effort to reduce the high nitrate levels within the Stillhouse Hollow drainage, City of Austin staff have been working with community residents upstream of Stillhouse Hollow and Barrow Springs in efforts to improve water quality at the spring (COA 2007c, p. 38). The goal of the conservation program, which started in 2001, is to educate more than 250 residents on environmentally appropriate fertilizer use. While the program has resulted in changes to fertilizer use in the targeted community, there have been no changes in water quality detected to date as a result of these efforts (COA 2007c, p. 40).

Polycyclic aromatic hydrocarbons (PAHs) are another form of aquatic pollution that may be affecting Jollyville Plateau salamanders, their habitat, or their prey. PAHs can originate from petroleum products, such as oil or grease, or from atmospheric deposition from the byproducts of combustion (for example, vehicular combustion). These pollutants are widespread and can contaminate water supplies through sewage effluents, urban and highway runoff, and chronic leakage or acute spills of petroleum and petroleum products (Van Metre, *et al.* 2000, p. 4067, Albers 2003, p. 345). Petroleum and petroleum byproducts can adversely affect living organisms by causing direct toxic action, altering water chemistry, reducing light, and decreasing food availability (Albers 2003, p. 349). PAH exposure can cause impaired reproduction, reduced growth and development, and tumors or cancer in species of amphibians, reptiles, and other organisms (Albers 2003, p. 354). PAHs are also known to cause death, reduced survival, altered physiological function, inhibited reproduction, and changes in species populations and community composition of freshwater invertebrates (Albers 2003, p. 352).

Limited sampling by the City of Austin has detected PAHs at concentrations of concern at three sites in the range of the Jollyville Plateau salamander. Most notable, were the elevated levels of nine different PAH compounds at the Spicewood Springs site in the Shoal Creek drainage area (COA 2005, pp. 16–17). This is also one of the sites where salamanders have shown a significant decline in abundance during the City of Austin long-term monitoring studies (COA 2006, p. 47).

In summary, the best available information indicates that habitat destruction, in the form of water quality degradation, is occurring in the majority of the range of the Jollyville Plateau salamander, as evidenced by elevated levels of sedimentation, ions, nutrients, and PAHs documented in salamander habitats. The primary threat from water quality stressors is, therefore, at a significant level of exposure and is imminent because detrimental effects are already being manifested. Probable negative responses by Jollyville Plateau salamanders to habitat degradation from water quality declines include mortalities and deformities of individual salamanders at several sites and significant declines in abundance at four monitoring sites over the last 10 years. In addition, sedimentation results in physical loss of available habitat and changes macroinvertebrate communities, which are the prey (food sources) for the salamander. These habitat modifications are most likely the result of urban development in the drainage areas where salamanders occur. Overall, the information available provides compelling evidence that urban development has led to decreases in water quality caused by higher levels of aquatic pollutants and increased sedimentation in habitats of Jollyville Plateau salamanders. Such habitat destruction or modification (in the form of decreased water quality) has shown to significantly lower salamander abundance.

Extent of Existing and Future Development

We used two quantitative measures to assess the extent of urban development within areas draining to stream segments where Jollyville Plateau salamanders are known to occur. This analysis provided a tool for assessing the scope (geographic extent), immediacy (potential future effects), and the intensity (strength of stressor) of the habitat stressors that originate from urban development (the source of water quality threats). For this status review, we assumed that, as the amount of urban development increases, as quantified by these two measurements, the extent (that is the scope, immediacy, and intensity) of the source of water quality threats also increases.

The first measure is the estimated percent of impervious cover and the second is the overall percent of land area that is currently developed, undeveloped, or open space (these terms are defined below). Impervious cover is any surface material, such as roads, rooftops, sidewalks, patios, paved surfaces, or compacted soil, that prevents water from filtering into the soil (Arnold and Gibbons 1996, p. 244). Developed areas are land tracts that have structures already built on the property including, for example, tracts with land use designations of residential, commercial, industrial, civic (public), utilities, and roads. Undeveloped tracts were those that have not been dedicated as open space, and have not yet had any construction on the land. Open space includes lands set aside for either low-use recreation (some recreational parks are included) or as wildlife preserves.

To calculate impervious cover and land use, the City of Austin delineated the surface drainage area flowing into 20 distinct stream segments with all currently known salamander localities. Then, for each of these drainage areas, they calculated the percent of impervious cover using the area of the building and transportation footprints. For the land use calculations, they determined which parcels fell into each of 15 categories (Single-Family Residential, Mobile Home, Large-Lot Single-Family Residential, Multi-Family Residential, Commercial, Office, Industrial, Civic, Open Space, Golf Course, Transportation, Streets and Roads, Utilities, Undeveloped, and Water) based upon land usages. We summarized these data by calculating the total area of the parcels designated as ''undeveloped'' and ''open space'' and adding all the other categories together, with the exception of ''water'', to create our ''developed'' category. ''Water'' was only found in one polygon in the Walnut Creek watershed and was not added to any land use category.

Current Impervious Cover Analysis. We evaluated the current (2006 and 2007) levels of impervious cover in the areas that drain to salamander locations, which include undeveloped tracts and open spaces in the calculation. Once natural vegetation in a watershed is replaced with impervious cover, rainfall is converted to surface runoff instead of filtering through the ground (Schueler 1991, p. 114). Citing a number of other studies, Bowles, *et al.* (2006, p. 111) state that impervious cover in watersheds elevates the frequency and intensity of storm flows (water draining watersheds immediately following rain events) and reduces baseflow (flows from spring flows not directly influenced by rain events) in receiving streams, increases erosion and down cutting (lowering the elevation of stream channels by moving substrates downstream), and contributes nutrient and toxic pollutant loads. Also, Schueler (1994, p. 104) found that sites receiving runoff from high impervious cover drainage areas had sensitive aquatic macroinvertebrate species replaced by species more tolerant of pollution and hydrologic stress (high rate of changes in discharges over short periods of time).

Various levels of impervious cover within watersheds have been cited as having detrimental effects to water quality within streams. The threshold of measurable degradation of stream habitat and loss of biotic integrity consistently occurs with 6 to 15 percent impervious cover in contributing watersheds (Bowles, *et al.* 2006, p. 111; Miller, *et al.* 2007, p. 74). A review of relevant literature by Schueler (1994, p. 100–102) indicates that stream degradation occurs at impervious cover of 10 to 20 percent, a sharp drop in habitat quality is found at 10 to 15 percent impervious cover, and watersheds above 15 percent are consistently classified as poor, relative to biological condition. Schueler (1994, p. 102) also concluded that even when water quality protection practices are widely applied, 35 to 60 percent impervious cover exceeds a threshold beyond which we cannot maintain predevelopment water quality.

The 20 drainage areas within the range of the Jollyville Plateau salamander have impervious cover estimates ranging from 0 percent to 45 percent. For the purposes of our analysis, we categorized each of the 20 drainage areas (based on overall drainage areas, which incorporate undeveloped tracts and open spaces) as either low (less than 6 percent impervious cover), moderate (between 6 and 15 percent impervious cover), high (between 16 and 34 percent impervious cover), or very high (35 percent impervious cover or greater) to assess the intensity of development. Five of the areas had overall low levels of impervious cover (less than six percent). Eight areas had moderate levels of impervious cover (6 to 15 percent). Five areas had high levels of impervious cover (16 to 34 percent). Two drainage areas had very high levels of impervious cover (35 percent or greater). We expect the levels of impervious cover to increase as undeveloped areas are developed in the future (discussed in more detail below in the Extent of Development in the Foreseeable Future section). In summary, based on the best available information we found that 15 of the 20 drainage areas evaluated have levels of impervious cover (greater than 5 percent) that may be detrimental to salamander habitats. Therefore, the Jollyville Plateau salamander has a significant level of exposure to threats from water quality degradation originating in urban development because a majority of populations are potentially affected.

Current Land Use Analysis. We also evaluated the extent of the potential pollution sources from urban areas affecting Jollyville Plateau salamander habitat by quantifying the land use designation in all upstream areas that drain to stream segments where salamanders have been documented to occur. Overall, we found that the 20 drainage areas upstream of salamander locations encompass 15,485 ac (6,267 ha), ranging in size from 44 to 2,063 ac (18 to 835 ha). Of the overall total, 8,464 ac (3,425 ha) (55 percent) are already developed, 2,432 ac (984 ha) (16 percent) are currently undeveloped, and 4,586 ac (1,856 ha) are dedicated as open space (30 percent).

A substantial portion of the land area categorized as open space is protected as part of the Balcones Canyonlands Preserve (BCP). The BCP is managed as mitigation lands by the City of Austin, Travis County, or others under the authority of an Endangered Species Act Section 10(a)(1)(B) permit and Habitat Conservation Plan for the protection of endangered birds and karst invertebrates. Of the 4,586 acres (ac) (1,856 hectares (ha)) in the drainage areas designated as open space, an estimated 3,999 ac (1,618 ha) (87 percent) is within areas managed under the BCP. Although the permit that created the BCP did not include the Jollyville Plateau salamander, the BCP land management strategies provide strong protections for salamander habitats on lands within the preserve. Water quality in salamander sites located within the BCP, however, is influenced by land use practices upstream and outside the BCP preserves. For example, important headwater areas in Tributaries 5 and 6 of Bull Creek (where significant declines in salamander abundance have been found) have affected habitats downstream (COA 2006, p. 45).

One of the drainage areas that have been severely impacted by older urban development (in place more than 20 years) is the Walnut Creek drainage. In this drainage area, 88 percent of the watershed is developed and 7 percent is open space. Overall, it has a very high level of impervious cover (36 percent). Only one small spring pool has been found in the past to have salamanders within this drainage area and the location is within a small recreational park. Despite several recent survey efforts, salamanders have not been observed there since 2005, and the species may be extirpated from this drainage area (COA 2006, p. 47). This site is likely an example of the extirpation of a Jollyville Plateau salamander population as a result of the long-term impacts of a highly urbanized watershed.

Development in Drainage Areas at Monitoring Sites. We also did these analyses specifically for the nine long-term monitoring sites. For some sites, this required evaluating a subset of the drainage area of the stream segment so as to include only areas that are upstream of the monitoring site. We found that the drainage areas of the long-term monitoring sites with declining salamander abundance had high rates of impervious cover. Of the four long-term monitoring sites where the City of Austin documented declines in salamander abundance (discussed in more detail above in the City of Austin Monitoring Data section), one site was in a watershed with very high levels of impervious cover, two sites were in watersheds with high levels of impervious cover, and one site was in a watershed with moderate levels of impervious cover. Of these four sites, the drainage areas were 97 percent, 83 percent, 80 percent, and 46 percent developed. Three of these sites each had 12 percent or less of their drainage areas in open space. These data support the general conclusion that sites with declining salamander abundances have highly developed watersheds.

One exception is the monitoring site at Tributary 5 of the Bull Creek Watershed, which has declining abundance, but only moderate levels of impervious cover and only 46 percent of the drainage area developed. Tributary 5 is within the BCP (described above in the Current Land Use Analysis section). However, this site has substantial development (461 ac, 187 ha) within the headwaters of the drainage area to this monitoring site, and excessive sedimentation has been observed here (discussed in more detail above in the City of Austin Monitoring Data section). Since 1997, this site also has seen increases in recent development as the reported estimated impervious cover has increased from between 5 and 11 percent (COA 2001a, p. 33) to a current estimate of 13 percent.

One of the nine long-term monitoring sites (Wheless site in Long Hollow drainage area) had increasing salamander abundance over the 10 years of study. The drainage area for this site has no development and 97 percent of the area is within protected lands of the BCP, including the headwaters. These results provide correlated evidence that poor water quality resulting from the high levels of urban development result in a decline in abundance of the Jollyville Plateau salamander at specific locations. Therefore, as the intensity of the source of threats to habitat (how water quality resulting from urban development) increases, a negative response by the salamander at the population is apparent.

We also compared the mean number of salamanders counted during recent monitoring surveys (between 2004 and 2006) at the long-term monitoring sites (unpublished data provided by the City of Austin) with the current level of development within the drainage areas (percent developed). Although the sample efforts among sites were not standardized, the comparison showed a trend that, as the percent of development increased in drainage areas, the mean number of Jollyville Plateau salamanders counted decreased. This correlation indicates that as development levels increase, the actual abundance of salamanders decreases. Urban development results in low water quality and increased sedimentation, which negatively impacts salamander abundance. This again supports the conclusion that the intensity of urban development is inversely related to the population response of the Jollyville Plateau salamander. A similar correlation was documented for a species of *Eurycea* salamander in North Carolina. As impervious cover increased in drainage areas, salamander abundances in streams significantly decreased (Miller, *et al.* 2007, p. 79).

Treatment of Cave Locations and Brushy Creek. For the impervious cover and land use analysis described above, we did not include the caves occupied by Jollyville Plateau salamanders from the Buttercup Creek and Cluck Creek drainage areas in the City of Cedar Park as part of the 20 drainage areas. Instead, we analyzed these drainage areas separately because all of the salamander locations in the Buttercup Creek and Cluck Creek drainage areas are within caves (and are the cave form of the species, as described above in the Background section). We do not have specific information on the extent to which surface drainage areas contribute waters to these salamander cave locations; subsurface water within the caves is likely originating from other surface drainage basins. The Buttercup Creek drainage area (where caves occur that contain salamanders) encompasses 689 ac (279 ha) and has 10 percent impervious cover and is 37 percent developed, 18 percent undeveloped, and 45 percent open space. The Cluck Creek drainage area (also where caves occur that contain salamanders) encompasses 248 ac (100 ha) and has 16 percent impervious cover and is 53 percent developed, 27 percent undeveloped, and 20 percent open space. The urban development in the drainage areas around these cave locations is at moderate to high levels and, depending on hydrogeology of subsurface flows, could be affecting water quality in the aquatic habitats in the caves.

We also separately evaluated one Jollyville Plateau salamander location along Brushy Creek located approximately 1.5 miles (2.4 kilometers) east of Interstate Highway 35. This location is approximately 5 miles (8 kilometers) northeast of the nearest other known salamander location. We are not aware of any surveys for salamanders for most of the Brushy Creek drainage (which encompasses over 38,000 ac (15,000 ha)) and additional locations could be discovered with future surveys (Hillis 2007, p. 1). Salamanders from the one site along Brushy Creek mainstem were included in the taxonomic study describing the species. Genetic studies confirmed that salamanders from this location were Jollyville Plateau salamanders (Chippendale, *et al.* 2000, p. 49). This known salamander habitat is isolated at one spring site on private property near an existing office complex (Chippendale, *et al.* 2000, p. 36). The location appears to be about 200 feet (61 meters) from the Brushy Creek channel at a spring outflow along a steep bank (Hillis 2007, p.1). We do not know if the salamander occurs in other parts of Brushy Creek itself, and, therefore, we do not know if the species would be affected by upstream development in the Brushy Creek watershed.

We treated the Brushy Creek drainage area separately because of the uncertainties of the status of the salamander in this drainage area, and because the size of the drainage is more than twice that of all the other areas combined and would inaccurately skew the results. The Brushy Creek drainage area had an estimated impervious cover of 15 percent. Current land use analysis showed the Brushy Creek drainage area has 46 percent developed, 48 percent undeveloped, and 6 percent open space. This drainage area is currently moderately impacted by development and, with such a small area of open space and large undeveloped area, it is likely to be more heavily impacted by urban development in the foreseeable future.

Conclusion on Existing and Future Development. Based on our assessments of impervious cover and current land use, the level of development in a drainage area (the primary source of water quality degradation and sedimentation loading) can be indicative of the abundance and trend of Jollyville Plateau salamander populations within the receiving streams downstream. The scope of the threat to water quality from urbanization (based on the geographic extent) is considered moderate because it occurs in multiple watersheds. The strength and the exposure of the threat source are considered moderate to high because a majority of the drainage areas are already impacted by urban development. We also used this information and relationship of land use data to predict the future extent of the threats to salamander habitat from urban development.

Extent of Development in the Foreseeable Future

The amount of developed land within the areas draining to salamander habitat is expected to increase in the foreseeable future, which as we explain below, we consider to be 20 years. We expect the majority of currently undeveloped areas that are not preserved as open space (total of 2,432 ac (984 ha)) to be developed as residential or commercial structures within the next 20 years. This expectation is based on the rapid human population projections for the Austin metropolitan area. For example, the 2007 population estimates for the City of Austin and the Austin MSA (metropolitan statistical area, which includes Bastrop, Caldwell, Hays, Travis, and Williamson Counties) are 724,111 and 1,501,522, respectively. By 2025 (the year nearest 20 years out from present for which population data are available), the population projections for the same two areas are 1,041,401 and 2,603,682, respectively (COA 2007a, p. 1). Between 2007 and 2025, these forecasts represent a 44 percent increase in the City of Austin and a 73 percent increase in the human population in the Austin MSA. The area in northwest Austin where salamander habitat occurs has limited lands on which to build additional structures to accommodate expected growth. Therefore, based on high expected growth and limited areas to build, we assume for the purposes of this status review that the remaining undeveloped lands in drainage areas of salamander habitat that are not located within open space preserves are likely to be developed within the next 20 years.

Using this assumption, we combined the developed and undeveloped categories of land use and calculated the total amount of development (current and future) in each area draining into the 20 stream segments with salamanders. To characterize the scope of development within each area, we grouped the drainages into four levels of development (both current and future): 0 to 25 percent, 26 to 50 percent, 51 to 75 percent, and greater than 76 percent developed. This provided us with an estimate of the maximum level of future development that can be expected. We found that 11 of the 20 drainage areas are likely to have greater than 76 percent of their land area developed. There are likely to be three drainage areas with 51 to 75 percent developed, four drainage areas with 26 to 50 percent developed, and two drainage areas with 0 to 25 percent developed. Because the majority of drainage areas are likely to be over 75 percent developed, these results support the conclusion that threats to Jollyville Plateau salamander habitats from urbanization are likely to increase in the foreseeable future.

Conclusion on Habitat Threats From Water Quality Degradation

Based on these results, we conclude that the level of impervious cover and overall land use are reasonable indicators of the intensity and exposure of water quality threats to salamander habitat. The intensity (strength of stressor) of the threat and level of exposure are considered high because a majority of the drainage areas with salamanders currently have levels of urban development (based on impervious cover rates and proportion of developed lands) that have been shown to cause negative responses by salamanders.

Water Quantity and Spring Flow Declines

The northern segment of the Edwards Aquifer is the primary supply of water for Jollyville Plateau salamander habitat (Cole 1995, p. 33). In general, the aquifer has been described as localized, small, and highly susceptible to pollution, drying, or draining (Chippendale, *et al.* 2000, p. 36). The portion of the Edwards Aquifer underlying the Jollyville Plateau is relatively shallow, with a high elevation, thus being likely to not sustain spring flows during periods of drought (Cole 1995, pp. 26–27). Increased urbanization in the watershed has been cited as one factor, in combination with drought, causing declines in spring flows (COA 2006, pp. 46–47). This could occur because of the inability of the watershed to allow slow filtration of water through soils following rain events. Instead rainfall runs off impervious surfaces and into stream channels at higher rates, increasing downstream flows and decreasing groundwater recharge (Miller, *et al*. 2007, p. 74).

We found no specific evidence that aquifer declines or spring flow losses have occurred as a result of urbanization or the direct use of aquifer water by pumping (TWDB 2003, p. 32). Predictions of future groundwater use in this area suggest a large drop in pumping as municipalities convert from groundwater to surface water supplies (TWDB 2003, p. 65). However, field studies have shown that a number of springs that support Jollyville Plateau salamanders have already gone dry periodically and that spring waters resurface following rain events (COA 2006, p. 46–47).

Although water quantity decreases and spring flow declines are cited as a threat to the Jollyville Plateau salamander (Bowles, *et al.* 2006, p. 111), we did not find evidence that salamander habitats and populations are being substantially affected by lack of sufficient water quantity. Jollyville Plateau salamanders apparently spend some part of their life history in underground aquatic habitats and have the ability to retreat underground when surface flows decline. For example, one of the City of Austin monitoring sites where the salamanders are most abundant undergoes periods where there is no surface water for habitat by the salamander (COA 2006, p. 47). Drying spring habitats can result in stranding salamanders, resulting in death of individuals (COA 2006, p. 16).

In summary, the intensity and exposure of water quality threats posed by potential declining aquifer levels and loss of spring flow to the Jollyville Plateau salamander appear to be relatively low. This is because the aquifer is not currently used to a large extent as a water source for human use, and it is unlikely that it will be in the future. Also, we do not have substantial evidence that declining water quality is resulting in a negative response by the salamander. However, continued future development, which increases runoff and decreases aquifer recharge, and the potential use of water from the northern segment of the Edwards Aquifer may cause significant threats to the species' existence in the future.

Minor Habitat Threats

Frequent human visitation associated with some habitat of the Jollyville Plateau salamander may negatively affect the species and its habitat. Documentation from the City of Austin of disturbed vegetation, vandalism, and the destruction of travertine deposits (fragile rock formations formed by deposit of calcium carbonate on stream bottoms) by foot traffic has been documented at one of their salamander monitoring sites in the Bull Creek watershed (COA 2001a, p. 21) and may result in direct destruction of small amounts of the salamander's habitat. This threat is of low magnitude because the negative impacts occur infrequently and at limited locations.

Feral hogs have become abundant in some areas where the Jollyville Plateau salamander occurs. Feral hogs can negatively impact salamander habitat by physically wallowing in spring heads and destroying interstitial spaces and increasing sedimentation downstream (COA 2006, p. 34). The City of Austin has addressed this threat in some areas by constructing enclosure fences around known salamander locations (COA 2006, p. 46). Feral hogs are a low magnitude threat (low intensity and localized scope) to the salamander.

Conclusion on Threats to Habitat

The Jollyville Plateau salamander is threatened due to modification of the species' habitat (Factor A), both presently and into the foreseeable future. The presence of significant urban development in a majority of watersheds draining water to salamander locations has resulted in the deterioration of the water quality in salamander habitats characterized by an increase in sedimentation and pollutant loading. This water quality decline has resulted in the physical loss of salamander habitat from sedimentation, changes in the composition of its macroinvertebrate prey base, death and deformities of individual salamanders, and the overall decline in abundance of the salamanders over time in areas with urban watersheds.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

We are not aware of any information regarding overutilization of Jollyville Plateau salamanders for commercial, recreational, scientific, or educational purposes and do not consider this a significant factor affecting this species (i.e., a threat) now or in the foreseeable future.

Factor C. Disease or Predation

City of Austin biologists found Jollyville Plateau salamander abundances were negatively correlated with the abundance of predatory centrarchid fish (carnivorous freshwater fish belonging to the sunfish family), such as black bass (*Micropterus* spp.) or sunfish (*Lepomis* spp.) (COA 2001a, p. 102). Predation of a Jollyville Plateau salamander by a centrarchid fish was observed during a May 2006, field survey (COA 2006, p. 38). However, Bowles, *et al.* (2006, pp. 117–118) rarely observed these predators in Jollyville Plateau salamander habitat. Jollyville Plateau salamanders have been observed retreating into gravel substrate after cover was moved suggesting these salamanders display anti-predation behavior (Bowles, *et al.* 2006, p.117). We have no data to indicate whether predation of the Jollyville Plateau salamander may increase in the future or is considered a significant factor affecting the species and therefore a threat.

Chytridiomycosis (Chytrid fungus) is a fungal disease that is responsible for killing amphibians world wide (Daszak, *et al.* 2000, p. 445). The chytrid fungus has been documented on the feet of Jollyville Plateau salamanders (COA 2006, pp. 22–23). However, for unknown reasons, the salamanders are not displaying signs of infection (COA 2006, p. 23); individuals held in captivity tested positive for seven months, but never displayed symptoms (COA 2006, p. 23). We have no data to indicate whether impacts from this disease may increase or decrease in the future, and therefore, whether it is a significant factor affecting the species (i.e., a threat).

While predation and disease may be affecting Jollyville Plateau salamanders, neither factor is at a level that we consider to be threatening the continued existence of the salamanders now or in the foreseeable future.

Factor D. Inadequacy of Existing Regulatory Mechanisms

The Jollyville Plateau salamander is not listed on the Texas State List of Threatened or Endangered Species (TPWD 2006, pp. 2–3). Therefore it is receiving no direct protection from the State.

Under authority of the Texas Administrative Code (Title 30, Chapter 213), the Texas Commission on Environmental Quality (TCEQ) regulates activities having the potential for polluting the Edwards Aquifer and hydrologically connected surface streams. However, less than half of the known Jollyville Plateau salamander locations occur within those portions of the Edwards Aquifer regulated by TCEQ; therefore, many do not benefit from these protections (TCEQ 2001, p. 1). For those Jollyville salamander locations that are covered by the TCEQ regulations, the regulations do not address land use, impervious cover limitations, non-point source pollution, or application of fertilizers and pesticides over the recharge zone (30 TAC 213.3). We are unaware of any water quality ordinances more restrictive than TCEQ in Williamson County or in Travis County outside the City of Austin.

The City of Austin's water quality ordinances (City of Austin Code, Title 25, Chapter 8) provide some water quality regulatory protection to the salamander's habitat within Travis County; however, based on water quality monitoring, they are not effective at reducing nutrient levels (see discussion in Factor A). In addition, Title 7, Chapter 245 of the Texas Local Government Code permits ''grandfathering'' of State regulations. Grandfathering allows developments to be exempted from new requirements for water quality controls and impervious cover limits if the developments were planned prior to the implementation of such regulations. However, these developments are still obligated to comply with regulations that were applicable at the time when project applications for development were first filed (Title 7, Chapter 245 of the Texas Local Government Code p. 1). Unpublished data provided by City of Austin indicates that up to 26 percent of undeveloped areas within watersheds draining to Jollyville Plateau salamander habitat may be exempted from current water quality control requirements due to ''grandfathering'' legislation.

The BCP offers some water quality benefits to the Jollyville Plateau salamander in portions of the Bull Creek, Brushy Creek, Cypress Creek, and Long Hollow Creek drainages through preservation of open space (Service 1996a, pp. 2–28, 2–29). However, eight of the nine City of Austin monitoring sites occupied by the Jollyville Plateau salamander within the BCP are being affected or have been affected by water quality degradation occurring upstream and outside of the preserved tracts (see Factor A for discussion) (COA 2006, p. 29, 34, 37, 49; COA 1999, pp. 6–11; Travis County 2007, p. 4). Additionally, Jollyville Plateau salamanders are not a covered species under the section 10(a)(1)(B) permit under which the preserves were established (Service 1996b, pp. 1–10). Therefore, they receive no specific protections under the BCP permit, such as mitigation to offset impacts from development.

Data indicate that water quality degradation in streams occupied by Jollyville Plateau salamanders continues to occur despite the existence of current regulatory mechanisms in place to protect water quality (COA 2006, p. 29). Therefore, we consider the inadequacy of existing regulatory mechanisms to be a threat to the Jollyville Plateau salamander now and in the foreseeable future.

Factor E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

We are not aware of any information regarding other natural or manmade factors affecting the Jollyville Plateau salamanders' continued existence. Therefore, we have determined that there are no other natural or manmade factors significantly affecting this species now or in the foreseeable future that constitutes a threat to the Jollyville Plateau salamander.

Finding

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species. We reviewed the petition, available published and unpublished scientific and commercial information, and information submitted to us during the public comment period following the publication of our 90-day petition finding. This 12-month finding reflects and incorporates information we received during the public comment period, or obtained through consultation, literature research, and field visits, and responds to significant issues identified. We also consulted with recognized Jollyville Plateau salamander experts. On the basis of this review, we find that the listing of the Jollyville Plateau salamander is warranted, due to threats associated with habitat modification from urban development causing water quality degradation, and the inadequacy of existing regulatory mechanisms. However, listing of the Jollyville Plateau salamander is precluded at this time by pending proposals for other species with higher listing priorities and actions.

The threats to the Jollyville Plateau salamander support a finding that the species warrants listing as threatened or endangered throughout its range. The primary factor leading to our finding are threats described above under Factor A. The source of the habitat threats are from substantial levels of urban development that has occurred on a majority of watersheds draining to salamander habitats. For example 55 percent of the land draining to salamander habitat is already developed. This urbanization produces pollutants that have caused demonstrable declines in the water quality where salamanders live. The immediacy of the threats is high because impervious cover and developed areas are chronic sources for water quality degradation that are currently occurring and are likely to increase with future urban development in the salamander's range. The threat intensity (that is the strength of the water quality degradation stressor) is moderate because actual measures of significant water quality problems are in limited portions of the salamander's range. The level of exposure of the threat is found to be high, based on urbanization in a majority of the species' range. These water quality impacts alter physical aquatic habitats and the food sources of the salamander, producing negative population responses. Negative responses by the salamander have been documented at both the individual level (mortalities and deformities) and the population level (significant declines in abundance over the last 10 years). We find the overall negative response by the salamander to be at a moderate level because deformities and deaths of salamanders have been limited in scope to a few localities and only one location may have experienced an extirpation. Otherwise, the current range of the salamander changed little from the known historic range. On balance of these facts, we find the overall level of threat from habitat modifications to be moderate.

The other factor we found to be contributing to the warranted status of the Jollyville Plateau salamander is that State (TCEQ) and local (City of Austin and BCP) regulations have not been adequate to prevent or minimize impacts to salamanders (Factor D). This is evidenced by data gathered at monitoring sites in developing drainage areas with the species.

Since this finding is warranted but precluded, we do not need to specifically determine whether it is appropriate to perform a ''significant portion of the range'' analysis for this species. However, due to the restricted nature of the Jollyville Plateau salamander's range, we generally consider all of the remaining range to be significant for the conservation of this species. Because of a small and restricted population distribution, and because of threats described above, the Jollyville Plateau salamander warrants listing as threatened or endangered throughout its entire range. We will make a determination on the status of the species as threatened or endangered, during the proposed listing rule process.

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. 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 of Endangered and Threatened Wildlife and Plants or to change the status of a species from threatened to endangered; annual determinations on prior ''warranted but precluded'' petition findings as required under section 4(b)(3)(C)(i) of the Act; 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 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. In FY 2007, we were able to use some of the critical habitat subcap funds to fund proposed listing determinations for high-priority candidate species; we expect to also be able to do this in FY 2008.

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 P.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.''

In FY 2008, expeditious progress is that amount of work that can be achieved with $5,131,000, which is the amount of money we have for the Listing Program at this time. Since Congress has yet to approve a Listing Program appropriation for FY 2008, we are working under a Continuing Resolution. We are using the FY 2006 enacted budget amount ($5,131,000) for the Listing Program that is 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. The $5,131,000 for listing activities (that is, the portion of the Listing Program funding not related to critical habitat designations for species that already are listed) will be used to fund work in the following categories: 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 high-priority listing actions. The allocations for each specific listing action are identified in the Service's FY 2008 Draft Allocation Table (part of our administrative record). We are working on completing our allocation at this time. More funds are anticipated to be available in FY 2008 than in previous years to work on listing actions that are not the subject of court orders or court-approved settlement agreements.

Our decision that a proposed rule to list the Jollyville Plateau salamander is warranted but precluded includes consideration of its listing priority. In accordance with guidance we published on September 21, 1983, we assign an LPN to each candidate species (48 FR 43098). Such a priority ranking guidance system is required under section 4(h)(3) of the Act (16 U.S.C. 1533(h)(3)). Using this guidance, we assign each candidate an LPN of 1 to 12, depending on the magnitude of threats (high vs. moderate to low), immediacy of threats (imminent or non-imminent), and taxonomic status of the species, in order of priority (monotypic genus (i.e., a species that is the sole member of a genus), species, subspecies, distinct population segment, or significant portion of the range). The lower the listing priority number, the higher the listing priority (that is, a species with an LPN of 1 would have the highest listing priority).

We currently have more than 120 species with an LPN of 2. Therefore, we further rank the candidate species with an LPN of 2 by using the following extinction-risk type criteria: International Union for the Conservation of Nature and Natural Resources (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 (''Top 40''). These 40 candidate species 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 a species with an LPN of 2. In addition, available staff resources are also a factor in determining high-priority species provided with funding. 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. We assigned the Jollyville Plateau salamander an LPN of 8, based on our finding that the species faces threats of moderate magnitude that are imminent, and on its taxonomic status as a species (see Finding section).

As explained above, a determination that listing is warranted but precluded must also demonstrate that expeditious progress is being made to add or remove qualified species to and from the Lists of Endangered and Threatened Wildlife and Plants. (We note that 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, up to the date of making this finding for the Jollyville Plateau salamander, included preparing and publishing the following determinations:

FY 2007 COMPLETED LISTING ACTIONS

Publication date	Title	Actions	FR pages
10/11/2006 ...	Withdrawal of the Proposed Rule to List the Cow Head Tui Chub (*Gila biocolor vaccaceps*) as Endangered.	Final withdrawal, Threats eliminated.	71 FR 59700–59711
10/11/2006 ...	Revised 12-Month Finding for the Beaver Cave Beetle (*Pseudanophthalmus major*).	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 (*Euchloe ausonides insulanus*) 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
12/6/2006	12-Month Finding on a Petition To List the Cerulean Warbler (*Dendroica cerulea*) 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 (*Nerodia sipedon*) 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 *Penstemon grahamii* (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 (*Ursus maritimus*) 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 *Lepidium papilliferum* (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 *Astragalus debequaeus* (DeBeque milk vetch) as Threatened or Endangered.	Notice 90-day petition finding, Not substantial.	72 FR 6998–7005
2/21/2007	90-Day Finding on a Petition To Reclassify 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 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

FY 2007 COMPLETED LISTING ACTIONS—Continued

Publication date	Title	Actions	FR pages
05/02/2007 ...	12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly (*Euphilotes pallescens* ssp. *arenamontana*) as Threatened or Endangered with Critical Habitat.	Notice of 12-month petition finding, Not warranted.	72 FR 24253–24263
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 (*Rana muscosa*).	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 (*Dinacoma caseyi*) 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 *Astragalus anserinus* (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 Acanthocyclops columbiensis 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 Sclerocactus brevispinus (Pariette cactus) as an Endangered or Threatened Species; Taxonomic Change From Sclerocactus glaucus to Sclerocactus brevispinus, S. glaucus, and S. wetlandicus.	Notice of 12-month petition finding for uplisting, Warranted but precluded.	72 FR 53211–53222

In FY 2007, we provided funds to work on proposed listing determinations for the following high-priority species: 3 southeastern aquatic species (Georgia pigtoe, interrupted rocksnail, and rough hornsnail), 2 Oahu plants (*Doryopteris takeuchii, Melicope hiiakae*), 31 Kauai species (Kauai creeper, *Drosophila attigua, Astelia waialealae, Canavalia napaliensis, Chamaesyce eleanoriae, Chamaesyce remyi* var. *kauaiensis, Chamaesyce remyi* var. *remyi, Charpentiera densiflora, Cyanea eleeleensis, 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*), 4 Hawaiian damselflies (*Megalagrion nesiotes, Megalagrion leptodemas, Megalagrion oceanicum, Megalagrion pacificum*), and one Hawaiian plant (*Phyllostegia hispida (no common name)*). In FY 2008, we are continuing to work on these listing proposals. In addition, we are continuing to work on several other determinations listed below, which we funded in FY 2007 and are scheduled to complete in FY 2008.

ACTIONS FUNDED IN FY 2007 THAT HAVE YET TO BE COMPLETED

Species	Action
Actions Subject to Court Order/Settlement Agreement	
Wolverine	12-month petition finding (remand).
Western sage grouse	90-day petition finding (remand).
Rio Grande cutthroat trout	Candidate assessment (remand).
Actions With Statutory Deadlines	
Polar bear	Final listing determination.
Ozark chinquapin	90-day petition finding.
Tucson shovel-nosed snake	90-day petition finding.
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.

ACTIONS FUNDED IN FY 2007 THAT HAVE YET TO BE COMPLETED—Continued

Species	Action
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.
Shrike, Island loggerhead	90-day petition finding.
Cactus ferruginous pygmy owl	90-day petition finding.

Our expeditious progress so far in FY 2008 in the Listing Program, includes preparing and publishing the following:

FY 2008 COMPLETED LISTING ACTIONS

Publication date	Title	Actions	FR pages
10/09/2007	90-Day Finding on a Petition to List the Black-Footed Albatross (Phoebastria nigripes) as Threatened or Endangered.	Notice of 90-day Petition Finding, Substantial.	72 FR 57278–57283.
10/09/2007	90-Day Finding on a Petition To List the Giant Palouse Earthworm as Threatened or Endangered.	Notice of 90-day Petition Finding, Not substantial.	72 FR 57273–57276.
10/23/2007	90-Day Finding on a Petition To List the Mountain Whitefish (Prosopium williamsoni) in the Big Lost River, ID, as Threatened or Endangered.	Notice of 90-day Petition Finding, Not substantial.	72 FR 59983–59989.
10/23/2007	90-Day Finding on a Petition To List the Summer-Run Kokanee Population in Issaquah Creek, WA, as Threatened or Endangered.	Notice of 90-day Petition Finding, Not substantial.	72 FR 59979–59983.
11/08/2007	Response to Court on Significant Portion of the Range, and Evaluation of Distinct Population Segments, for the Queen Charlotte Goshawk.	Response to Court	72 FR 63123–63140.

Our expeditious progress also includes work on listing actions, which we anticipate will be funded in FY 2008, pending final appropriation. 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 are being conducted to meet statutory timelines, that is, timelines required under the Act. Actions in the bottom section of the table are high priority listing actions, which include at least one or more species with an LPN of 2, available staff resources, and when appropriate, species with a lower priority if they overlap geographically or have the same threats as the species with the high priority.

ACTIONS ANTICIPATED TO BE FUNDED IN FY 2008 THAT HAVE YET TO BE COMPLETED

Species	Action
Actions Subject to Court Order/Settlement Agreement	
Bonneville cutthroat trout	12-month petition finding (remand).
Pygmy rabbit	90-day petition finding (remand).
Gunnison's prairie dog	12-month petition finding.
Actions with Statutory Deadlines	
Polar bear	Final listing determination.
3 Southeastern aquatic species	Final listing.
Phyllostegia hispida	Final listing.
Yellow-billed loon	12-month petition finding.
Black-footed albatross	12-month petition finding.
Mount Charleston blue butterfly	12-month petition finding.
Goose Creek milk-vetch	12-month petition finding.
White-tailed prairie dog	12-month petition finding.
Mono Basin sage grouse (vol. remand)	90-day petition finding.
Ashy storm petrel	90-day petition finding.
Longfin smelt—San Fran. Bay population	90-day petition finding.
Black-tailed prairie dog	90-day petition finding.
Lynx (include New Mexico in listing)	90-day petition finding.
Wyoming pocket gopher	90-day petition finding.
Llanero coqui	90-day petition finding.
Least chub	90-day petition finding.

ACTIONS ANTICIPATED TO BE FUNDED IN FY 2008 THAT HAVE YET TO BE COMPLETED—Continued

Species	Action
American pika	90-day petition finding.
Dusky tree vole	90-day petition finding.
Sacramento Mts. checkerspot butterfly	90-day petition finding.
Kokanee—Lake Sammamish population	90-day petition finding.
206 species	90-day petition finding.
475 Southwestern species	90-day petition finding.
High Priority Listing Actions	
31 Kauai species [1]	Proposed listing.
8 packages of high-priority candidate species	Proposed listing.

[1] Funds used for this listing action were also provided in FY 2007.

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.

Conclusion

We will add Jollyville Plateau salamander to the list of candidate species upon publication of this notice of 12-month finding on a petition. We request that interested parties submit any new information on status and threats for this species. Natural history and distribution information in particular will help us monitor and focus habitat conservation of this species. Should an emergency situation develop with this or any candidate species, we will act to provide immediate protection, if warranted.

We intend that any proposed listing action for Jollyville Plateau salamander will be as accurate as possible. Therefore, we will continue to accept additional information and comments from all concerned governmental agencies, the scientific community, industry, or any other interested party concerning this finding.

References Cited

A complete list of all references cited is available on request from the U.S. Fish and Wildlife Service, Austin Ecological Services Office (see **ADDRESSES**).

Author(s)

The primary author of this document is U.S. Fish and Wildlife Service, Austin Ecological Services Field Office (see **ADDRESSES**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*).

Dated: November 28, 2007.

H. Dale Hall,

Director, Fish and Wildlife Service.

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