DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R6–ES–2013–0101]; [4500030114]

RIN 1018-AZ77

Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Revised Distinct Population Segment Boundary

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, propose to designate revised critical habitat for the contiguous U.S. distinct population segment (DPS) of the Canada lynx under the Endangered Species Act of 1973, as amended, and to revise the boundary of the Canada lynx DPS. These proposed revisions fulfill our obligations under two settlement agreements. The revised critical habitat proposed rule also addresses issues raised by two courts in 2010. If we finalize this rule as proposed, it would extend the Endangered Species Act's protections to the Canada lynx wherever it occurs in the contiguous United States, including New Mexico, and it would revise this species' critical habitat. The effect of this regulation is to conserve the Canada lynx and its

habitats in the contiguous United States under the Endangered Species Act.

DATES: We will accept comments received or postmarked on or before [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES** section, below) must be received by 11:59 p.m. Eastern Time on the closing date. *Public Hearing:* A public hearing will be held on this proposed rule on Monday, November 25, 2013, from 6:00 p.m. to 9:00 p.m. (Mountain Time). The formal public hearing will be preceded by an open house and general information meeting from 2:00 p.m. to 5:00 p.m.

ADDRESSES: You may submit comments by one of the following methods:

(1) *Electronically*: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Search box, enter FWS–R6–ES–2013–0101, which is the docket number for this rulemaking. You may submit a comment by clicking on "Comment Now!"

(2) *By hard copy*: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R6–ES–2013–0101; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We request that you send comments **only** by the methods described above. We will post all comments on *http://www.regulations.gov*. This generally means that we will

post any personal information you provide us (see the **Public Comments** section below for more information).

Public Hearing: A public hearing will be held on this proposed rule on Monday, November 25, 2013, from 6:00 p.m. to 9:00 p.m. (Mountain Time) at the Red Lion Colonial Hotel, 2301 Colonial Drive, Helena, Montana, 59601. The formal public hearing will be preceded by an open house and general information meeting from 2:00 p.m. to 5:00 p.m.

Public Meeting: An informational public meeting will be held on Monday, November 4, 2013, from 7:00 p.m. to 9:00 p.m. at the George W. Stearns High School auditorium at 199 State Street, Millinocket, Maine, 04462.

People needing reasonable accommodations in order to attend and participate in the public hearing or meeting should contact Jodi Bush, Montana Fish and Wildlife Office, as soon as possible (see **FOR FURTHER INFORMATION CONTACT**).

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at *http://www.fws.gov/montanafieldoffice/*, *http://www.regulations.gov* at Docket No. FWS–R6–ES–2013–0101, and at the Montana Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Any additional tools or supporting information that we may develop for this critical habitat designation will also be available

at the Fish and Wildlife Service website and Field Office set out above, and may also be included in the preamble and/or at *http://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT: Jodi Bush, Field Supervisor, U.S. Fish and Wildlife Service, Montana Ecological Services Field Office, 585 Shepard Way, Suite 1, Helena, MT 59601; telephone 406-449-5225. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Endangered Species Act (Act), any species that is determined to be threatened or endangered requires critical habitat to be designated, to the maximum extent prudent and determinable. Designations and revisions of critical habitat and revisions to definitions of listed entities can only be completed by issuing a rule. This is a proposed rule to revise the designation of critical habitat for the threatened contiguous United States (U.S.) distinct population segment (DPS) of the Canada lynx *(Lynx canadensis)* and to revise the DPS boundary to extend the protections of the Act to lynx everywhere they occur in the contiguous United States, including New Mexico. The lynx DPS was listed as threatened in 2000. We designated critical habitat for the lynx

DPS in 2006 and revised the designation in 2009. Also in 2009, we determined that adding lynx in New Mexico to the listing of the lynx DPS was warranted because lynx that were introduced into Colorado were regularly crossing the State border into New Mexico. In 2010, the U.S. District Courts in the Districts of Montana and Wyoming remanded the revised critical habitat designation to the Service. The Service agreed to submit to the Federal Register a proposed rule on the revised designation of critical habitat for the Canada lynx by September 1, 2013. This date was extended to September 20, 2013 by stipulation. As part of the 2011 multidistrict litigation (MDL) agreement, we committed to propose adding lynx in New Mexico to the DPS by September 2013.

This rule would revise the definition of the lynx DPS. We propose to rescind the existing boundary of the lynx DPS, which is based on State boundaries within the historic distribution of lynx, and replace it with a DPS definition that extends the protections of the Act to lynx wherever they occur in the contiguous United States. This revised boundary would include lynx that occur in New Mexico as a result of lynx introduction efforts in Colorado.

This rule would revise the designation of critical habitat for the lynx DPS. In total, we propose to designate 41,547 square miles (mi^2) (107,607 square kilometers (km^2)) of critical habitat in five units in the States of Idaho, Maine, Minnesota, Montana, Washington, and Wyoming. We propose to redesignate those areas we designated in 2009 along with additional areas in northern Maine

and northwestern Wyoming (see details and list of counties under *Proposed Revised Critical Habitat Designation*, below). We propose to exclude from critical habitat Tribal lands and some State and private lands managed in accordance with approved lynx conservation plans. If these exclusions are finalized, the area designated as critical habitat would be 39,632 mi^2 (102,647 km^2), which would be 632 mi^2 (1,637 km^2)—1.6 percent—larger than the area we designated in 2009.

The basis for our revised critical habitat action. Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. We will consider excluding from the final designation (1) Tribal lands, (2) lands in Maine managed in accordance with the Natural Resources Conservation Service's Healthy Forest Reserve Program, (3) lands in Montana managed in accordance with the Montana Department of Natural Resources and Conservation (DNRC) Forested State Trust Lands Habitat Conservation Plan, and (4) lands in Washington managed in accordance with the Washington Department of Natural Resources (DNR) Lynx Habitat Management Plan for DNR-managed Lands.

We will prepare an economic analysis. We prepared a final economic analysis to evaluate the potential economic impacts of our 2009 critical habitat designation. To ensure that we adequately consider the economic impacts of the current proposed designation, we will prepare an economic analysis of this proposed designation and make it available for public comment.

We will prepare a National Environmental Policy Act analysis. Because this rule proposes designation of critical habitat in States within the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we will prepare an analysis in accordance with the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*). We will update and revise our 2009 NEPA analysis based on the current proposed critical habitat designation and notify the public of the availability of the draft environmental assessment.

We will seek peer review. We are seeking comments from independent specialists to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment on our specific assumptions and conclusions in this revised critical habitat designation. Because we will consider all comments and information received during the comment period, our final determinations may differ from this proposal. In addition to public and peer-review comments received on this proposed rule, between the proposed and final rules, the Service will continue to evaluate (1) any new information that becomes available regarding the status and distribution of lynx in the contiguous United States, (2) any

refinements of or improvements to lynx habitat mapping and/or modeling, particularly those efforts currently under way on National Forest lands, (3) new information regarding the potential effects of climate change on lynx and its habitats, (4) new information regarding the potential effects of forest management on lynx and its habitats, and (5) any other new information that was not considered previously to determine the relevance of such information in revising critical habitat for lynx. If necessary and appropriate, revisions to this proposed rule will be made to address such information.

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned government agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act (16 U.S.C. 1531 *et seq*.) including whether there are threats to the species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(2) Specific information on:

(a) The amount and distribution of lynx habitat in the contiguous United States;

(b) What areas that were occupied at the time of listing and that contain features essential to the conservation of the DPS should be included in the designation and why;

(c) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change and changing forest management practices; and

(d) What areas not occupied at the time of listing may be essential for the conservation of the DPS and why, including areas that remain unoccupied, such as the "Kettle Range" in Ferry County, Washington, and areas recently occupied, such as northern New Hampshire (in northern Coos County), northeastern Vermont (in northern Essex County), western Maine in Somerset, Franklin, and northern Oxford Counties, including portions of the White Mountain National Forest, and eastern Maine in northern Washington County.

(3) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed revised critical habitat.

(4) Comments or information that may assist in identifying or clarifying the primary constituent element.

(5) Whether lands in the Southern Rocky Mountains of Colorado, northern New Mexico, and southern Wyoming (a) contain the physical and biological features essential for the conservation of the DPS, (b) contain these features in the quantities and spatial

arrangements across landscapes necessary to support lynx populations over time, and (c) are essential to the conservation of the DPS, and the basis for why that might be so.

(6) Whether lands in the Clearwater and Nez Perce National Forests in Idaho, the Bitterroot National Forest in Idaho and Montana, the Beaverhead–Deerlodge National Forest in Montana, and parts of the Helena and Lolo National Forests in Montana not currently proposed for designation (a) contain the physical and biological features essential for the conservation of the DPS, (b) contain these features in the quantities and spatial arrangements across landscapes necessary to support lynx populations over time, and (c) are essential to the conservation of the DPS, and the basis for why that might be so.

(7) How the proposed boundaries of the revised critical habitat designation could be refined to more closely circumscribe the boreal forest landscapes essential to the conservation of lynx.

(8) Information on the projected and reasonably likely impacts of climate change on lynx and proposed critical habitat.

(9) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation; in particular, any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

(10) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area. In particular, we are considering excluding all Tribal lands (Maine, Minnesota, and Montana) as well as lands in (a) Maine, managed in accordance with the Natural Resources Conservation Service's Healthy Forest Reserve Program (75 FR 6539, February 10, 2010), (b) Montana, managed in accordance with the Montana DNRC Forested State Trust Lands Habitat Conservation Plan (Montana DNRC and U.S. Fish and Wildlife Service 2010), and (c) Washington, managed in accordance with the Washington DNR Lynx Habitat Management Plan for DNR-managed Lands (Washington DNR 2006).

(11) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments **only** by the methods described in the **ADDRESSES** section.

We will post your entire comment—including your personal identifying information—on *http://www.regulations.gov*. You may request at the top of your

document that we withhold personal information such as your street address, phone number, or e-mail address from public review; however, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov*, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Montana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Previous Federal Actions

For more information on previous Federal actions concerning the lynx, refer to the final listing rule published in the **Federal Register** on March 24, 2000 (65 FR 16052), the clarification of findings published in the **Federal Register** on July 3, 2003 (68 FR 40076), the *Recovery Outline for the Contiguous United States DPS of Canada Lynx* (Recovery Outline; U.S. Fish and Wildlife Service 2005, entire) the final rule designating critical habitat for lynx published in the **Federal Register** on November 9, 2006 (71 FR 66008), the final rule designating revised critical habitat published in the **Federal Register** on February 25, 2009 (74 FR 8616), and the 12-month finding on a petition to change the final listing of the DPS of the Canada lynx to include New Mexico published in the **Federal Register** on December 17, 2009 (74 FR 66937). These documents and others addressing the status and conservation of lynx in the contiguous

United States may be viewed and downloaded from the Service's website: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A073.

On July 28, 2010, the U.S. District Court for the District of Montana remanded the 2009 revised critical habitat final rule to the Service because of flaws it perceived in the Service's rationale for its decision not to designate critical habitat in Colorado and in the Beaverhead-Deerlodge, Bitterroot, Clearwater, and Nez Perce National Forests in Idaho and Montana, and in portions of the Helena and Lolo National Forests in Montana not included in the designation. The court ordered the Service to determine whether areas occupied by lynx introduced into Colorado possess the physical and biological features essential to the conservation of the species, and consider the physical and biological features of occupied forests in Montana and Idaho to determine whether they should be designated as critical habitat. The court also ordered that the 2009 final critical habitat rule "…shall remain in place until the Service issues a new final rule on lynx critical habitat, at which time the current, invalidated Final Rule (74 Fed. Reg. 8616) will be superseded."

On September 10, 2010, because of its concerns with the Service's consideration of potential economic impacts to recreational snowmobiling interests in Washington State, the U.S. District Court for the District of Wyoming enjoined the final critical habitat rule "…pending review and consideration by the Secretary of the full analysis of all the economic impacts, and a determination on the exclusion request of the Washington State Snowmobile Association…". The Court enjoined the final rule only in regard to

National Forest Lands in Washington State (Unit 4) "…currently managed by…" the Lynx Conservation Assessment and Strategy (LCAS).

In this proposed rule, the Service addresses the issues raised by the courts, evaluates recent lynx research and data, considers additional areas for inclusion in critical habitat and other areas for exclusion under section 4(b)(2) of the Act, and proposes this revised critical habitat designation based on the best available scientific and commercial data.

We also propose to rescind the existing State-boundary-based definition of the lynx DPS and replace it with a definition that extends the Act's protections to lynx "where found" in the contiguous United States. This change would ensure that lynx, which are known for their long-distance dispersal capability and tendency to occur in places well outside of typical habitats, receive the Act's protections wherever they occur in the contiguous United States, including (but not limited to) New Mexico.

Revised Definition of the Contiguous U.S. Distinct Population Segment of the Canada Lynx

In the final listing rule for the Canada lynx, dated March 24, 2000, the Service defined the contiguous U.S. DPS of lynx based on the international boundary with Canada and state boundaries of all 14 States in the historic and current range of lynx (65 FR 16052; 74 FR 66937). With that definition, New Mexico was not included in the

listed area because no lynx occurred there, historic records did not show lynx in the State, and it lacked lynx habitat.

On December 17, 2009, the Service published a 12-month "warranted but precluded" finding in the **Federal Register** on a petition to expand the listing of the Canada lynx to include the State of New Mexico (74 FR 66937). That finding was made in response to an August 8, 2007, petition from a coalition of environmental groups and a 2008 settlement agreement. In the finding, the Service acknowledged that lynx associated with a lynx introduction effort in Colorado were regularly and frequently crossing the State boundary between Colorado and New Mexico and that, when they did, they were no longer protected by the Act because New Mexico was not included in the listed DPS area. In 2011, as part of the MDL settlement agreement, the Service agreed to amend the listing rule to include New Mexico so that lynx entering New Mexico from Colorado would no longer lose Federal protection under the Act upon crossing the State boundary.

We have determined that lynx entering New Mexico, or any other States not currently included in the DPS as described in the 2000 final listing rule, should not lose their protection under the Act upon doing so. Therefore, with this rule, we propose to rescind the State-boundary-based definition of the contiguous U.S. lynx DPS and replace it in regulation with a definition of the DPS that extends the Act's protections to lynx "where found within contiguous United States." This change will ensure that all lynx in

the contiguous United States receive protection under the Act regardless of where they may wander, including New Mexico.

Designation of Revised Critical Habitat for the Contiguous U.S. Distinct Population Segment of the Canada Lynx

Background

It is our intent to discuss below only topics relevant to the revised designation of critical habitat in this proposed rule. For more information about the listing of the Canada lynx, please refer to the **Previous Federal Actions** section above.

Species Information

Taxonomy and Species Description

The Canada lynx (order Carnivora; family Felidae) is a medium-sized cat with long legs and large, well-furred paws. Its long, black ear tufts and short, black-tipped tail distinguish the lynx from the similar but much more common bobcat (*Lynx rufus*). In winter, the lynx's fur is dense and has a grizzled appearance with grayish-brown mixed with buff or pale brown fur on the back, and grayish-white or buff-white fur on the belly, legs and feet. In summer, its fur is more reddish to gray-brown (McCord and Cardoza 1982, p. 730). Lynx generally measure 30 to 35 inches (in) (75 to 90 centimeters (cm))

long and weigh 14 to 31 pounds (lb) (6 to 14 kilograms (kg)) (Quinn and Parker 1987, Table 1; Moen *et al*. 2010a, Figure 2; Maine Department of Inland Fisheries and Wildlife 2012, *unpublished data*). The lynx's large feet and long legs make it highly adapted for traversing and hunting in deep snow. Lynx hybridization with bobcats has been documented in Minnesota, Maine, and New Brunswick (Schwartz *et al*. 2004, entire; Homyack *et al*. 2008, entire), where male bobcats bred with female lynx to produce fertile offspring with lynx-like ear tufts, intermediate foot-size, and bobcat-like fur (Interagency Lynx Biology Team 2013, p. 35). Canada lynx are related to the somewhat larger Eurasian lynx (*Lynx lynx*), which occupies a similar boreal forest distribution in northern Europe, northern Russia, and central Asia (von Arx *et al*. 2001, pp. 8-10).

Distribution

The Canada lynx is broadly distributed across northern North America from eastern Canada to Alaska (McCord and Cardoza 1982, p. 729). It is strongly associated with the expansive, continuous boreal forests of those areas, and its range largely overlaps that of its primary prey, the snowshoe hare (*Lepus americanus*), also a boreal forest specialist (Bittner and Rongstad 1982, p. 146; Mowat *et al*. 2000, pp. 268-269; Aubry *et al*. 2000, p. 375). The southern periphery of the boreal forest extends into parts of the northern contiguous United States, where it transitions to the Acadian forest in the Northeast (Seymour and Hunter 1992, pp. 1, 3), deciduous temperate forest in the Great Lakes regions, and subalpine forest in the Rocky Mountains and Cascade Mountains in the west (Agee 2000, pp. 40-41). In the contiguous United States, these transitional

boreal forests become discontinuous and patchy, preventing both lynx and hares from broadly achieving densities similar to those of the northern boreal forests (Wolff 1980, pp. 123-128; Buehler and Keith 1982, pp. 24, 28; Koehler 1990, p. 849; Koehler and Aubry 1994, p. 84; Aubry *et al*. 2000, pp. 373-375, 382, 394). These forests eventually become too fragmented and isolated in the contiguous United States to support hares at the landscape densities and distributions necessary to support lynx home ranges (Interagency Lynx Biology Team 2013, p. 77) or lynx populations over time (see also Habitat and Biology, below).

Snow conditions also determine the distribution of lynx (Ruggiero *et al*. 2000, pp. 445-449). Lynx are morphologically and physiologically adapted for hunting snowshoe hares and surviving in areas that have cold winters with deep, fluffy snow for extended periods. These adaptations provide lynx a competitive advantage over potential competitors, such as bobcats or coyotes (*Canis latrans*) (McCord and Cardoza 1982, p. 748; Buskirk *et al*. 2000b, pp. 86-95; Ruediger *et al*. 2000, pp. 1-11; Ruggiero *et al*. 2000, pp. 445, 450). Bobcats and coyotes have a higher foot load (more weight per surface area of foot), which causes them to sink into the snow more than lynx. Therefore, bobcats and coyotes cannot hunt efficiently in fluffy or deep snow and are at a competitive disadvantage to lynx. Long-term snow conditions presumably limit the winter distribution of potential lynx competitors such as bobcats (McCord and Cardoza 1982, p. 748) or coyotes. These adaptations may also help lynx avoid predators such as mountain lions (*Puma concolor*; Squires and Laurion 2000, p. 346) and fisher (*Martes pennanti*; Vashon *et al.* 2012, p. 20), which also have higher foot-loading, making them

less efficient in deep, fluffy snow conditions (Krohn *et al.* 2005, entire).

Lynx occurrence has been documented in 24 States in the northern contiguous United States (McKelvey *et al*. 2000a, entire). However, northern (Canadian and Alaskan) lynx populations are cyclic, with large population swings occurring over 8- to 11-year intervals and lagging a year or two behind snowshoe hare population cycles (Elton and Nicholoson 1942, entire; Mowat *et al*. 2000, pp. 281-294; Interagency Lynx Biology Team 2013, p. 33). When hares are abundant, northern lynx populations increase quickly and dramatically; when hare numbers subsequently decline, large numbers of lynx disperse widely in search of food (Slough and Mowat 1996, pp. 956-957; Mowat *et al*. 2000, pp. 281-294). Historically, during and after these events, often referred to as lynx population "irruptions," many lynx dispersed into the northern contiguous United States, often occurring temporarily in habitats that are incapable of supporting lynx populations over time (Thiel 1987, entire; McKelvey *et al*. 2000a, pp. 241-242, 253). Many records of lynx in the contiguous United States appear to be related to such events (McKelvey *et al*. 2000a, entire; see also Biology and *Criteria Used To Identify Critical Habitat*, below).

Persistent, productive lynx populations (interbreeding lynx populations that have occupied particular areas consistently over time) in the contiguous United States occur in northern Maine, northeast Minnesota, northwest Montana/northeast Idaho, north-central Washington, and the Greater Yellowstone Area of southwest Montana and northwest Wyoming. Recently, lynx reproduction also has been documented in northern New

Hampshire (in 2010 and 2011), northern Vermont (in 2009, 20011, and 2012), eastern Maine (in 2010), and breeding is likely in some areas of western Maine (U.S. Fish and Wildlife Service 2013a, p. 1). Whether the small breeding populations in New Hampshire and Vermont will persist is uncertain (Interagency Lynx Biology Team 2013, p. 23), and regional-scale modeling suggests that habitat and snow conditions there are likely insufficient to support viable lynx populations over time (Hoving *et al.* 2005, pp. 739, 749). Additionally, from 1999 to 2006, researchers captured 218 lynx in Alaska and Canada and released them into high-elevation forests in western Colorado (Devineau *et al*. 2010, entire). Although 122 (56 percent) of these lynx had died by June 2010 (Shenk 2010, pp. 1, 5), some subsequently established home ranges in Colorado and produced kittens in some years. Some also dispersed into northern New Mexico, northeastern Utah, and southern and western Wyoming, though no reproduction has been documented among any of the lynx that left Colorado. Other lynx from this introduced population traveled through Wyoming, Montana, and Idaho, and into southern Canada, and others traveled to Arizona, southern Utah, eastern Nevada, Kansas, Nebraska, Iowa, and South Dakota, with most of the latter animals ultimately dying in inhospitable habitats in those places (Devineau *et al*. 2010, p. 526, Figure 1).

Populations that are composed of a number of discrete subpopulations, connected by dispersal, are called metapopulations (Hanski and Gilpin 1991, entire; McKelvey *et al*. 2000b, p. 25). Lynx populations in the contiguous United States appear to function as metapopulations (McKelvey *et al.* 2000b, pp. 21, 33; 65 FR 16052–16082; 68 FR 40077–40099; 71 FR 66025–66035; 74 FR 8616–8641). They are generally small populations

isolated from one another, though most are directly connected to larger lynx populations in Canada (McKelvey *et al*. 2000b, pp. 25-34; U.S Fish and Wildlife Service 2005, p. 2). Lynx disperse in both directions across the Canada–U.S. border (Aubry *et al.* 2000, pp. 386-387; Moen *et al.* 2010b, pp. ii, 17, 19; Vashon *et al.* 2012, p. 22), and this connectivity and interchange with lynx populations in Canada is thought to be essential to the maintenance and persistence of lynx populations in the contiguous United States (McKelvey *et al.* 2000b, p. 33; U.S Fish and Wildlife Service 2005, p. 2; Interagency Lynx Biology Team 2013, p. 34, 42, 47, 54, 60, 65; Squires *et al.* 2013, p. 187).

The small number of breeding lynx in northeastern Vermont, northern New Hampshire, and western and eastern Maine are indirectly connected to the Canadian population via extensive core habitat in northern Maine. The small lynx population in the Greater Yellowstone Area of southwest Montana and northwest Wyoming is indirectly connected to the Canadian population via the Northern Rocky Mountains lynx population in northwest Montana and northeast Idaho, and by dispersal corridors (habitat "stepping stones") between northwest Montana and the Greater Yellowstone Area. The Southern Rocky Mountains, particularly in Colorado, lack such habitat "stepping stones" from the north, and the subalpine forests there appear to be functionally disjunct from northern lynx populations and habitats (McKelvey *et al.* 2000a, p. 230; Interagency Lynx Biology Team 2013, pp. 50, 54). Although some of the lynx released into Colorado subsequently dispersed northward, these movements should be interpreted with caution and may not be representative of natural lynx dispersal behavior. During unprecedentedly large irruptions of lynx from Canada into the contiguous United States in the early 1960s and

again in the early 1970s, few lynx were documented in Colorado, despite large-scale survey efforts, and no viable populations of lynx occurred there prior to the State's introduction efforts (McKelvey *et al.* 2000a, pp. 231, 242).

Habitat

Lynx are highly specialized predators of snowshoe hares and are dependent on landscapes with high-density snowshoe hare populations for survival and reproduction (McCord and Cardoza 1982, p. 744; Quinn and Parker 1987, pp. 684-685; Aubry *et al*. 2000, pp. 375-378). Estimates of landscape-scale hare densities needed to support lynx populations in the contiguous United States have ranged from 0.2 to 0.7 hares per acre (ac) (0.5 to 1.8 hares per hectare (ha)) (Ruggiero *et al*. 2000, pp. 446-447; Steury and Murray 2004, p. 137; Moen *et al.* 2012, p. 352; Simons-Legaard *et al.* 2013, p. 574). Lynx and snowshoe hares are strongly associated with what is broadly described as boreal forest (Bittner and Rongstad 1982, p. 154; McCord and Cardoza 1982, p. 743; Quinn and Parker 1987, p. 684; Agee 2000, p. 39; Aubry *et al*. 2000, pp. 378-382; Hodges 2000a, pp. 136-140 and 2000b, pp. 183-191; McKelvey *et al*. 2000a, pp. 211-232). The predominant vegetation of boreal forest is conifer trees, primarily species of spruce (*Picea* spp.) and fir (*Abies* spp.) (Elliot-Fisk 1988, pp. 34-35, 37-42). Lynx habitat can generally be described as moist boreal forests that have cold, snowy winters and a snowshoe hare prey base (Quinn and Parker 1987, pp. 684-685; Agee 2000, pp. 39-47; Aubry *et al*. 2000, pp. 373-375; Buskirk *et al*. 2000a, pp. 397-405; Ruggiero *et al*. 2000, pp. 445-447). The boreal forests that lynx use in the contiguous United States are

characterized by patchily-distributed moist forest types with high hare densities in a matrix of other habitats (e.g., hardwoods, dry forest, non-forest) with low landscape hare densities. In these areas, lynx incorporate the matrix habitat (non-boreal forest habitat elements) into their home ranges and use it for traveling between patches of boreal forest that support high hare densities where most lynx foraging occurs.

In the contiguous United States, the boreal forest landscape is naturally patchy and transitional because it is the southern edge of the boreal forest range, where there also is increased prevalence of non-forested land uses (e.g., agriculture, development). This generally limits snowshoe hare populations in the contiguous United States from achieving landscape densities similar to those of the expansive northern boreal forest in Canada, where snowshoe hares are generally more abundant and more evenly distributed across the landscape (Wolff 1980, pp. 123-128; Buehler and Keith 1982, pp. 24, 28; Koehler 1990, p. 849; Koehler and Aubry 1994, p. 84). Consequently, important foraging habitat for lynx is often more limited and fragmented in the contiguous United States than it is in the northern boreal forests of Canada and Alaska (Berg and Inman 2010, p. 6) and overall habitat quality is lower. In some areas, patches of habitat containing snowshoe hares become so small and fragmented that the landscape cannot support lynx home ranges (Interagency Lynx Biology Team 2013, p. 77) or populations. Additionally, the presence of more snowshoe hare predators and competitors at southern latitudes may inhibit the potential for high-density hare populations (Wolff 1980, p. 128). As a result, lynx generally occur at relatively low densities in the contiguous U.S. compared to the high lynx densities that occur in the northern boreal forest of Canada

(Aubry *et al*. 2000, pp. 375, 393-394) or the densities of species such as the bobcat, which is a habitat and prey generalist.

The boreal forest landscape is naturally dynamic. Forest stands within the landscape change as they undergo succession (transition from one stage in the development of a mature forest to another) after natural or human-caused disturbances such as fire, insect epidemics, wind, ice, disease, and forest management (Elliot-Fisk 1988, pp. 47-48; Agee 2000, pp. 47-69). As a result, lynx habitat within the boreal forest landscape is a shifting mosaic of habitat patches of variable and continually changing quality. That is, boreal forests contain stands of differing ages and conditions, some of which provide lynx foraging or denning habitat (or may provide these in the future depending on patterns of disturbance and forest succession) and some of which serve as travel routes for lynx moving between foraging and denning habitats (McKelvey *et al*. 2000c, pp. 427-434; Hoving *et al*. 2004, pp. 290-292).

Because lynx population dynamics, survival, and reproduction are closely tied to snowshoe hare availability, snowshoe hare habitat is the primary component of lynx habitat. Lynx generally concentrate their foraging and hunting activities in areas where snowshoe hare densities are high (Koehler *et al*. 1979, p. 442; Ward and Krebs 1985, pp. 2821-2823; Murray *et al*. 1994, p. 1450; O'Donoghue *et al*. 1997, pp. 155, 159-160 and 1998, pp. 178-181; Simons-Legaard *et al*. 2013, pp. 573-575). Snowshoe hares feed on conifers, deciduous trees, and shrubs (Hodges 2000b, pp. 181-183) and are most abundant in forests with dense understories that provide forage, cover to escape from

predators, and protection during extreme weather (Wolfe *et al*. 1982, pp. 665-669; Litvaitis *et al*. 1985, pp. 869-872; Hodges 2000a, pp. 136-140 and 2000b, pp. 183-195).

Over much of the lynx's range, hare densities are higher in regenerating, earlier successional forest stages because they often have greater understory structure than mature forests (Buehler and Keith 1982, p. 24; Wolfe *et al*. 1982, pp. 665-669; Koehler 1990, pp. 847-848; Hodges 2000b, pp. 183-195; Homyack 2003, pp. 63, 141; Griffin 2004, pp. 84-88). Because understory density within a forest stand changes over time as the stand undergoes succession, (i.e., as earlier successional stages with dense understories advance to more mature stands with reduced understory structure), hare habitat quality and corresponding hare densities also shift continually across boreal forest landscapes. However, snowshoe hares can be abundant in mature forests with dense understories, particularly in the Northern Rocky Mountains portion of the DPS (Griffin 2004, pp. 53-54; Hodges *et al*. 2009, p. 876; Squires *et al*. 2010, pp. 1648, 1653-1657; Berg *et al*. 2012, pp. 1483-1487), and these mature forests may be a source of hares for other adjacent forest types (Griffin and Mills 2009, pp. 1492, 1495-1496). Lynx do not occur everywhere within the range of snowshoe hares in the contiguous United States (Bittner and Rongstad 1982, p. 146; McCord and Cardoza 1982, p. 729). This may be due to inadequate abundance, density, or spatial distribution of hares in some places, or the absence of snow conditions that would allow lynx to express a competitive advantage over other hare predators, or a combination of these factors.

Within the boreal forest, lynx den sites are located where coarse woody debris,

such as downed logs and windfalls, provides security and thermal cover for lynx kittens (McCord and Cardoza 1982, pp. 743-744; Koehler 1990, pp. 847-849; Slough 1999, p. 607; Squires and Laurion 2000, pp. 346-347; Organ *et al*. 2008, entire; Squires *et al*. 2008, pp. 1497, 1501-1505; Moen and Burdett 2009, entire). The amount of structure (e.g., downed, large, woody debris) appears to be more important than the age of the forest stand for lynx denning habitat (Mowat *et al*. 2000, pp. 274-275), although in western Montana, 80 percent of documented dens occurred in mature stands (Squires *et al*. 2008, p. 1497).

Biology

Because of the patchiness and temporal nature of high-quality snowshoe hare habitat across much of the range of lynx in the contiguous United States, lynx populations in the DPS require large boreal forest landscapes with high average snowshoe hare densities to ensure that sufficient high-quality snowshoe hare habitat is available and to ensure that lynx may move freely among patches of habitat and among subpopulations of lynx. Individual lynx maintain large home ranges, reported as generally ranging from 12 to 83 mi^2 (31 to 216 km^2) (Koehler 1990, p. 847; Aubry *et al*. 2000, pp. 382-386; Squires and Laurion 2000, pp. 342-347; Squires *et al*. 2004a, pp. 13-16, Table 6; Vashon *et al*. 2005a, pp. 7-11, Vashon *et al*. 2008, p. 1479). The size of lynx home ranges varies depending on abundance of snowshoe hares, the lynx's gender and age, the season, and the density of lynx populations (Koehler 1990, p. 849; Poole 1994, pp. 612-616; Slough and Mowat 1996, pp. 951, 956; Aubry *et al*. 2000, pp. 382-386;

Mowat *et al*. 2000, pp. 276-280; Vashon *et al*. 2005a, pp. 9-10; Vashon *et al*. 2008, pp. 1482-1485). When hare densities decline, for example, lynx enlarge their home ranges to obtain sufficient amounts of food to survive and reproduce (Slough and Mowat 1996, p. 956; Mowat *et al*. 2000, pp. 265, 278). When hare densities are very low and lynx hunting success declines, many lynx abandon home ranges and disperse, often over long distances, in search of areas with greater food resources (Slough and Mowat 1996, pp. 956-957; Mowat *et al*. 2000, pp. 290-294). Although some of these dispersing lynx survive and reestablish home ranges elsewhere, many never find areas of high hare densities and die en route, often soon after initiating dispersal (Mowat *et al*. 2000, p. 293).

Lynx are highly mobile and regularly move long distances (greater than 60 mi (100 km)) (Aubry *et al*. 2000, pp. 386-387; Mowat *et al*. 2000, pp. 290-294; Moen *et al*. 2010b, pp. ii, 17-19; Vashon *et al*. 2012, pp. 21-22). Lynx disperse primarily when previously adequate habitats become temporarily inadequate due to snowshoe hare population declines (Ward and Krebs 1985, pp. 2821-2823; Slough and Mowat 1996, p. 956; O'Donoghue *et al*. 1997, pp. 156, 159; Poole 1997, pp. 499-503). Lynx may disperse at any time of year (Moen *et al*. 2010b, pp. ii, 5). Subadult lynx disperse even when hares are abundant (Poole 1997, pp. 502-503), presumably to establish new home ranges. Lynx also make exploratory movements outside their home ranges (Aubry *et al*. 2000, p. 386; Squires *et al*. 2001, pp. 18-26).

Snowshoe hares comprise a majority of the lynx diet throughout its range (Nellis

et al. 1972, pp. 323-325; Brand *et al*. 1976, pp. 422-425; Koehler 1990, p. 848; Apps 2000, pp. 358-359, 363; Aubry *et al*. 2000, pp. 375-378; Mowat *et al*. 2000, pp. 267-268; von Kienast 2003, pp. 37-38; Squires *et al*. 2004a, p. 15, Table 8), and hare abundance is the major driver of lynx population dynamics (see below). Lynx prey opportunistically on other small mammals and birds, particularly during lows in snowshoe hare populations, but alternate prey species do not sufficiently compensate for low availability of snowshoe hares, and lynx populations cannot persist over time in areas with consistently low hare densities (Brand *et al*. 1976, pp. 422-425; Brand and Keith 1979, pp. 833-834; Koehler 1990, pp. 848-849; Mowat *et al*. 2000, pp. 267-268).

Lynx populations in Canada fluctuate in response to the cycling of snowshoe hare populations (Elton and Nicholson 1942, pp. 241-243; Hodges 2000a, pp. 118-123; Mowat *et al*. 2000, pp. 265-272), with synchronous fluctuations in lynx numbers emanating from the core of the Canadian population and spreading over vast areas, generally lagging hare numbers by one year (McKelvey *et al*. 2000a, pp. 232, 239; Mowat *et al*. 2000, pp. 266, 270). When hares are abundant, lynx have larger litter sizes, higher kitten survival, and lower adult mortality, resulting in rapid population growth during the increase phase of the hare cycle (Slough and Mowat 1996, pp. 955-956; Mowat *et al*. 2000, pp. 266, 270-272, 281-289). When snowshoe hare populations are low, female lynx produce few or no kittens that survive to independence (Nellis *et al*. 1972, pp. 326-328; Brand *et al*. 1976, pp. 420, 427; Brand and Keith 1979, pp. 837-838, 847; Poole 1994, pp. 612-616; Slough and Mowat 1996, pp. 953-958; O'Donoghue *et al*. 1997, pp. 158-159; Aubry *et al*. 2000, pp. 388-389; Mowat *et al*. 2000, pp. 285-287).

When hares decline, lynx mortality rates increase, largely because of starvation, as do home range sizes and dispersal/emigration rates (Ward and Krebs 1985, pp. 2821-2823; O'Donoghue *et al*. 1997, pp. 156, 159; Poole 1997, pp. 499-503; Mowat *et al*. 2000, pp. 265-272, 278, 281-294). Lynx numbers decline dramatically during the "crash" phase of the hare cycle (Slough and Mowat 1996, p. 956; Mowat *et al*. 2000, p. 283), with large numbers of lynx dispersing in search of food. Historically, this has resulted in irruptions—large numbers of lynx entering the northern contiguous U.S.—such as the unprecedented "explosions" of lynx observed in the 1960s and 1970s (McKelvey *et al*. 2000a, p. 242). During these events, many lynx occurred in anomalous habitats, suffered high mortality, and numbers declined dramatically within a few years of irruptive peaks (Thiel 1987, entire; McKelvey *et al*. 2000a, p. 242).

Although snowshoe hare populations in Canada show strong, regular population cycles, these types of synchronous, intrinsically generated fluctuations are generally much less pronounced or absent entirely among hare populations in the contiguous United States (Hodges 2000b, pp. 165-173; Hodges *et al*. 2009, pp. 870, 875-876; Scott 2009, pp. 1-44). In the contiguous United States, the degree to which regional lynx population fluctuations are influenced by local snowshoe hare population dynamics is unclear. However, it is anticipated that because of variability in the timing and intensity of lynx irruptions from Canada, and natural fluctuations in snowshoe hare populations, there will be periods when lynx densities within the DPS are extremely low. This dynamic likely predated the historical lynx record and we consider such fluctuations, including periods of very low lynx density, to be a natural part of lynx dynamics in the

contiguous U.S. DPS. Where lynx populations are contiguous with cyclic hare populations in Canada, lynx presence and population dynamics in the contiguous United States appear to be more influenced by the occurrence of irruptions from Canada than by intrinsically generated snowshoe hare population cycles within the DPS range.

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities

associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are

essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical and biological features within an area, we focus on the principal biological or physical constituent elements (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. Primary constituent elements are those specific elements of the physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the

Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species (if one has been completed), articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is generally dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside

and outside the critical habitat designation, will continue to be subject to: (1) conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) section 9 of the Act's prohibitions on taking any individual of the species, including taking caused by actions that affect habitat. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist:

(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or

(2) such designation of critical habitat would not be beneficial to the species.

There is currently no imminent threat of take attributed to collection or vandalism under Factor B for Canada lynx, and identification and mapping of critical habitat is not expected to initiate any such threat. In the absence of finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then a prudent finding is warranted. Here, the potential benefits of designation include: (1) Triggering consultation under section 7 of the Act, in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to state or county governments or private entities; and (4) preventing people from causing inadvertent harm to the species. Therefore, because we have determined that the designation of critical habitat will not likely increase the degree of threat to the species and may provide some measure of benefit, we find that designation of critical habitat is prudent for the Canada lynx DPS.

Critical Habitat Determinability

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for lynx is determinable. Our regulations at 50 CFR

424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

(i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or

(ii) The biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

We reviewed the available information pertaining to the biological needs of the species and habitat characteristics where lynx occur. This and other information represent the best scientific data available and led us to conclude that the designation of critical habitat is determinable for the Canada lynx DPS.

Physical or Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

We derive the specific physical or biological features essential for the Contiguous U.S. DPS of the Canada lynx from studies of this species' habitat, ecology, and life history as described below. Additional information on the habitat, ecology, and life history of the lynx DPS can be found in the documents listed above under **Previous Federal Actions**. We have determined, as we did in the 2009 final critical habitat rule, that the following physical or biological features are essential for lynx:

Space for Individual and Population Growth and for Normal Behavior

Boreal Forest Landscapes

Lynx populations respond to biotic and abiotic factors at different scales. At the regional scale, boreal forests, snow conditions, and competitors (especially bobcat) influence the species' range (Aubry *et al*. 2000, pp. 378-380; McKelvey *et al*. 2000a, pp. 242-253; Hoving *et al*., 2005 p. 749). At the landscape scale within each region, natural and human-caused disturbance processes (e.g., fire, wind, insect infestations, forest

management, and development) may influence the spatial and temporal distribution of lynx populations by affecting the distribution of high quality habitat for snowshoe hares (Agee 2000, pp. 47-73; Ruediger *et al*. 2000, pp. 1-3, 2-2–2-6, 7-3). At the stand-level (vegetation community) scale, the quality, quantity, and juxtaposition of habitats influence home range location and size, productivity, and survival (Aubry *et al*. 2000, pp. 380-390; Vashon *et al*. 2005a, pp. 9-11). At the smaller substand (within-stand) scale, the spatial distribution and abundance of prey and microclimate likely influence lynx movements, hunting behavior, and den and resting site locations (Organ *et al*. 2008, entire; Squires *et al*. 2008, entire; Moen and Burdett 2009, p. 16; Squires *et al*. 2010, pp. 1648, 1654-1657).

All of the physical and biological features of critical habitat for lynx are found only within large landscapes in what is broadly described as the boreal forest or cold temperate forest (Frelich and Reich 1995, p. 325; Agee 2000, pp. 43-46). That is, no individual small-scale area or site is likely to have all of the physical and biological features lynx need to survive. Rather, lynx in the DPS use very large areas as home ranges that incorporate landscape features that may be widely separated from one another to satisfy all of their life-history needs. In contrast to the extensive homogenous boreal forest found in the core of lynx range in northern Canada and Alaska, the southern terminus of the boreal forest type that extends into parts of the northern contiguous United States becomes transitional with other forest types—the Acadian forest in the Northeast (Seymour and Hunter 1992, pp. 1, 3), deciduous temperate forest in the Great Lakes, and subalpine forest in the west (Agee 2000, pp. 43-46). In this rule, we use the

term “boreal forest” because it generally encompasses most of the vegetative descriptions of the transitional forest types that comprise lynx habitat in the contiguous United States (Agee 2000, pp. 40-41).

Because of the transitional nature and patchy distribution of boreal forest in the contiguous United States, species that are specifically adapted to the classic boreal forest farther north, like the lynx, must contend with aspects of their habitat at the southern extent of the boreal forest for which they are not well-adapted. For example, southern transitional boreal forests often have lower landscape snowshoe hare densities than boreal forests further north (Wolff 1980, pp. 123-128; Buehler and Keith 1982, pp. 24, 28; Koehler 1990, p. 849; Koehler and Aubry 1994, p. 84). This requires lynx in the contiguous United States to incorporate more land area into their home ranges than lynx do in the north to acquire adequate food (Mowat *et al*. 2000, pp. 265, 277-278). At some point, landscape hare densities become too low, making some areas incapable of supporting lynx survival and reproduction. Larger home ranges likely require more energy output associated with greater foraging effort (Apps 2000, p. 364) and possibly increased exposure to predation and other mortality factors than lynx face in the core of their range. All of this likely leads to lower reproductive output and tentative conservation status in many parts of the DPS relative to those in Canada and Alaska (Buskirk *et al*. 2000b, p. 95).

Throughout the range of the DPS, lynx habitat occurs within boreal forest vegetation types that support high landscape densities of snowshoe hares and have deep

snow for extended periods. In eastern North America, lynx distribution was strongly associated with areas of deep snowfall and large (40-mi^2 (100-km^2)) landscapes that had been heavily cut and treated with herbicides and had a high proportion of regenerating forest (Hoving 2001, pp. 75, 143). Hoving *et al*. (2004, p. 291) concluded that the broad geographic distribution of lynx in eastern North America is most influenced by snowfall, but within areas of similarly deep snowfall, measures of forest succession become more important factors in determining lynx distribution. Second-order habitat selection in the Acadian forest region is influenced by hare density (a surrogate for early successional forest) and mature conifer forest, despite its association with low hare densities (Simons-Legaard *et al*. 2013 pp. 573-574). In the Northern Rocky Mountains, lynx habitat relationships appear to be less tied to early successional forest stages; high lynx use and hare densities, especially in the critical winter season, occur in mature multistoried forest stands where conifer branches reach the snow surface and thereby provide hare forage (Squires *et al*. 2006a, p. 15; Squires *et al*. 2010, pp. 1653-1657; Berg *et al*. 2012, entire).

Boreal forests used by lynx are generally cool, moist, and dominated by conifer tree species, primarily spruce and fir (Agee 2000, pp. 40-46; Aubry *et al*. 2000, pp. 378-382; Ruediger *et al*. 2000, pp. 4-3, 4-8–4-11, 4-25–4-26, 4-29–4-30). Boreal forest landscapes used by lynx are heterogeneous mosaics of vegetative cover types and successional forest stages created by natural and human-caused disturbances (McKelvey *et al*. 2000c, pp. 426-434). In many places periodic vegetation disturbances stimulate development of dense understory or early successional habitat for snowshoe hares (Ruediger *et al*. 2000, pp. 1-3–1-4, 7-4–7-5). In Maine, lynx were positively associated

with landscapes altered by clearcutting 15 to 25 years previously (Hoving *et al*. 2004, p. 291; Simons-Legaard *et al*. 2013, pp. 573-574). In other places, such as the Northern Rocky Mountains and Greater Yellowstone Area, mature multistoried conifer forests as well as dense regenerating conifer stands provide foraging habitat for lynx (Squires *et al*. 2010, pp. 1648, 1653-1657; Berg *et al*. 2012, entire).

The overall quality of the boreal forest landscape and the juxtaposition of stands of high-quality habitat within the landscape are important for both lynx and snowshoe hares in that both can influence connectivity or movements between habitat patches, availability of food and cover, and spatial structuring of populations or subpopulations (Hodges 2000b, pp. 184-195; McKelvey *et al*. 2000c, pp. 431-432; Walker 2005, p. 79). For example, lynx foraging habitat must be near denning habitat to allow females to adequately provision dependent kittens, especially when the kittens are relatively immobile (Moen *et al*. 2008a, p. 1507; Vashon *et al*. 2012, p. 16). In north-central Washington, hare densities were higher in landscapes with an abundance of dense boreal forest interspersed with small patches of open habitat, in contrast to landscapes composed primarily of open forest interspersed with few patches containing dense vegetation (Walker 2005, p. 79; Lewis *et al*. 2011, p. 565). Similarly, in northwest Montana, connectivity of dense patches within the forest matrix benefited snowshoe hares (Ausband and Baty 2005, p. 209). In mountainous areas, lynx appear to prefer relatively gentle slopes (Apps 2000, p. 361; McKelvey *et al*. 2000d, p. 333; von Kienast 2003, p. 21, Table 2; Maletzke 2004, pp. 17-18).

Individual lynx require large areas of boreal forest landscapes to support their home ranges and to facilitate dispersal and exploratory travel. The size of lynx home ranges is strongly influenced by the quality of the habitat, particularly the abundance of snowshoe hares, in addition to other factors such as gender, age, season, and density of the lynx population (Aubry *et al*. 2000, pp. 382-385; Mowat *et al*. 2000, pp. 276-280). Generally, females with kittens have the smallest home ranges while males have the largest home ranges (Moen *et al*. 2005, p. 11; Burdett *et al*. 2007, p. 463). Reported average home range sizes vary greatly from 12 mi^2 (31 km^2) for females and 26 mi^2 (68 km^2) for males in Maine (Vashon *et al*. 2005a, p. 7), 8 mi^2 (21 km^2) for females and 119 mi^2 (307 km^2) for males in Minnesota (Moen *et al*. 2005, p. 12), and 34 mi^2 (88 km^2) for females and 83 mi^2 (216 km^2) for males in northwest Montana (Squires *et al*. 2004a, p. 13). Home range sizes of lynx introduced into Colorado averaged 29 mi^2 (75 km^2) among reproductive females, 40 mi^2 (103 km^2) among attending (reproductive) males, and 252 mi^2 (654 km^2) among all non-reproductive lynx (Shenk 2008, pp. 1, 10). Based on data presented in Shenk (2008, p. 10) and combining reproductive and non-reproductive lynx, home range estimates for lynx in Colorado averaged 181 mi^2 (470 km^2) for females and 106 mi^2 (273 km^2) for males.

Forest Type Associations in the Contiguous United States

Maine

Stands of regenerating sapling (15–35 years old) spruce-fir forest that provide

dense cover are preferred by both snowshoe hares and lynx in Maine (Robinson 2006, pp. 26-36; Vashon *et al*. 2012, p. 15). Lynx were more likely to occur in large (40 mi^2 (100 km^2)) landscapes with regenerating forest, and less likely to occur in landscapes with very recent clearcut or partial harvest, (Hoving *et al*. 2004, pp. 291-292). Regenerating stands used by lynx generally develop after forest disturbance and are characterized by dense horizontal structure and high stem density within a meter of the ground. These habitats support high snowshoe hare densities (Homyack 2003, p. 63; Fuller and Harrison 2005, pp. 716,719; Vashon *et al*. 2005a, pp. 10-11). At the stand scale, lynx in northwestern Maine selected older (11- to 26-year-old), tall (15 to 24 feet (ft) (4.6 to 7.3 meters (m)) regenerating clearcut stands and older (11- to 21-year-old) partially harvested stands (Fuller *et al*. 2007, pp. 1980, 1983-1985). At the home range scale, lynx also selected mature conifer forest (Simons-Legaard *et al*. 2013, pp. 572-573). Lynx may use partial harvested and mature conifer stands associated with low hare densities because of increased ease of travel and prey access along the extensive edges with high-quality (regenerating clearcut) habitats (Simons-Legaard *et al*. 2013 p. 574).

Minnesota

In Minnesota, lynx primarily occur in the Northern Superior Uplands Ecological Section of the Laurentian Mixed Forest Province. Historically, this area was dominated by red pine (*Pinus resinosa*) and white pine (*P. strobus*) mixed with aspen (*Populus* spp.), paper birch (*Betula papyrifera*), spruce, balsam fir (*A. balsamifera*) and jack pine (*P. banksiana*) (Minnesota Department of Natural Resources [Minnesota DNR] 2003, p.

2). Lynx habitats in Minnesota were associated with Lowland Conifer, Upland Conifer, Mixed Conifer, and Regenerating Forest cover types, with lynx selecting the latter because it provides snowshoe hare habitat (Moen *et al*. 2008a, p. 1511; Moen *et al*. 2008b, pp. 18-29). Moen *et al.* (2008b, pp. 23-25) reported that lynx also selected for the edges between different cover types, presumably because they could more efficiently capture hares along the edges between stands than in the dense interior understory of regenerating stands.

Northern Rocky Mountains (Idaho, Montana, and Northwestern Wyoming)

In the Northern Rocky Mountains, most lynx occurrences are associated with the Rocky Mountain Conifer Forest or Western Spruce-Fir Forest vegetative class (Kuchler 1964, p. 4; McKelvey *et al*. 2000a, p. 246) and most occur above 4,101 ft (1,250 m) elevation (Aubry *et al*. 2000, pp. 378-380; McKelvey *et al*. 2000a, pp. 243-245). The dominant vegetation that constitutes lynx habitat in these areas is subalpine fir (*A. lasiocarpa*), Engelmann spruce (*P. engelmanii*) and lodgepole pine (*P. contorta*) (Aubry *et al*. 2000, p. 379; Ruediger *et al*. 2000, pp. 4-8–4-10). Within in the boreal forest landscape, lodgepole pine is seral to (i.e., is an earlier successional stage) subalpine fir and Engelmann spruce, which are climax forest habitat types. In winter, lynx preferentially used mature multistoried stands, predominantly spruce-fir, with dense horizontal cover and avoided clearcuts and large forest openings (Squires *et al*. 2010, pp. 1648, 1653-1656). In summer, lynx also selected young stands with dense spruce-fir saplings, and avoidance of openings was not apparent (Squires *et al*. 2010, pp. 1648,

1654-1655). Dry forest types (e.g., ponderosa pine (*Pinus ponderosa*), dry Douglas-fir (*Pseudotsuga menziesii*)) do not provide lynx habitat (Berg 2009, p. 20; Squires *et al*. 2010, p. 1655).

Washington

In the North Cascades in Washington, most lynx occurrences were found above 4,101 ft (1,250 m) (McKelvey *et al*. 2000a, p. 243, 2000d, p. 321; von Kienast 2003, p. 28, Table 2; Maletzke 2004, p. 17). In this area, lynx selected Engelmann spruce – subalpine fir forest cover types in winter (von Kienast 2003, p. 28; Maletzke 2004, pp. 16-17; Koehler *et al*. 2008, p. 1518). As in the Northern Rockies, lodgepole pine is a dominant tree species in the earlier successional stages of these climax cover types. Seral (intermediate stage of ecological succession) lodgepole stands contained dense understories and, therefore, received high use by snowshoe hares and lynx (Koehler 1990, pp. 847-848; McKelvey *et al*. 2000d, pp. 332-335). Douglas-fir and ponderosa pine forests, openings, recent burns, open canopy and understory cover, and steep slopes were all avoided habitat types (Koehler *et al*. 2008, p. 1518).

Southern Rocky Mountains (Western Colorado, Northern New Mexico, Southern Wyoming)

Lynx introduced into Colorado used high-elevation mature Engelmann spruce/subalpine fir, mixed spruce/fir/aspen, and riparian/mixed riparian habitats in

Subalpine and Upper Montane forest zones, and avoided lower elevation Montane forests of Douglas fir and ponderosa pine (Shenk 2008, pp.1-2, 12, 15; Devineau *et al.* 2010, p. 525; Ivan 2011a, pp. 21, 27). However, it remains uncertain whether these habitats can sustain a viable lynx population over time (Shenk 2008, p. 16; Shenk 2010, pp. 2, 5-6, 11). Introduced lynx from Colorado also have wandered into mountainous areas of northern New Mexico, which contain relatively small and fragmented areas of similar high-elevation spruce/fir and cold mixed-conifer habitats (U.S. Forest Service 2009, pp. 5-10). No evidence exists that lynx occupied these areas historically; reproduction among introduced lynx that have traveled from Colorado into northern New Mexico has not been documented; and habitats in New Mexico are thought to be incapable of supporting a self-sustaining lynx population (U.S. Forest Service 2009, pp. 2, 10, 16-17).

Based on the information above, we identify large boreal forest landscapes that support high densities of snowshoe hares and have deep snow for extended periods to contain the physical and biological features needed to support and maintain lynx populations over time and which, therefore, are essential for the conservation of the lynx DPS.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Food (Snowshoe Hares)

Snowshoe hare density is the most important factor explaining the persistence of lynx populations (Steury and Murray 2004, p. 136). Snowshoe hare density differences

among areas of boreal forest in the contiguous United States are also thought to explain many lynx distribution patterns historically and at present. While seemingly all of the physical aspects usually associated with lynx habitat may be present in a landscape, if snowshoe hare densities are inadequate to support reproduction, recruitment, and survival over time, lynx populations will not persist. Minimum landscape snowshoe hare densities necessary to maintain persistent, reproducing lynx populations across the range of the DPS have not been determined, although Ruggiero *et al*. (2000, pp. 446-447) suggested that at least 0.2 hares per ac (0.5 hares per ha) may be necessary. Landscape hare densities in areas known to support lynx home ranges in the contiguous United States were 0.26 hares per ac (0.64 hares per ha) in northeast Minnesota (Moen *et al.* 2012, p. 352) and 0.30 hares per ac (0.74 hares per ha) in northern Maine (Simons-Legaard *et al.* 2013, p. 574). Landscape hare density in Voyageurs National Park in northern Minnesota was estimated at 0.14 hares per ac (0.35 hares per ha) and did not support resident breeding lynx (Moen *et al.* 2012, pp. 352-354). In northern Maine, areas with landscape hare densities less than 0.2 hares per ac (0.5 hares per ha) were not occupied by lynx (Simons-Legaard *et al.* 2013, pp. 567, 575).

Steury and Murray (2004, entire) modeled lynx and snowshoe hare populations and predicted that a minimum of 0.4 to 0.7 hares per ac (1.1 to 1.8 hares per ha) would be required for persistence of a reintroduced lynx population in the portion of the lynx range in the contiguous United States. In areas used by introduced lynx in west-central Colorado, Zahratka and Shenk (2008, pp. 906, 910) reported hare densities that ranged from 0.03 to 0.5 hares per ac (0.08 to 1.32 hares per ha) in mature Engelmann spruce-

subalpine fir stands and from 0.02 to 0.14 hares per ac (0.06 to 0.34 hares per ha) in mature lodgepole pine stands. In "purportedly good" hare habitat also in west-central Colorado in the area used by introduced lynx, Ivan (2011c, pp. iv-v, 71, 92) estimated summer hare densities of 0.08 to 0.27 hares per ac (0.2 to 0.66 hares per ha) in stands of "small" lodgepole, 0.004 to 0.01 hares per ac (0.01 to 0.03 hares per ha) in "medium" lodgepole, and 0.004 to 0.1 hares per ac (0.01 to 0.26 hares per ha) in spruce-fir stands.

The boreal forest landscape is naturally dynamic and usually contains a mosaic of forest stand successional stages. In some areas, particularly in the eastern portion of the DPS, stands that support high densities of snowshoe hares are of a young successional stage and are in a constant state of transition to other more mature stages. Conversely, if the vegetation potential (or climax forest type) of a particular forest stand is conducive to supporting abundant snowshoe hares, it likely will also go through successional stages that are of lesser value as lynx foraging habitat (i.e., times when snowshoe hare abundance is low) or lynx denning habitat (Agee 2000, pp. 62-72; Buskirk *et al*. 2000a, pp. 403-408) as part of a natural forest succession process. For example, a boreal forest stand where there has been recent disturbance, such as fire or timber harvest, resulting in little or no understory structure will support fewer snowshoe hares and, therefore, lower quality lynx foraging habitat. However, that temporarily low-quality stand would regenerate into higher-quality snowshoe hare (lynx foraging) habitat within 10 to 25 years, depending on local conditions (Ruediger *et al*. 2000, pp. 1-3–1-4, 2-2–2-5). The continuation of this naturally dynamic pattern of succession exhibited in boreal forests is crucial for lynx survival due to their dependence on intermediate successional stages in

many areas. In places where lynx are dependent on mature forest stages, forest stand turnover still occurs, but on a longer time scale requiring the ability to recruit new mature forest stands as others are lost to fire, insect infestation, or human activities.

Forest management techniques that thin the understory may reduce habitat quality for hares and, thus, for lynx (Ruediger *et al*. 2000, pp. 2-4–3-2; Hoving *et al*. 2004, pp. 291-292; Homyack *et al*. 2007, entire), at least temporarily (Griffin and Mills 2007, entire). Stands may continue to provide good snowshoe hare habitat for many years until woody stems in the understory become too sparse, as a result of undisturbed forest succession or management (e.g., clearcutting or thinning) (Griffin and Mills 2007, entire). Thus, if the vegetation potential of the stand is appropriate, a stand that is not currently in a condition that supports abundant snowshoe hares for lynx foraging or coarse woody debris for den sites would improve as habitat for snowshoe hares (and thus lynx foraging) with time. Therefore, we consider lynx habitat to include forest areas with the potential, through natural succession, to produce high-quality snowshoe hare habitat, regardless of their current stage of forest succession.

Snowshoe hares feed on conifers, deciduous trees, and shrubs (Hodges 2000b, pp. 181-183), and they prefer boreal forest stands that have a dense horizontal understory to provide food, as well as cover and security from predators. Snowshoe hare density is correlated to understory cover between approximately 3 to 10 ft (1 to 3 m) above the ground or snow level (Hodges 2000b, p. 184). Habitats most heavily used by snowshoe hares are stands with shrubs, stands that are densely stocked, and stands at ages where

branches have more lateral cover (Hodges 2000b, p. 184; Lewis *et al*. 2011, pp. 561, 564-565). Generally, earlier successional forest stages provide a greater density of horizontal understory and support more snowshoe hares (Buehler and Keith 1982, p. 24; Wolfe *et al*. 1982, pp. 668-669; Koehler 1990, pp. 847-848; Hodges 2000b, pp. 184-191; Griffin 2004, pp. 84-88). However, snowshoe hares can be abundant in mature forests with dense understories, particularly in the western part of the DPS range (Griffin 2004, pp. 53-54, 88; Hodges *et al*. 2009, p. 876; Squires *et al*. 2010, pp. 1648, 1653-1657; Berg *et al*. 2012, pp. 1484-1488), and such mature forests may be a source of hares for other adjacent forest types (Griffin and Mills 2009, pp. 1492, 1495-1496).

In Maine, snowshoe hare densities were highest in regenerating softwood (spruce and fir) and mixed-wood stands with high conifer stem densities (Homyack 2003, p. 195; Fuller and Harrison 2005, pp. 716, 719; Robinson 2006, p. 69). However, when exploiting high-density hare habitats, lynx focused foraging efforts in stands with intermediate hare densities and structural complexity that occurred at the edges of the highest density habitat, suggesting that lynx must balance between hare abundance and accessibility (Fuller and Harrison 2010, pp. 1276-1277; Simons-Legaard *et al.* 2013, p. 574). In northeastern Minnesota, lynx used areas with relatively higher proportions of coniferous forest, young (10- to 30-year-old) regenerating forest, and shrubby grassland, and these habitats supported the highest hare densities (McCann and Moen 2011, pp. 509, 515).

In montane and subalpine forests in northwest Montana, the highest snowshoe

hare densities in summer were generally in younger stands with dense forest structure, but winter hare densities were as high or higher in mature stands with dense understory forest structure (Griffin 2004, p. 53). In Montana in winter, hare and lynx used multistoried stands, often in older-age classes, where the tree boughs touch the snow surface but where the stem density is low (Squires *et al*. 2006a, p. 15; Griffin and Mills 2009, pp. 1492, 1495-1496; Squires *et al*. 2010, pp. 1648, 1653-1656). In the North Cascades of north-central Washington, snowshoe hare density was highest in 20-year-old lodgepole pine stands where the average density of trees and shrubs was 15,840 stems per ha (6,415 stems per ac) (Koehler 1990, pp. 847-848), and hare density was associated with large shrubs and saplings within a stand (Lewis *et al*. 2011, pp. 561, 564-565). In western Wyoming, late-seral multistoried forests supported a greater abundance of snowshoe hares than regenerating even-aged forests (Berg *et al*. 2012, p. 1). Similarly, in Yellowstone National Park, where hares were rare and patchily distributed, hare presence and relative abundance were linked to mature forest stands (Hodges *et al*. 2009, p. 876). In western Colorado areas used by introduced lynx, Zahratka and Shenk (2008, pp. 906, 910) estimated higher hare densities in spruce-fir stands than in lodgepole pine, but Ivan (2011c, pp. iv, 71, 92) estimated hare densities as highest in stands of small lodgepole pine, intermediate in spruce-fir stands, and lowest in stands of medium lodgepole pine.

Habitats supporting abundant snowshoe hares must be present in a sufficient proportion (though not necessarily the majority) of the landscape to support a viable lynx population. Landscapes with more contiguous hare habitat, or where patches of high-quality habitat occur in a matrix with patches of similar quality, support more hares than

fragmented habitats or those in which patches of hare habitat occur within a matrix of poor-quality habitat (Lewis *et al*. 2011, p. 565). Broad-scale snowshoe hare density estimates are not available for all of the areas being proposed as lynx critical habitat. Available snowshoe hare density estimates are helpful in determining where snowshoe hares exist, but each estimate is specific to both a location and a point in time. Due to intrinsic, rapid fluctuations often seen in snowshoe hare populations, density estimates cannot be considered definitive for any particular area. If enough data were gathered for a specific area over several years, these data could be used to calculate an average density (with margins of error included). Lynx do not occur everywhere within the range of snowshoe hares in the contiguous United States (Bittner and Rongstad 1982, p. 146; McCord and Cardoza 1982, p. 729). This may be due to inadequate abundance, density, or spatial distribution of hares in some places, to the absence of snow conditions that would allow lynx to express a competitive advantage over other hare predators, or to a combination of these factors.

Based on the information above, we identify high densities of snowshoe hares broadly distributed across boreal forest landscapes to be a physical or biological feature needed to support and maintain lynx populations over time and which, therefore, is essential to the conservation of the lynx DPS.

Snow Conditions (Other Physiological Requirements)

Snow conditions also determine the distribution of lynx and snowshoe hares.

Deep, fluffy snow conditions likely restrict potential lynx competitors such as bobcat or coyote from effectively encroaching on or hunting hares in winter lynx habitat. In addition to snow depth, other snow properties, including surface hardness or sinking depth, also influence lynx foraging success and, ultimately may be important factors in the spatial, ecological, and genetic structuring of the species (Stenseth *et al*. 2004, entire). Gonzalez *et al.* (2007, pp. 4, 7) compared 496 lynx locations with snow cover over the period 1966–2005 and concluded that lynx require 4 months (December through March) of continuous winter snow coverage.

In eastern North America, snowfall was the strongest predictor of lynx occurrence at a regional scale (Hoving *et al*. 2005, p. 746, Table 5), and lynx in the northeastern United States were most likely to occur in areas with a 10-year mean annual snowfall greater than 105 in (268 cm) (Hoving 2001, p. 75; Hoving *et al*. 2005, p. 749). The Northern Superior Uplands section of northeast Minnesota, which supports a persistent lynx population, receives more of its precipitation as snow than any other part of the State, and has the longest period of snow cover and shortest growing season (Minnesota DNR 2003, p. 2). Average annual snowfall from 1971 to 2000 in this area was generally greater than 55 in (149 cm) (University of Minnesota 2005).

Information on average snowfall or snow depths in mountainous areas such as the Cascade and Northern Rocky Mountains is limited because few weather stations in these regions have measured snow fall or snow depth over time. An important consideration in mountainous areas is that topography strongly influences local snow conditions. For

example, in the Cascades, annual snowfall averaged 121 in (307 cm) at Mazama, WA (elevation 2,106 ft (642 m)), and 15 in (38 cm) at Omak, WA (elevation 1,299 ft (396 m)) (Western Regional Climate Center 2013). In western Montana areas that support lynx populations, annual snowfall averaged 90 in (229 cm) in Troy (elevation 1,950 ft (594 m)) and 120 in (305 cm) at Seeley Lake (elevation 4,200 ft (1,280 m)) (Western Regional Climate Center 2013).

Based on the information above, we identify winter conditions that provide and maintain deep, fluffy snow for extended periods in boreal forest landscapes to be a physical or biological feature needed to support and maintain lynx populations over time and which, therefore, are essential to the conservation of the lynx DPS.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Denning Habitat

Lynx den sites are found in mature and younger boreal forest stands that have a large amount of cover and downed, large woody debris. The structural components of lynx den sites are common features in managed (logged) and unmanaged (e.g., insect damaged, wind-throw) stands. Downed trees provide excellent cover for den sites and kittens and often are associated with dense woody stem growth.

In northern Maine, 12 of 26 natal dens occurred in conifer-dominated sapling

stands, and 5 dens were found in mature or mixed multistoried forest stands dominated by conifers (Organ *et al*. 2008, p. 1515). Modeling sub-stand characteristics of these 26 dens determined that 2 variables, tip-up mounds of blown-down trees and visual obscurity at 5 m from the den, were most useful for predicting lynx den-site selection in managed forests (Organ *et al*. 2008, p. 1514). Lynx essentially selected dense cover in a cover-rich area for denning. Denning habitat was provided by blowdown, deadfalls, and root wads. Coarse woody debris alone was not a useful predictor of lynx den-site selection, despite its abundance, and denning habitat was not considered limiting in northwest Maine (Organ *et al*. 2008, p. 1516). Den sites in Maine often occurred at the interface of two stands of different ages or in dense regenerating conifer stands, suggesting that females select den sites near prey sources to minimize time spent away from kittens while foraging (Vashon *et al*. 2012, p. 16).

In northern Minnesota, structural components of forests, such as blowdown and deadfalls, appear to be more important than forest cover type in determining lynx denning habitat (Interagency Lynx Biology Team 2013, p. 46). Most den sites in Minnesota were found in blowdown and were associated with small patches of uplands surrounded by low-lying wetland areas (Moen and Burdett 2009, pp. 5, 11). Although lowland conifer cover types appeared to provide the forest structure used most often for denning in northern Minnesota (Moen *et al*. 2008a, p. 1510), other forest cover types were used if they contained recent blowdowns (Moen and Burdett 2009, p. 16). Very dense horizontal cover in the immediate vicinity of the den site also appeared to be a determinant (Moen and Burdett 2009, p. 16). Female lynx foraged within approximately 1.2–1.8 mi (2–3

km) of den sites when kittens were at the den; at the scale of the foraging radius around a den site, landscape composition contained more lowland conifer, upland conifer, and regenerating forest than did home ranges (Moen *et al*. 2008a, p. 1507). Denning habitat does not appear to be limiting in northern Minnesota (Moen and Burdett 2009, p. 16).

In northwestern Montana, lynx generally denned in mature spruce–fir forests among downed logs or root wads of wind-thrown trees in areas with abundant coarse woody debris and dense understories with high horizontal cover in the immediate areas around dens (Squires *et al*. 2004a, Table 3; Squires *et al*. 2008, pp. 1497, 1501-1505). Few dens were located in young regenerating or thinned stands with discontinuous canopies (Squires *et al*. 2008, p. 1497). Many dens had northeasterly aspects and were farther from forest edges than random expectation (Squires *et al*. 2008, p. 1497).

In the North Cascades, Washington, lynx denned in mature (older than 250 years) stands with an overstory of Engelmann spruce, subalpine fir, and lodgepole pine with an abundance of downed woody debris (Koehler 1990, p. 847). In this study, all den sites were located on north-northeast aspects (Koehler 1990, p. 847). Den site availability, although not thought to be limiting for lynx populations in the DPS (Moen *et al*. 2008a, p. 1512; Organ *et al*. 2008, pp. 1514, 1516-1517; Squires *et al*. 2008, p. 1505), is an essential component of the boreal forest landscapes that lynx need to satisfy a key life-history process (reproduction).

Introduced lynx in Colorado denned at higher elevations and on steeper slopes

compared to general use areas, with den sites tending to have northerly aspects and dense understories of coarse woody debris (Shenk 2008, p. 2).

Based on the information above, we identify denning habitat as described above to be a physical or biological feature needed to support and maintain lynx populations over time and which, therefore, is essential to the conservation of the lynx DPS.

Habitats Protected From Disturbance or Representative of the Historic Geographical and Ecological Distributions of the Species

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). In 2007, the IPCC released its Fourth Assessment Report, which represents the current scientific consensus on global and regional climate change and the best scientific data available in this rapidly changing field. "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007a, p. 78). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability,

human activity, or both (IPCC 2007a, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007a, pp. 8–14, 18–19). In our analyses, we use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

Previous IPCC assessments concluded that temperatures across the globe have increased by about 1.8 ºFahrenheit (F) (1 ºCelsius (C)) over the last century (IPCC 2001, p. 7). The IPCC projection for eastern and western North America within the range of the lynx DPS is climate warming of 1.8 ºF (1 ºC) to 5.4 ºF (3 ºC) by the year 2050 (IPCC 2007b, p. 889). The range of warming projected over the next century runs from 3.6 ºF (2 ºC) to 10.8 ºF (6 ºC) for North America, with warming higher than this average in areas that are inland, northerly, or mountainous. The IPCC concludes that continued warming in North America, with lower snow accumulation and earlier spring snowmelt, is very likely (IPCC 2007b, p. 887). Climate history and projections from regional climate models for regions within the lynx DPS corroborate global models indicating that both eastern and western North America, including all portions of the lynx DPS, have warmed in the last century and are likely to warm 1.8 ºF (1 ºC) to 5.4 ºF (3 ºC) by the year 2050 (IPCC 2007b, p. 889). For example, in the Northern Rocky Mountains at Glacier National Park, mean summer temperatures have increased 3.0 ºF (1.66 ºC) between 1910 and 1980 (Hall and Fagre 2003, pp. 134-137) resulting in lower snowpack,

earlier spring melt, and distributional shifts in vegetation (Hall and Fagre 2003, pp. 138-139; Fagre 2005, pp. 4-9). These changes are predicted to continue and accelerate under future climate scenarios (Hall and Fagre 2003, Fig. 7). An analysis of potential snow cover under a range of IPCC future climate scenarios and modeling of vegetation using a dynamic vegetation model indicates that potential lynx habitat could decrease by as much as two-thirds in the contiguous United States by the end of this century (Gonzalez *et al*. 2007, pp. 4, 7-8, 10, 13-14).

Across their worldwide distribution, lynx are dependent on deep snow that persists for long periods of time. Warmer winter temperatures are reducing snow pack in all portions of the lynx DPS through a combination of a higher proportion of precipitation falling as rain and higher rates of snowmelt during winter (Hamlet and Lettenmaier 1999, p. 1609; Brown 2000, p. 2347; Hoving 2001, pp. 73-75; Mote 2003, p. 3-1; Christensen *et al*. 2004, p. 347; Knowles *et al*. 2006, pp. 4548-4549). This trend is expected to continue with future warming (Hamlet and Lettenmaier 1999, p. 1611; Christensen *et al*. 2004, p. 347; Mote *et al*. 2005, p. 48; IPCC 2007b, p. 850). The IPCC (2007b, p. 850) concludes that "snow season length and snow depth are very likely to decrease in most of North America except in the northernmost part of Canada where maximum snow depth is likely to increase." Shifts in the timing of the initiation of spring runoff toward earlier dates in western North America are also well documented (Hamlet and Lettenmaier 1999, p. 1609; Brown 2000, p. 2347; Cayan *et al*. 2001, pp. 409-410; Christensen *et al*. 2004, p. 347; Mote *et al*. 2005, p. 41; Knowles *et al*. 2006, p. 4554). In addition, a feedback effect causes the loss of snow cover due to the reflective nature of snow and the relative heat-

absorbing properties of non-snow-covered ground. This feedback effect leads to the highest magnitude of warming occurring at the interface of snow-covered and exposed areas, increasing the rate at which melting occurs in spring (Groisman *et al*. 1994a, pp. 1637-1648; Groisman *et al*. 1994b, pp. 198-200). This effect has led to the average date of peak snowmelt to shift three weeks earlier in spring in the Intermountain West (Fagre 2005, p. 4).

Snow accumulation and duration are expected to decline generally in the geographic areas that contain the central and eastern portion of the lynx DPS (IPCC 2007c, p. 891; Burns *et al*. 2009, p. 31). Due to the importance to lynx of prolonged periods of deep fluffy snow, current habitats that lose this feature would decline in value for lynx (Hoving 2001, p. 73; Carroll 2007, p. 1092; Gonzalez *et al*. 2007, entire). Reduced snow depth and duration may reduce lynx's competitive advantage over bobcats, which have similar ecology to lynx but are not as well-adapted to hunting hares in deep fluffy snow (Hoving 2001, pp. 23-24; Carroll 2007, p. 1102; Interagency Lynx Biology Team 2013, p. 69, 71).

Changes in temperature and rainfall patterns are expected to shift the distribution of ecosystems northward and up mountain slopes (McDonald and Brown 1992, pp. 411-412; Danby and Hik 2007, pp. 358-359; IPCC 2007c, pp. 230, 232). As climate changes over a landscape, the ecosystems that support lynx are likely to shift, tracking the change of temperature, but with a time lag depending on the ability of individual plant and animal species to migrate (McDonald and Brown 1992, pp. 413-414; Hall and Fagre

2003, p. 138; Peterson 2003, p. 652). In the contiguous United States, researchers expect that lynx in mountainous habitat will, to some extent, track climate changes by using higher elevations on mountain slopes, assuming that vegetation communities supportive of lynx and hare habitats also move upslope (Gonzalez *et al*. 2007, p. 7).

Future of Lynx Habitat

In 2003, we determined that climate change was not a threat to lynx within the contiguous U.S. DPS because the best available science we had at that time (Hoving 2001) was too uncertain in nature (68 FR 40083). Since that time, new information on regional climate changes and potential effects to lynx habitat has been developed (e.g., Knowles *et al*. 2006, pp. 4545-4559; Carroll 2007, pp. 1098-1102; Danby and Hik 2007, pp. 358-359; Gonzalez *et al*. 2007, entire; Burns *et al*. 2009, p. 31; Johnston *et al*. 2012, pp. 6-13), and much of this new information suggests that climate change is likely to be a significant issue of concern for the future conservation of the lynx DPS. These studies predict lynx distribution and habitat are likely to shift upward in elevation within its currently occupied range and recede northward as temperatures increase (Gonzalez *et al*. 2007, pp. 7, 13-14, 19; Jacobson *et al*. 2009, pp. 26-27, 30-31; Vashon *et al*. 2012, pp. 60, 64; Interagency Lynx Biology Team 2013, p. 69). Climate modeling suggests that lynx habitat and populations are anticipated to decline accordingly (Carroll 2007, pp. 1098-1102) and may disappear completely from parts of the range of the DPS by the end of this century (Johnston *et al*. 2012, pp. 6-13). Climate change is expected to substantially reduce the amount and quality of lynx habitat in the contiguous United

States, with patches of high-quality habitat becoming smaller, more fragmented, and more isolated (Carroll 2007, pp. 1099-1100; Johnston *et al*. 2012, p. 11). Remaining lynx populations would likely be smaller than at present and, because of small population size and increased isolation, populations would likely be more vulnerable to stochastic environmental and demographic events (Carroll 2007, pp. 1100-1103).

Aside from predicted elevational and latitudinal shifts in areas currently occupied by lynx, we are aware of no models that predict specific areas not currently of value for lynx that will become so as a result of climate-induced changes (e.g., Johnston *et al*. 2012, p. 11). Therefore, at this time, we find it appropriate to propose critical habitat for the lynx only in areas occupied by the DPS that currently contain the physical and biological features essential to the conservation of the lynx. Although it is not within our authority to designate critical habitat in Canada (in the event that the range of lynx recedes northward out of the contiguous United States), the revised critical habitat units in this proposed rule include, to the extent practicable, higher elevation habitats within the range of the DPS that would facilitate long-term lynx adaptation to an elevational shift in habitat should one occur. As climate change scenarios and ecosystem responses become more regionally certain, revisions to critical habitat may be necessary to accommodate shifts in the range of the essential physical and biological features and any corresponding shift in the range of lynx in the contiguous United States.

Primary Constituent Element for Canada Lynx

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of lynx in areas occupied at the time of listing, focusing on the features' primary constituent elements (PCEs). We consider PCEs to be the elements of physical or biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine, as we did in the 2009 final critical habitat rule, that the PCE specific to lynx in the contiguous United States is:

(1) Boreal forest landscapes supporting a mosaic of differing successional forest stages and containing:

(a) Presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface;

(b) Winter conditions that provide and maintain deep fluffy snow for extended periods of time;

(c) Sites for denning that have abundant coarse woody debris, such as downed trees and root wads; and

(d) Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

With this proposed designation of critical habitat, we intend to identify the physical or biological features essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the features' PCE sufficient to support the recovery of the species. For lynx, the distinction between areas that may contain *some* of each of the physical and biological features described above and areas that have *all* of the physical and biological features, each in adequate quantities *and* spatial arrangements to support populations, is very important for the reasons discussed below.

Many places in the contiguous United States have (1) some amount of boreal forest supporting a mosaic of successional stages, (a) snowshoe hares and their habitats, (b) deep, fluffy snow for extended periods, (c) denning habitat, and (d) other habitat types interspersed among boreal forest patches, but which do not and cannot support lynx populations. That is, not all boreal forest landscapes supporting a mosaic of differing

successional forest stages contain the physical and biological features essential to lynx in adequate quantities and spatial arrangements on the landscape to support lynx populations over time. Lynx may occasionally (even regularly, if intermittently) occur temporarily in places that do not contain all of the elements of the PCE, especially during "irruptions" of lynx into the northern contiguous United States following hare population crashes in Canada (as described above under *Species Information* and below under *Criteria Used To Identify Critical Habitat*). However, because lynx reproduction and recruitment in such places, if any occur at all, do not offset mortality and dispersal, these areas are likely population "sinks," and as such do not contribute to lynx conservation or recovery. We have determined that these population "sink" areas do not contain the PCE and, therefore, are not essential to the conservation and recovery of the lynx DPS.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection.

The need for specific management direction and conservation measures for lynx was recognized during development of the interagency Lynx Conservation Assessment and Strategy (LCAS; Ruediger *et al*. 2000, entire). The U.S. Forest Service (USFS), Bureau of Land Management (BLM), National Park Service, and the Service developed

the LCAS using the best available science at the time specifically to provide a consistent and effective approach to conserve lynx and lynx habitat on Federal lands. The overall goals of the 2000 LCAS were to recommend lynx conservation measures, to provide a basis for reviewing the adequacy of USFS and BLM land and resource management plans with regard to lynx conservation, and to facilitate conferencing and consultation under section 7 of the Act. The LCAS identified an inclusive list of 17 potential risk factors for lynx or lynx habitat that could be addressed under programs, practices, and activities within the authority and jurisdiction of Federal land management agencies. The risks identified in the LCAS were based on effects to individual lynx, lynx populations, or to lynx habitat.

Potential risk factors the LCAS addressed that may affect lynx productivity included: timber management, wildland fire management, recreation, forest/backcountry roads and trails, livestock grazing, and other human developments. Potential risk factors the LCAS addressed that may affect lynx mortality included: trapping, predator control, incidental or illegal shooting, and competition and predation as influenced by human activities and highways. Potential risk factors the LCAS addressed that may affect lynx movement included: highways, railroads and utility corridors, land ownership pattern, and ski areas and large resorts. Other potential large-scale risk factors for lynx addressed by the LCAS included: fragmentation and degradation of lynx refugia, lynx movement and dispersal across shrub-steppe habitats, and habitat degradation by nonnative and invasive plant species.

With the listing of the lynx DPS in 2000, Federal agencies across the contiguous U.S. range of the lynx were required to consult with the Service on actions that may affect lynx. The LCAS assisted Federal agencies in planning activities and projects in ways that benefit lynx or avoid adverse impacts to lynx or lynx habitat. In most cases, if projects were designed that failed to meet the standards in the LCAS, the biologists using the LCAS would arrive at an adverse effect determination for lynx. The 2000 LCAS used the best information available at the time to ensure that the appropriate mosaic of habitat would be provided for lynx conservation on Federal lands. Although the LCAS was written specifically for Federal lands, many of the conservation measures were considered equally applicable to non-Federal lands.

A Conservation Agreement between the USFS and the Service (U.S. Forest Service and U.S. Fish and Wildlife Service 2000, entire) and a similar Agreement between the BLM and the Service (Bureau of Land Management and U.S. Fish and Wildlife Service 2000, entire) committed the USFS and BLM to use the LCAS in determining the effects of actions on lynx until Forest and Land Management Plans were amended or revised to adequately conserve lynx. A programmatic biological opinion pursuant to section 7 of the Act confirmed the adequacy of the LCAS and its conservation measures to conserve lynx, and concluded that USFS and BLM land management plans, as implemented in accordance with the Conservation Agreements, would not jeopardize the continued existence of lynx (U.S. Fish and Wildlife Service 2000, entire).

Lynx conservation depends on management that supports boreal forest landscapes of sufficient size to encompass the temporal and spatial changes in habitat and snowshoe hare populations to support interbreeding lynx populations over time. At the time it was written, the LCAS recommended the most appropriate level of management or protection for lynx. The LCAS conservation measures addressed risk factors affecting lynx habitat and lynx productivity and were designed to be implemented at the scale necessary to conserve lynx. This level of management is appropriate for Federal lands because they account for the majority of high-quality lynx habitat in the contiguous United States (except for Maine), and also because the inadequacy, at the time of listing, of regulatory mechanisms to conserve lynx on these lands was the primary reason for listing the lynx as a threatened species under the Act.

After the LCAS was written, research on lynx, hares, and their habitats and distributions continued throughout the range of the DPS. The Service and land management agencies recognized that, as new scientific information became available, it should supplement the LCAS and be taken into account by land managers. The USFS considered such new information when it proposed to revise 18 Forest Plans under a programmatic plan amendment called the Northern Rocky Mountain Lynx Amendment (NRLA) (U.S. Forest Service 2007). Some of the LCAS standards were changed to guidelines because the Service determined that some risk factors were not negatively affecting the lynx DPS as a whole. For example, after publication of the LCAS, lynx studied in the contiguous United States were shown to use a variety of sites and conditions for denning, and den site availability is not believed to be a limiting factor for

lynx in the DPS (U.S. Fish and Wildlife Service 2007, pp. 48-49; Interagency Lynx Biology Team 2013, p. 30). Similarly, after evaluating Bunnell *et al*. (2006, entire) and Kolbe *et al*. (2007, entire), the Service determined that the best information available did not indicate that compacted snow routes increased competition from other species to levels that adversely impact lynx populations in the NRLA area (U.S. Fish and Wildlife Service 2007, pp. 53-55). Also since the LCAS was written, new information revealed the importance of multistoried stands for lynx in western areas (Squires *et al*. 2006a, p. 15); based on this, the USFS adopted a standard in the NRLA not identified in the LCAS for conserving such stands.

In addition to diverging from the standards in the LCAS because of new information, the NRLA also deviated from the LCAS by allowing additional fuels-reduction projects in areas within the wildlands-urban-interface (WUI). In our analysis of the NRLA, we determined that the management in the NRLA area would provide for the recovery of lynx in these areas by addressing the major reason we listed the lynx in 2000─the lack of guidance for conservation of lynx in Federal land management plans. Consultation under section 7 of the Act was completed for the NRLA in 2007, and it is now official land management direction for the National Forests that adopted it. In 2008, the USFS and the Service coordinated on the development of the similar Southern Rocky Mountains Lynx Amendment to guide section 7 consultation and conservation of lynx introduced into Colorado and their potential habitats on seven National Forests in Colorado and southern Wyoming (U.S. Fish and Wildlife Service 2008, entire; U.S. Forest Service 2008a, entire).

Federal agencies across most of the range of the DPS have amended or revised land management plans to include specific management direction to conserve lynx and lynx habitat (Interagency Lynx Biology Team 2013, p. 88). This direction was developed in accordance with the National Forest Management Act (NFMA) of 1976 and the regulations that implement the statute (36 CFR 219.22), which requires public review and comment as part of the decision-making process. The USFS has completed such amendments or revisions to Land and Resource Management Plans in its Eastern, Northern, Rocky Mountain, and Intermountain regions. In the Pacific Northwest Region, forest plans for national forests with lynx habitat are currently being revised (Interagency Lynx Biology Team 2013, p. 4).

To address the substantial volume of new information on lynx, hares, and their habitats and distributions that has accumulated from more than a decade of continuing research throughout the range of the DPS, the LCAS, completed in January of 2000 and revised in August of 2000, was again revised in 2013 (Interagency Lynx Biology Team 2013, entire). The current revision synthesizes all the available research relevant to lynx, their primary prey, and anthropogenic influences on the conservation of lynx in the contiguous United States. Most USFS Land and Resource Management Plans within the current range of lynx have been formally amended or revised to incorporate lynx and hare conservation standards and guidelines. Standards and guidelines were primarily based on those in the 2000 LCAS, but many Forests used the LCAS to develop goals, objectives, and standards and guidelines formulated or adapted for specific geographic areas or

Forest units. Therefore, the Lynx Biology Team deemed it appropriate to abandon the use of prescriptive measures such as those in the 2000 LCAS, and in the 2013 revision provide recommended conservation measures to be considered in project planning and implementation and which may help inform future amendments or revisions of USFS forest plans.

The 2013 LCAS revision presents the most current source of such information and will continue to inform the special management considerations necessary for conserving lynx on Federal lands. Notably, the 2013 revision concludes that recent studies in the contiguous United States generally suggest that lynx are rarer and more patchily distributed in the western U.S. and Great Lakes regions, and more abundant in Maine, than previously thought (Interagency Lynx Biology Team 2013, p. 23). It recommends focusing limited conservation resources on those "…relatively limited areas that support persistent lynx populations and have evidence of recent reproduction, with less stringent protection and greater flexibility given in areas that only support lynx intermittently" (Interagency Lynx Biology Team 2013, p. 2). By proposing critical habitat only in areas that contain the PCE (have *all* physical and biological features in adequate quantities and spatial arrangements), the Service, with this rule, adopts the LCAS recommendation to focus conservation in areas capable of supporting lynx populations over time.

The LCAS was developed to provide a consistent and effective approach to conserve lynx on Federal lands in the conterminous United States. In northern New

England, the only place the LCAS would apply is on Federal land in the White Mountain National Forest. However, in northern New England, most lynx habitat is on private commercial timber lands, and lynx populations there occur in extensive boreal forest landscapes where large, contiguous stands of young, regenerating spruce-fir habitat are prevalent (due to past clearcut timber harvest) and support high densities of snowshoe hares. Although lynx and hare habitats were likely created historically by natural forest disturbances (e.g., fire, insects and disease, and windthrow), the current extensive habitats in northern Maine are the result of large-scale industrial forest management. Maintaining lynx populations there will require forest management practices that produce extensive stands supporting high hare densities into the future. The Service developed Canada Lynx Habitat Management Guidelines for Maine (McCollough 2007, entire), which specify the special management—recommendations on land use, forest conditions, landscape conditions, and silviculture requirements—needed to support lynx populations based on the best available science (see discussion of Healthy Forest Reserve Program under **Exclusions,** below, for further details).

Assuring adequate management of most lynx habitat on private lands in northern New England has been limited success. Extensive clearcutting in the 1970s and 1980s to salvage conifers damaged by spruce budworm created much of the habitat currently used by lynx. The Maine Forest Practices Act of 1989 regulated clearcuts, resulting in a shift in timber-harvesting practices toward a greater reliance on partial harvesting, which supports lower hare densities (Robinson 2006, entire). Without forest management planning, likely silviculture scenarios are expected to cause declines of 55–65 percent in

lynx habitat and populations by 2032 (Simons 2009, p. 217). Four northern Maine landowners with collective ownership of approximately 8.5 percent of occupied lynx habitat have developed lynx forest management plans through the Natural Resource Conservation Service's Healthy Forest Reserve Program. These landowners commit to employ the Service's lynx habitat management guidelines (McCollough 2007, entire), which include greater use of even-aged silviculture that creates large patches of high-quality hare habitat and landscape hare densities that will continue to support lynx. All other private lands occupied by lynx in Maine currently lack specific forest management plans for lynx, indicating a continuing need for special management considerations there.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. We review available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we consider whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. We do not currently propose to designate any areas outside the geographic area occupied by lynx at the time of listing because we have determined that occupied areas are sufficient for the conservation of the lynx DPS.

To determine those specific areas occupied by the species at the time it was listed on which are found those physical or biological features essential to the conservation of

the species, as required by section 3(5)(a)(i) of the Act, we reviewed the approach to the conservation of the lynx provided in the LCAS (Ruggiero *et al.* 2000, entire; Interagency Lynx Biology Team 2013, entire); the Recovery Outline (U.S. Fish and Wildlife Service 2005, entire); information from State, Federal and Tribal agencies; and information from academia and private organizations that have collected scientific data on lynx. We reviewed available information that pertains to the habitat requirements of lynx and its principal prey, the snowshoe hare. This information included data in reports submitted by researchers holding recovery permits under section 10(a)(1)(A) of the Act; research published in peer-reviewed articles or presented in academic theses; agency reports and unpublished data; and various Geographic Information System (GIS) coverages (e.g., land cover type information, land ownership information, snow depth information, topographic information, locations of lynx obtained from radio- or GPS-collars and locations of lynx confirmed via DNA analysis or other verified records).

In proposing critical habitat for the lynx, we used the best scientific data available to evaluate areas that possess appropriate quantities and spatial arrangements of the physical and biological features essential to the conservation of the DPS and that may require special management considerations or protection. In evaluating areas as critical habitat, we first conducted a two-part analysis: (1) We relied on information used during listing of the species, and any available newer information, to delineate the geographic area occupied by the species at the time of listing, and (2) we used the best available scientific information to determine which occupied areas contain the physical and biological features in adequate quantities and spatial arrangements to support lynx

populations over time, thus demonstrating that they are essential to the conservation of the lynx.

To delineate critical habitat for lynx, we must be able to distinguish, across the extensive range of the species in the contiguous United States, areas that contain all essential physical and biological features in adequate quantities and spatial distributions to support lynx populations over time (areas with the PCE, as described above under "Primary Constituent Element for Canada Lynx") from other areas that may contain some or all of the features but in inadequate quantities and/or spatial arrangements of one or more feature (and which, therefore, by definition do not contain the PCE). However, the scientific literature does not confer precisely what quantities and spatial arrangements of the physical and biological features are needed to support lynx populations throughout the range of the DPS. We lack range-wide site-specific information or tools that would allow us to analyze boreal forests across much of the range of the DPS and determine which specific areas contain the spatial and temporal mosaic of habitats and hare densities that lynx populations need to persist.

Delineating critical habitat for lynx is complicated by a number of factors related to (1) the animals' biology and population dynamics; (2) the biology and population dynamics of its primary prey, the snowshoe hare; (3) the patchily distributed, temporally and spatially dynamic successional habitat features that shift continually across landscapes, and which drive populations of both lynx and hares at the southern peripheries of both species' ranges; (4) our imperfect understanding of the above factors;

and (5) the resulting difficulty in determining with certainty and quantifying which specific habitat features, in what specific amounts and spatial and temporal arrangements, are necessary to provide the boreal forest mosaic essential to lynx conservation. The task is further complicated by an imperfect historical record of lynx occurrence in the contiguous United States. Finally (but importantly), the differences between areas capable of supporting lynx populations over time and other areas that look like they should, but do not, are often subtle and cannot be distinguished over broad areas using traditional vegetation/habitat mapping, remote sensing (aerial photos, satellite data), or available habitat modeling techniques (e.g., see Ivan 2011a, p. 27).

As described above (see *Distribution* and *Biology*), lynx populations throughout most of their range are irruptive. In central Canada where they inhabit a large, relatively homogenous boreal forest landscape, lynx respond quickly to cyclic fluctuations in hare populations. When hares are abundant, lynx respond with increased productivity and survival and, therefore, increased population sizes (Slough and Mowat 1996, pp. 955-956; Mowat *et al*. 2000, pp. 266, 272). Typically, after hare numbers peak, they begin to decline rapidly and dramatically, forcing large numbers of lynx to disperse—to abandon home ranges in areas with dwindling prey bases no longer capable of supporting the large number of lynx that resulted from the earlier prey abundance (Slough and Mowat 1996, pp. 956-957; Mowat *et al*. 2000, pp. 291-294). These periodic mass dispersal events (irruptions) appear to start at the core of the species' range in Canada and radiate outward (McKelvey *et al*. 2000a, p. 239). At the southern periphery of the lynx's range, these events sometimes result in large numbers of lynx dispersing into a variety of habitats in

some areas of the northern contiguous United States in search of adequate food resources (Thiel 1987, entire; McKelvey *et al*. 2000a, pp. 239-242). Some of these dispersing lynx survive and reestablish home ranges elsewhere, but many die en route, often soon after initiating dispersal (Mowat *et al*. 2000, p. 293), and some appear to remain temporarily in areas not capable of supporting all of their life-history needs over time (Thiel 1987, entire).

Canadian populations of lynx have historically been the most reliable source for lynx populations in many areas of the contiguous United States, tending to replenish them within the DPS about every ten years as the lynx/hare cycle ebbs and flows (McKelvey *et al*. 2000a, entire). These events can be pictured as a "wave" of lynx that occasionally washes over many of the northern tier of States. Over time the wave recedes, leaving remnant lynx populations or "puddles" of lynx in a variety of habitats. These puddles of lynx shrink over time as many lynx perish in inhospitable habitats or disperse elsewhere in search of adequate hare densities. When these waves recede, lynx may disappear abruptly from areas of unsuitable habitat or more gradually from suboptimal or marginal habitats. In both cases, lynx perish in or leave many of the places where they occurred temporarily because the habitats in such places, due to insufficient prey densities or inadequacy of one or more other physical or biological features, are incapable of supporting them over time. In a few places in the northern contiguous United States, in landscapes with high snowshoe hare densities and adequate quantities and spatial arrangements of other essential physical and biological features, the puddles tend to persist. It is these remnant "puddle" areas that demonstrate the capacity to support lynx

population resiliency—the ability of lynx to persist through lows in their own populations and those of their primary prey—that we have determined are essential to conservation of the contiguous U.S. lynx DPS.

In terms of lynx conservation, it is important to distinguish between areas that support lynx populations over time (the lasting "puddles") and areas in which lynx may occasionally and temporarily (even if somewhat regularly) occur during and for some time after population irruptions (the temporary or shrinking "puddles"). The former are likely "source" subpopulations within the lynx metapopulation. In addition to their ability to persist through lows in hare and lynx numbers, those areas, during times of hare abundance, produce excess lynx that may either subsequently bolster the local population or disperse into adjacent areas, should habitats and hare numbers in those areas become favorable. The latter areas are likely "sinks"—places where lynx may occasionally occur temporarily but where reproduction and recruitment, if any occur at all, are unlikely to offset mortality. Such areas do not produce excess lynx and, therefore, do not contribute to the health and stability of the metapopulation.

Lynx are wide-ranging animals that regularly make long-distance movements through both suitable and unsuitable habitats. They also are habitat and prey specialists, inferring natural selection pressures favoring the ability to identify, locate, and occupy habitats conducive to survival and reproduction. The historic record shows that lynx occurred only occasionally in some parts of the southern periphery of its range in the contiguous United States during and for variable lag times after the wave-like population

irruptions described above, with long periods of apparently complete absence between irruptions (McKelvey *et al*. 2000a, entire). This finding suggests that lynx dispersing from areas where hare numbers were declining arrived at many such places looking for but not finding the physical and biological features they needed to survive over the long term (Mowat *et al*. 2000, p. 293). Additionally, lynx were listed under the Act because regulatory mechanisms at the time were deemed inadequate to conserve lynx habitats in the places they did occur, not because of any documented population decline or range contraction in the contiguous United States. For the reasons given above, we conclude it is unlikely that there are areas within the DPS range that contain the PCE (i.e., adequate amounts and spatial arrangements of all essential physical and biological features) that lynx have been unable to locate and occupy. We further conclude that areas supporting persistent lynx populations within the range of the DPS are unlikely to have remained undetected.

Finally, the Act indicates that the function of critical habitat is to provide for the recovery of the species. We designate critical habitat in areas that contain, based on our assessment of the best data available to us, the physical and biological features in the appropriate quantities and spatial arrangements (the PCE), to provide for the conservation of the species. For some species, critical habitat may include unoccupied areas if the currently occupied areas are not sufficient to recover the species. For other species, critical habitat may be a subset of the occupied areas, if the occupied areas have differences in quality that relate to their ability to contribute meaningfully to recovery of the species. The Act does not require that we designate critical habitat in every area that

has some components or some amount of the PCE, nor does it require that we demonstrate that all other areas lack the PCE. We make these determinations on a case-by-case basis based upon the best information available as to what the species needs for recovery.

By specifically allowing revisions to critical habitat designations if and when new information becomes available, the Act recognizes the potential limitations of the best available information at any point in time. For lynx, we have determined that not all areas where lynx occasionally occur are necessary for recovery. We believe that lynx recovery in the contiguous United States can be accomplished by conserving high-quality habitat occupied by persistent lynx populations across the range of the DPS, and addressing the threats to lynx in those areas.

In summary, lynx have a demonstrated ability to disperse large distances in search of favorable habitats. Further, natural selection theory implies the ability of lynx to locate and occupy areas conducive to their survival and population viability. Nonetheless, due to inherent swings in densities of their primary prey, lynx regularly occur temporarily in habitats that are not capable of supporting populations over time, usually during irruptions after cyclic hare population crashes in Canada. In proposing critical habitat for lynx, it is essential to distinguish between areas capable of supporting populations over time (areas with all essential physical and biological features in adequate quantities and spatial arrangements and which, therefore, demonstrably contain the PCE) and areas that may have some or all of the features but with inadequate

quantities and/or spatial arrangements of one or more of them (and which, therefore, do not contain the PCE). Exactly how much of each of the physical and biological features must be present and specifically how each must be spatially arranged within boreal forest landscapes to support lynx populations over time is unknown. In the absence of site-specific information, we do not have tools or techniques (e.g., remote sensing or vegetation mapping technologies of adequate resolution) that would allow us to distinguish across broad landscapes throughout all of the range of the DPS between those areas that contain the PCE and other areas that contain the physical and biological features but in inadequate quantity and/or spatial arrangement. Nonetheless, we use the best available information to identify where the physical and biological features occur in adequate quantity and spatial arrangement to provide for the conservation of the species. Within this context, we developed the strategy described below for identifying, delineating, and proposing to designate critical habitat for the contiguous U.S. DPS of the Canada lynx.

The focus of our strategy in considering lands for designation as critical habitat is on boreal forest landscapes of sufficient size to encompass the temporal and spatial changes in habitat and snowshoe hare populations to support interbreeding lynx populations over time. These factors are included in the PCE for lynx. As defined in the Recovery Outline, areas that meet these criteria and have recent evidence of reproduction are considered "core areas" for lynx (U.S. Fish and Wildlife Service 2005, pp. 3-4).

In determining the geographic area occupied by the species at the time of listing,

we used data providing verified evidence of lynx occurrence. We eliminated areas from consideration in two ways: (1) areas outside the known historical range and (2) data older than 1995 were not considered valid to our assessment of areas occupied by lynx populations at the time of lsiting. We used data on the known historical range of the lynx (e.g., McKelvey *et al*. 2000a, pp. 207-232; Hoving *et al*. 2003, entire) to eliminate areas outside the historical range of the species.

We then focused on records since 1995 to ensure that this critical habitat designation is based on the data that most closely represent the current status of lynx in the contiguous United States and the geographical area known to be occupied by the species at the time of listing. Although the average lifespan of a wild lynx is not known, we assumed that a lynx born in 1995 could have been alive in 2000 or 2003, when the final listing rule and the clarification of findings were published. Data after 1995 were considered a valid indicator of occupancy at the time of listing. Recent verified lynx occurrence records were provided by Federal research entities, State wildlife agencies, academic researchers, Tribes, and private individuals or organizations.

We used only verified lynx records, because we wanted to rely on the best available data to evaluate specific areas and their features for critical habitat designation. The reliability of lynx occurrence reports can be questionable because the bobcat, a common species in much of the range of the lynx DPS, can easily be confused with the lynx. Additionally, many surveys are conducted by snow tracking in which correct identification of tracks can be difficult because of variable conditions affecting the

quality of the track and variable expertise of the tracker. Our definition of a verified lynx record is based on McKelvey *et al*. (2000a, p. 209): (1) an animal (live or dead) in hand or observed closely by a person knowledgeable in lynx identification, (2) genetic (DNA) confirmation, (3) snow tracks only when confirmed by genetic analysis (e.g., McKelvey *et al*. 2006, entire), or (4) location data from radio or GPS-collared lynx. Documentation of lynx reproduction consists of lynx kittens in hand, or observed with the mother by someone knowledgeable in lynx identification, or snow tracks demonstrating family groups traveling together, as identified by a person highly knowledgeable in identification of carnivore tracks. However, we made an exception and accepted snow track data from Maine, New Hampshire, and Vermont because of the stringent protocols, the confirmation of lynx tracks by trained, highly-qualified biologists, and the minimal number of species in the area with which lynx tracks could be misidentified (Maine Dept. of Inland Fisheries and Wildlife 2003, entire).

To define critical habitat according to section 3(5)(A) of the Act, we then delineated, within the geographical area occupied by the species at the time of listing, areas containing physical and biological features essential to the conservation of the lynx. The adequacy of the quantities and spatial arrangements of the physical and biological features (as defined above) essential to the conservation of the DPS is informed by the recovery outline for the species (as discussed below), the nature of the threats in a particular geographic area, and the conservation needs for the species in a particular geographic area.

In the North Cascades and Northern Rockies, the features essential to the conservation of lynx, the majority of lynx records, and the boreal forest types are typically, though not always, found above 4,000 ft (1,219 m) in elevation (McKelvey *et al*. 2000b, pp. 243-245; McAllister *et al*. 2000, entire). Thus, we limited the delineation of critical habitat to lands above this elevation unless we had habitat data indicating that high-quality habitat exists below this elevation. Additionally, in the North Cascades, features essential to the conservation of the lynx and the majority of the lynx records occur east of the crest of the Cascade Mountains.

Application of the Criteria to the Southern Rocky Mountains; Certain National Forests in Idaho and Montana; and Northern New Hampshire, Northern Vermont, and Eastern and Western Maine

As described above under **Previous Federal Actions**, the District Court for the District of Montana found several flaws with our 2009 critical habitat designation for lynx. The following section discusses the issues raised by the court. We also provide an evaluation of the recently documented small breeding populations of lynx in northern New Hampsire, northern Vermont, and eastern and western Maine.

Colorado and the Southern Rocky Mountains

The Montana District Court found that we failed in our 2009 designation to determine whether "areas occupied by lynx in Colorado possess the physical and

biological features essential to the conservation of the species."

In the Recovery Outline, we defined six core areas for lynx as those having *both* persistent verified records of lynx occurrence over time *and* recent evidence of reproduction (U.S. Fish and Wildlife Service 2005, pp. 3-5, 20-21). We also defined the Southern Rocky Mountains of Colorado and southern Wyoming as a "provisional" core area because it contained an introduced lynx population that had demonstrated reproduction (U.S. Fish and Wildlife Service 2005, p. 4). "Provisional" means: "accepted or adopted tentatively; conditional; or temporary." In our 2009 critical habitat designation, after careful evaluation of the historic record of verified lynx occurrence in Colorado and the Southern Rockies, we determined that there was no compelling evidence that the area had ever supported lynx populations over time and that, therefore, it did not likely contain the PCE and did not meet our criteria for designating critical habitat (74 FR 8641). For reasons that are described in more detail below, the available data do not support that Colorado and the Southern Rockies contain the physical and biological features essential to lynx in adequate quantities, quality, and spatial arrangements to support lynx populations over time, and we provide what evidence is available to determine whether the area, or any parts of it, contain the PCE.

In 1999, just prior to lynx being listed under the Act, the Colorado Division of Wildlife (now Colorado Parks and Wildlife (CPW)) began an intensive effort to establish a lynx population in Colorado, eventually releasing 218 wild-caught Alaskan and Canadian lynx from 1999 to 2006 (Devineau *et al*. 2010, p. 524). At least 122 (56

percent) of the introduced lynx died by June of 2010 (Shenk 2010, pp. 1, 5), but others survived and established home ranges in Colorado, produced kittens in some years, and now are distributed throughout forested areas of western Colorado. Some lynx from this introduced population have also traveled into northern New Mexico, eastern Utah, and southern and western Wyoming, though no reproduction outside of Colorado has been documented by these dispersers.

The CPW has determined the lynx introduction effort to be a success based on attainment of several benchmarks (e.g., high post-release survival, low adult mortality rates, successful reproduction, recruitment equal to or greater than mortality over time; Ivan 2011a, p. 21 and 2011b, p. 11), but acknowledges that the future persistence of the population is uncertain and hinges on the assumption that patterns of annual reproduction and survival observed as of 2010 repeat themselves during the next 20 or more years (Shenk 2008, p. 16; Shenk 2010, pp. 2, 5-6, 11). However, CPW has discontinued the intensive monitoring necessary to determine if these patterns of reproduction and survival will persist over that time (Colorado Parks and Wildlife 2012, p. 1), instead embarking on a passive monitoring program to detect lynx presence (Ivan 2011b, entire).

Although parts of Colorado and the Southern Rocky Mountains clearly contain some (perhaps all) of the physical and biological features lynx need, available evidence does not indicate that the area, or any parts of it, contain the features in the quantities, quality, and spatial arrangement necessary to provide for the conservation of the species (i.e., to support lynx populations over the long term). The Southern Rocky Mountains

(western Colorado, northern New Mexico, and southern Wyoming) are on the southern limit of the species' range and contain marginal lynx habitat (74 FR 8619), are disjunct from lynx habitats in the United States and Canada (McKelvey *et al.* 2000a, p. 230; 68 FR 40090; Devineau *et al*. 2010, p. 525; Interagency Lynx Biology Team 2013, pp. 50, 54), and have patchily distributed habitat that limits snowshoe hare abundance (Interagency Lynx Biology team 2013, p. 54). The nearest lynx population occurs in the Greater Yellowstone Area, which supports a small, low density population also disjunct from other lynx populations and which is unlikely to regularly supply dispersing lynx to the Southern Rockies. We previously determined that the Southern Rockies' distance and isolation from other lynx populations and habitats substantially reduce the potential for lynx from northern populations to naturally augment or colonize the area, that the immigration necessary to maintain a local lynx population is, therefore, naturally precluded, and that the contribution of the Southern Rockies to the persistence of lynx in the contiguous United States is presumably minimal (68 FR 40100–40101).

Dolbeer and Clark (1975, p. 539) estimated 0.30 hares per ac (0.73 hares per ha) on their study area in Summit County in central Colorado. Reed *et al.* (1999, unpublished, as cited by Hodges (2000b, p. 185)) reported hare densities in Colorado ranging from 0.02 to 0.19 hares per ac (0.05 to 0.46 hares per ha). In areas used by introduced lynx in west-central Colorado, Zahratka and Shenk (2008, pp. 906, 910) reported hare densities that ranged from 0.03 to 0.5 hares per ac (0.08 to 1.32 hares per ha) in mature Engelmann spruce-subalpine fir stands and from 0.02 to 0.14 hares per ac (0.06 to 0.34 hares per ha) in mature lodgepole pine stands. The authors cautioned

against comparing their results to other hare density estimates, as their use of the "mean maximum distance moved" method may have underestimated effective area trapped (Zahratka and Shenk 2008, p. 911), potentially resulting in overestimates of hare density. In "purportedly good" hare habitat also in west-central Colorado in the area used by introduced lynx, Ivan (2011c, pp. iv-v, 71, 92) estimated summer hare densities of 0.08 to 0.27 hares per ac (0.2 to 0.66 hares per ha) in stands of "small" lodgepole pine, 0.004 to 0.01 hares per ac (0.01 to 0.03 hares per ha) in "medium" lodgepole pine, and 0.004 to 0.1 hares per ac (0.01 to 0.26 hares per ha) in spruce-fir stands. The author reported that hare densities were less than 0.4 hares per ac (< 1.0 hare per ha) in all stand types and all seasons and, in most cases, were less than 0.12 hares per ac (0.3 hares per ha), and no combination of survival and recruitment estimates from any stand type in any year would result in a self-sustaining hare population, though hare recruitment may have been underestimated (Ivan 2011c, pp. 95, 99).

Ruggiero *et al.* (2000, pp. 446-447) concluded that a snowshoe hare density greater than 0.2 hares per ac (0.5 hares per ha) may be necessary for lynx persistence. Steury and Murray (2004, pp. 127, 137) modeled lynx and hare populations and determined that a hare density of 0.4 – 0.7 hares per ac (1.1 – 1.8 hares per ha) would be needed for persistence of lynx translocated (i.e., introduced or reintroduced) to the southern portion of the species' range. Most hare density estimates for Colorado are well below those thought necessary to to support an introduced lynx population over time (Steury and Murray 2004, entire), and many, even from areas considered "good" hare habitat, are lower than the density Ruggiero *et al.* (2000, pp. 446-447) considered

necessary for lynx persistence.

The generally low hare densities reported in most cases in what is considered good hare habitat in western Colorado and the very large home ranges (181 mi^2 (470 km^2) for females and 106 mi^2 (273 km^2) for males) reported by Shenk (2008, pp. 1, 10) suggest that even the best potential lynx habitat in the Southern Rocky Mountains is marginal and unlikely to support lynx populations over time. Some of the lynx introduced into Colorado have dispersed into mountainous areas of northern New Mexico, which contain relatively small and fragmented areas of similar high-elevation spruce/fir and cold mixed-conifer habitats (U.S. Forest Service 2009, pp. 5-10). No evidence exists that lynx occupied these areas historically; no reproduction has been documented among introduced lynx that have traveled from Colorado into northern New Mexico; and habitats in New Mexico are thought to be incapable of supporting a self-sustaining lynx population (U.S. Forest Service 2009, pp. 2, 10, 16-17). The lack of connectivity with northern lynx populations (McKelvey *et al.* 2000a, p. 230; Devineau *et al*. 2010, p. 525; Interagency Lynx Biology Team 2013, pp. 50, 54), which is considered necessary for the maintenance and conservation of lynx populations in the contiguous United States (Interagency Lynx Biology Team 2013, pp. 42, 47, 54, 60, 65), further suggests that lynx in the Southern Rockies, in the absence of continued translocations or introductions of lynx, are unlikely to receive the demographic and genetic exchange needed to maintain lynx populations over time.

For these reasons, the Service has determined that the Southern Rocky Mountains

likely do not possess the physical and biological features essential to lynx in sufficient quantities, quality, and spatial arrangement to sustain lynx populations over time. Wildlife introductions are, by their nature, experiments whose fates are uncertain. However, it is always our goal for such efforts to be successful and, where possible, contribute to recovery of listed species. If Colorado's introduction effort is successful (i.e., if recruitment equals or exceeds combined mortality and emigration over the next 20 years (Shenk 2010, pp. 2, 5-6, 11)), it could *contribute* to recovery by providing an additional buffer against threats to the DPS. The potential contribution of Colorado to lynx recovery does not mean, however, that the habitat there is essential for the conservation of the DPS. In other words, the lynx population in Colorado is beneficial, but not essential, for recovery. Therefore, we find that the habitat in Colorado and elsewhere in the Southern Rocky Mountains does not contain the essential physical and biological features of lynx habitat, is not essential for the conservation of the lynx DPS, and we are not proposing to designate critical habitat for the lynx DPS in the Southern Rockies. However, as a listed species, it should be noted that lynx in the Southern Rockies are afforded protection pursuant to sections 7(a)(2) and 9 of the Act. Section 7(a)(2) requires Federal agencies, when undertaking, funding, or permitting actions that may affect listed species to consult with the Service, and to ensure that the implementation of such actions do not result in jeopardy to the species. Toward that end and pursuant to section 7 of the Act, the Service may recommend measures to minimize the effects (including incidental take) of the Federal action upon listed species.

National Forests in Idaho and Montana

The Montana District Court ordered the Service to determine specifically whether lands in the Clearwater and Nez Perce National Forests in Idaho, the Bitterroot National Forest in Idaho and Montana, the Beaverhead-Deerlodge National Forest in Montana, and additional parts of the Helena and Lolo National Forests (outside the areas currently proposed for designation) in Montana contain the physical and biological features essential for the conservation of the DPS. Although each of these areas clearly contain some (and perhaps all) of the physical and biological features lynx need, for the reasons discussed below we find no evidence that any of the areas contain the elements in adequate quantities, quality, and spatial arrangements to support lynx populations over time. We provide evidence, where available, that these areas were not occupied by lynx at the time of listing and are not currently occupied by lynx populations, and we summarize relevant survey results, all of which indicate that lynx do not occupy these areas or that the areas are lacking in either quantity or spatial arrangement (or both) of one or more of the essential features. Therefore, we determine that these areas do not contain the physical and biological features in adequate quantities, quality, and spatial arrangement, are not essential to the conservation of the lynx, and as a result these areas do not meet the definition of critical habitat and subsequently are not being proposed. .

The historical record does not suggest that these areas (outside those portions of the Helena and Lolo National Forests proposed for designation as critical habitat) ever supported lynx populations (McKelvey *et al*. 2000a, pp. 224-227). In the Recovery Outline, the Service classified these as "secondary areas" because they lacked evidence

of lynx reproduction (U.S. Fish and Wildlife Service 2005, pp. 4, 21). As described in detail below, recent surveys for lynx in many of these areas have failed to detect lynx presence, and the available evidence suggests these areas occasionally may provide temporary habitat for transient lynx dispersing from established lynx populations in the Northern Rocky Mountains of Canada, Idaho, and Montana, but that they likely do not contain all physical and biological features in adequate quantities and spatial arrangements to support lynx populations over time.

There is no evidence that the Beaverhead-Deerlodge, Bitterroot, and Nez Perce National Forests were occupied by lynx at the time of listing, nor that they are currently occupied by lynx populations. To date, surveys on these National Forests, which have been conducted according to established protocols, have failed to detect presence of any individual lynx, and they provide no indication of the presence of lynx populations. Surveys described below were conducted according to National Lynx Survey (McKelvey *et al*. 1999, entire), and winter snow-tracking survey (Squires *et al*. 2004b, entire) protocols. Snow-tracking surveys in particular are highly effective at detecting lynx, even when only a few animals inhabit the survey area (Ulizio *et al*. 2007, p. 5; Squires *et al.* 2012, pp. 215, 219-222).

On the Beaverhead-Deerlodge National Forest, National Lynx Survey efforts in 1999–2001 detected no lynx (U.S. Forest Service 2002a, entire and 2002b, entire). During 2001–2005, in surveys designed to detect presence of lynx and wolverines, 11,220 mi (17,950 km) of winter snow-tracking surveys and trap route checks in the

Anaconda-Pintler, Beaverhead, Flint Creek and Pioneer mountain ranges on the Beaverhead-Deerlodge National Forest detected only a single "putative" lynx track, and no verified tracks (Squires *et al*. 2003, p. 4; Squires *et al*. 2006b, p. 15). Additional recent snow tracking surveys (Berg 2009, entire) also failed to detect any lynx, and the author concluded that, although some pockets of habitat appeared to support high densities of snowshoe hares, "[m]ost of the [Beaverhead-Deerlodge National Forest] was and appeared to be dry lodgepole pine, which likely is not good lynx habitat…" (Berg 2009, p. 20). During May and June of 2009, hair snares (642 snare-nights) and remote cameras (319 camera-nights) deployed in the Boulder, Flint Creek, and Pioneer mountain ranges also failed to detect any lynx (Porco 2009, entire). Additional hair snare surveys in summer 2012 similarly failed to detect lynx (Pilgrim and Schwartz 2013, entire; U.S. Forest Service 2013a, entire). Snow-tracking surveys designed to detect presence of multiple forest carnivores, including lynx, conducted by the Idaho Department of Fish and Game from 2004 to 2006 detected no lynx in the Beaverhead Mountains Section, just west of the Beaverhead-Deerlodge National Forest (Patton 2006, pp. 20-21, Table 11).

On the Bitterroot National Forest, National Lynx Survey efforts in 2000–2002 and 2010–2011 detected no lynx (U.S. Forest Service 2000, entire, 2002c, entire, 2003a, entire, 2003b, entire; Pilgrim 2010, entire; Shortsleeve 2013, pers. comm.). Snow-tracking surveys designed to detect presence of multiple forest carnivores, including lynx, conducted by the Idaho Department of Fish and Game from 2004 to 2006 detected no lynx in the Bitterroot Mountains Section (Patton 2006, pp. 20-21, Table 11). Additionally, among 223 vegetation plots sampled in 2010–2012 on the Forest, only 30

(16.1%) met minimum horizontal cover standards for snowshoe hare/lynx habitat (U.S. Forest Service 2012, unpublished data).

On the Nez Perce National Forest, winter snow-tracking surveys covering 448 mi (721 km) in 2007 did not detect any lynx (Ulizio *et al*. 2007, entire). The authors concluded that (1) these surveys very likely would have detected the presence of a lynx population if one occurred on the Forest, (2) that the failure to detect lynx suggests that a lynx population does not inhabit the surveyed portion of the Forest, and (3) "[h]istorical sightings…may be the result of transient lynx moving through the forest, but the infrequency of such reports suggests lynx are incidental to the area" (Ulizio *et al*. 2007, p. 5). Neither a partial hare-snare survey conducted in 2008 (though at fewer stations than recommended by the protocol) nor a partial snow-tracking survey conducted in 2009 (also less extensive than protocol) detected presence of lynx on the Forest. Snow-tracking surveys conducted according to established protocols and covering 553 mi (890 km) of forest roads were completed in 2013; these surveys also failed to detect presence of any lynx on the Nez Perce National Forest (U.S. Forest Service 2013b, pp. 3-7). Snow-tracking surveys designed to detect presence of multiple forest carnivores, including lynx, conducted by the Idaho Department of Fish and Game from 2004 to 2006 detected no lynx in the Clearwater Region, including parts of the Nez Perce National Forest (Patton 2006, p. 9, Table 2).

The paucity of verified historical records of lynx occurrence in these three National Forests, and the absence of recent verified records, despite surveys designed to

detect lynx presence, suggest these areas may rarely and temporarily support transient dispersing lynx (McKelvey *et al*. 2000a, pp. 224-227; Ulizio *et al*. 2007, p. 5). Based on these surveys, historical records of lynx occurrence, the vegetation sampling data described above (U.S. Forest Service 2012, unpublished data), and expert opinion on habitat quality described above (Ulizio *et al*. 2007, p. 5) , the Service has determined that habitats on these three National Forests are not occupied by lynx populations and do not contain the physical and biological features in the appropriate quantity and spatial arrangement to be essential to lynx conservation. Additionally, we have determined that these areas are not essential to the conservation of the lynx DPS. Because we find that these areas do not meet the definition of critical habitat we are not proposing to designate the Bitterroot, Beaverhead-Deerlodge, and Nez Perce National Forests as critical habitat.

We recognize that all of the Clearwater and Lolo National Forests, and parts of the Helena National Forest (except for the disjunct Big Belt and Elkhorn mountain ranges) are considered as "occupied" by lynx for purposes of consultations under section 7 of the Act. Occupancy in the context of section 7 consultation is intended to inform the "may be present" standard under section 7 and does not infer the presence of lynx populations or that habitats in these areas contain the physical and biological features essential to lynx in sufficient quantity and spatial arrangement to support a lynx population. For section 7 purposes, occupany is determined on a Forest-wide basis, so that two observations anywhere on a Forest confer permanent "occupied" status to the entire Forest, even in places where lynx have not been documented and where no lynx populations occur.

The Clearwater National Forest is in an area classified as secondary for lynx recovery (U.S. Fish and Wildlife Service 2005, p. 21) because there is no record of consistent lynx presence or reproduction on the Forest. Snow-tracking surveys designed to detect presence of multiple forest carnivores, including lynx, conducted by the Idaho Department of Fish and Game from 2004 to 2006 detected no lynx in the Clearwater Region, including parts of the Clearwater National Forest (Patton 2006, p. 9, Table 2). Wirsing *et al.* (2002, entire) studied snowshoe hare demographics on study areas on the Clearwater National Forest. They concluded that: hare habitat was fragmented; good hare habitat was rare and occurred as small isolated patches; and that hares occurred at extremely low densities (0.04 hares per ac (0.09 per ha)) well below the range of densities typical of other southern hare populations, had low survival rates, and had poor juvenile recruitment (Wirsing *et al.* 2002, pp. 169-175). The authors identified hare predators including coyotes, raptors, mustelids, and bobcats (Wirsing *et al.* 2002, p. 172), but identified no predation attributable to lynx. The available evidence does not indicate that this area possesses the physical and biological features essential to the conservation of lynx in quantities and spatial arrangements sufficient to support a lynx population over time or be essential to lynx conservation. Therefore, we determine that habitats on the Clearwater do not meet the definition of critical habitat, and as a result we are not proposing to designate critical habitat on this National Forest.

Portions of the Helena and Lolo National Forests are classified as “core areas” for lynx recovery because they have evidence of consistent lynx occupancy and recent

records of reproduction (U.S. Fish and Wildlife Service 2005, pp. 4, 21); these areas are proposed for designation as critical habitat. Because of this lynx occupancy, both Forests are designated as "occupied" in their entirety for section 7 purposes, even though the remainders of these two Forests are considered secondary areas in the Recovery Outline (U.S. Fish and Wildlife Service 2005, pp. 6, 21) because they lack records of consistent lynx presence or reproduction. The parts of these two forests that are not proposed for designation do not contain the physical and biological features in adequate quantities, quality, and spatial arrangement, are not essential to the conservation of the lynx, and as a result these areas do not meet the definition of critical habitat and subsequently are not being proposed (as described below). Furthermore, these areas continue to lack evidence of lynx occupancy, and surveys (described below) have failed to detect the presence of lynx populations.

On the Helena National Forest, the Big Belt (in 2002, 2003, and 2004) and Elkhorn (in 2003) mountain ranges were surveyed according to the National Lynx Survey protocol (McKelvey *et al*. 1999, entire); no lynx were detected in any of these surveys (Pengeroth 2013, pers. comm.). On the Lolo National Forest, no lynx were detected during 941 mi (1,514 km) of snow-tracking surveys targeting lynx in the vicinity of Lolo Pass in January-March 2001 (Squires *et al.* 2004c, p.3). More recently, over 2,600 mi (4,184 km) of forest carnivore snow-tracking surveys were conducted according to accepted protocols (Squires *et al*. 2004b, entire) by highly trained technicians from 2010 to 2013 across much of the Forest and on some adjacent lands. These surveys resulted in 199 lynx detections over 4 years, only 1 of which occurred outside the portion of the

forest designated as critical habitat in 2009 and again proposed for critical habitat in this rule (U.S. Forest Service 2013c, pp. 2-3). The single detection outside the proposed critical habitat boundary was in an area surrounded by proposed critical habitat but at a slightly lower elevation (U.S. Forest Service 2013c, pp. 2, 4). Avialable information does not indicate that the portions of the Helena and Lolo National Forests not proposed for critical habitat designation possess the physical and biological features essential to lynx in adequate quantities and spatial arrangements to support lynx over time, or that lynx populations occupy these areas or did so at the time of listing. As a result, these areas do not meet the definition of critical habitat and subsequently are not being proposed.

Based on historical records and available survey data summarized above, the Service has determined that habitats on the Beaverhead-Deerlodge, Bitterroot, Clearwater, and Nez Perce National Forests, and on the Helena and Lolo National Forests outside those areas proposed for critical habitat designation, are not occupied by lynx populations and were likely not occupied at the time of listing. These areas may occasionally host transient dispersing lynx, but the best available information indicates that they do not contain the physical and biological features essential to lynx in adequate quantity and/or spatial arrangement, are not essential to the conservation of the lynx, and as a result these areas do not meet the definition of critical habitat and subsequently are not being proposed. However, as described above for lynx introduced into Colorado and the Southern Rockies, lynx that may occur intermittently and infrequently as trasients or dispersers on these National Forests are afforded protections pursuant to sections 9 and

7(a)(2) of the Act.

Northern New Hampshire and Northern Vermont

The historic status of lynx in New Hampshire and Vermont is poorly understood. Prior to the listing of the DPS in 2000, the last lynx documented in Vermont was trapped at St. Albans in 1968 (Kart *et al.* 2005, p. A4-101). In New Hampshire, surveys conducted in 1986 in high-elevation habitats in the White Mountain region detected no lynx (Litvaitis *et al*. 1991, pp. 70, 73). In 1992, an adult lynx was killed by a vehicle collision in southern New Hampshire (McKelvey *et al*. 2000a, p. 213). Because hare densities in the area where this lynx died are low and habitat conditions were considered unsuitable for home range establishment, this lynx was classified as a "transient" that did not belong to a resident population (Tur 2013, pers. comm.). Based on the best available data, we conclude that New Hampshire and Vermont were not occupied by lynx at the time of listing.

Since listing, lynx occurrence in northern New Hampshire and Vermont was documented beginning in 2006, and breeding was first documented in 2009. To date, evidence of lynx reproduction in Vermont has been documented in 2009, 2011, and 2012, all at the Nulhegan National Wildlife Refuge (NWR) (Cliché 2013, pers. comm.). In northern New Hampshire, breeding was documented in 2010 and 2011, all in the area encompassing the town of Pittsburg (Staats 2013a, pers. comm.).

The historic record for Vermont is scant, with only five records of lynx occurring from the period 1797 to 1968 and no evidence that a persistent breeding population of lynx ever occurred there (Kart *et al*. 2005, pp. 101-104). Conversely, lynx occurred historically in central and northern New Hampshire. In 2003, the Service determined that, despite a lack of breeding records, a small resident lynx population likely occurred historically in New Hampshire but no longer exists (68 FR 40087). A bounty program for lynx that persisted in New Hampshire until 1965, along with a lack of dispersing lynx from Quebec, and a loss of habitat associated with forest management practices most likely contributed to the extirpation of lynx from New Hampshire (Litvaitis *et al.* 1991, pp. 70, 73-74). Similarly, Brocke *et al.* (1993, p. 14) concluded that trapping mortality and the concurrent reduction in habitat resulting from large-scale forest harvest led to the extirpation of lynx from New Hampshire. While surveys to assess the current distribution and status of lynx in Vermont and New Hampshire are not yet complete, in Vermont, resident lynx are documented and breeding within a very small area located in the northeast corner of the State. In New Hampshire, survey efforts suggest that lynx are sparsely distributed through the northern half of the State, mostly likely as scattered transient animals, and breeding has been documented only in a very small area in the northeastern part of the State.

Eastern and Western Maine

Historically, lynx occurred throughout Maine. Hoving *et al.* (2003, entire) assembled historical records dating to 1833 to reconstruct the past distribution of lynx in

the State. Prior to 1913, lynx were found throughout the State, with the exception of coastal areas. From 1913 to 1972, records occurred in western and northern Maine. In 1936 and 1939, game wardens described lynx as rare, but present, in most districts except along the coast (Aldous and Medall 1941, as cited *in* Vashon *et al.* 2012, pp. 28, 33). From 1973 to 1999, most records occurred in western and northern Maine, although lynx also occurred in the central and eastern portions of the State. Between 1995 and 1999, the Maine Department of Inland Fisheries and Wildlife conducted snow track surveys for lynx in western and northern Maine (Vashon *et al.* 2012 pp. 34-35) and documented lynx only in northern Maine. Surveys conducted from 2003 to 2008 documented lynx in both western and northern Maine (Vashon *et al.* 2012, pp. 34-35). Surveys were not conducted in eastern Maine because there was no evidence that lynx occurred there.

Hoving *et al.* (2003, p. 371) documented 39 historical records of lynx kittens; these records represent a minimum of 21 litters and span 135 years. Most breeding was documented in northern Maine. Prior to listing, the last documented breeding in western Maine was observed in 1995 and in eastern Maine in 1896 (Hoving 2001, p. 173).

Since listing, lynx have been documented consistently in western and northern Maine and occasionally in central and northern parts of the State (Vashon *et al.* 2012, pp. 12, 59). Lynx breeding has been documented in western, northern, and eastern Maine (at a single location in 2010) (Vashon *et al.* 2012, p. 64). Lynx travel widely during dispersal and occasional forays outside of their home ranges (Vashon *et al.* 2012, pp. 22, 59; Maine Department of Inland Fisheries and Wildlife, unpublished data), which

explains occasional occurrences outside of western and northern Maine.

Snowshoe hares were at relatively high densities in northern Maine from 2001 to 2006, but declined by about 50 percent afterward (Scott 2009, pp. 1-44; Vashon *et al.* 2012, p. 14). Lynx populations were believed to have reached the carrying capacity of the habitat in about 2006 (Vashon *et al.* 2012, p. 58). At that time, lynx were likely dispersing at greater rates into western, central, and eastern parts of the State (Vashon *et al.* 2012, Fig. 4.2, p. 59) and were likely the source of lynx in New Hampshire and Vermont.

Western and eastern Maine have the highest densities of bobcats in the State (Hoving 2001, pp. 54-55). Maine is at the northern edge of the bobcat range, and their populations decline during severe winters (Morris 1986, entire; Parker *et al.* 1983, entire). In 2008 and 2009, Maine experienced two severe winters with deep snow that may have depressed bobcat populations in western and eastern parts of the State at the same time that larger numbers of lynx were dispersing from northern Maine. These conditions may have allowed lynx to establish home ranges in areas formerly inhabitated by bobcats. However, it is uncertain whether lynx will persist in these areas as bobcat populations recover.

As in Colorado, despite recent breeding by lynx in northern Vermont and New Hampshire and eastern and western Maine, it remains uncertain whether these areas contain the PCE (i.e., the physical and biological features essential to lynx in adequate

quantity and spatial arrangement to support persistent populations over time). Portions of northeast Vermont, northern New Hampshire, and eastern and western Maine contain boreal forest landscapes containing a mosaic of habitats of various ages. Recent analysis estimated that New Hampshire contains 342 mi^2 (888 km^2) of Canada lynx habitat (Litvaitis and Tash 2005, p. A-298). There are no comparable lynx habitat estimates for Vermont. Hoving *et al.* (2004, Fig. 1, p. 290) predicted a low probability of lynx occurrence in western Maine and no lynx occurrence in eastern Maine. Because these areas occur at the southern extreme of the species' current distribution, where habitat is interspersed with northern hardwood forests, as well as human-dominated land cover types (e.g., developed areas, roads, agricultural fields, etc.), habitat quality (percent of conifer forest, landscape hare density, intensity of forest management) is likely to be lower in Vermont, New Hampshire, and eastern and western Maine than in northern Maine. The snow regime is unsuitable for lynx in eastern Maine. Although potential high-quality lynx habitat in New Hampshire, Vermont, and western Maine is fragmented, a recently completed habitat connectivity model demonstrated 100 percent connectivity for lynx movement/dispersal between these areas and core areas (proposed for designation as critical habitat) in northern Maine (Farrell 2013, pers. comm.). Breeding lynx in Vermont and New Hampshire are connected to larger populations in northern Maine via western Maine, but they are not directly connected to Canadian populations.

Recent modeling to determine lynx habitat connectivity in the Northeast suggests that the Nulhegan River Basin contains Vermont's best lynx habitat (Farrell 2013, pers. comm.). The 205-mi^2 (530-km^2) basin includes 41 mi^2 (106 km^2) managed by the

Service, 34 mi^2 (89 km^2) managed by the Vermont Department of Natural Resources, and 131 mi^2 (340 km^2) of private commercial timber lands (with easement). Bobcats occur in the area at moderate densities (Hoving 2001, Fig. 2.5 p. 55). Snow track surveys conducted by State and Service personnel during the winters of 2011and 2012 (Nulhegan NWR only) and 2012 and 2013 (Nulhegan NWR and Victory Bog State Wildlife Management Area) indicate a resident population has become established on the NWR. In areas outside of Nulhegan NWR, the presence of sporadic records indicates lynx have not established home ranges and are considered transient or absent.

Historical records indicate that high-elevation habitats in New Hampshire's White Mountains contained lynx (Silver 1957, pp. 302–311); however, surveys conducted during the early 1990s in the White Mountain National Forest did not detect the species (Litvaitis *et al.* 1991, p. 15; Brocke *et al.* 1993, p. 14). No lynx have been detected by White Mountain National Forest staff during winter track surveys conducted since 2003 (Prout 2013, pers. comm.). However, in March 2013, New Hampshire Fish and Game Department staff confirmed the presence of lynx tracks in high elevation habitat located in the area near Franconia Notch. Snow surveys for lynx have not been conducted in high elevation habitats in western Maine.

In addition, during snow track surveys conducted by the New Hampshire Fish and Game Department in 2012 and 2013, lynx were detected near Cambridge and Success, south of the Lake Umbagog NWR (which has lynx in its Maine portion). Additional records (2006–2013, n=6) occur as far south as Jefferson, New Hampshire, at the

southern border of the Kilkenny Unit of the White Mountain National Forest. Lynx tracks have also been detected on the Pondicherry NWR, located in Whitefield, New Hampshire. Since 2006, New Hampshire has 18 confirmed records, totaling 28 individual animals.

The extent and size of habitat patches that support lynx in New Hampshire and western Maine are much smaller than those that occur in northern Maine (Litvaitis and Tash 2005, Fig. 2 and p. A-298; Robinson 2006, Fig. 3.3, p. 99). Hoving estimated roughly 386 mi^2 (1,000 km^2) of lynx habitat in New Hampshire (68 FR 40086–40087). Litvaitis and Tash (2005, p. A-298), analyzing potential lynx habitat in New Hampshire based on the Hoving lynx model, reported an area of 2,000 mi^2 (5,180 km^2) with a greater than 50 percent probability of lynx occurrence. Within this area, "enriched hare habitats" (including high-elevation spruce-fir, clear cuts, and shrub-dominated wetlands) consisted of 342 mi^2 (886 km^2), 17 percent of the total predicted lynx habitat area. The authors concluded that "the modest abundance of high-density hare habitat supports the notion that New Hampshire does not contain sufficient habitat to support a viable, stand-alone population of lynx. Long-term persistence of lynx in New Hampshire is probably dependent on immigrants and the State likely represents the southern limit of lynx in eastern North America" (Litvaitis and Tash 2005, p. A-298). Similarly, Brocke *et al.* (1993, pp. 1-14) suggested that the persistence of New Hampshire's lynx population was dependent on receiving dispersing animals. Therefore, persistence of lynx in New Hampshire relies on continuity of habitat through western Maine to the core area of lynx habitat in northern Maine.

The snow regime is adequate for lynx in northern Vermont, northern New Hampshire, and western Maine, especially in higher elevations (Hoving 2001, Fig. 2.2 p. 51). Higher elevation areas experience deep, fluffy snow conditions that provide a competitive advantage for lynx, whereas shallower snow in lower elevations may provide competitive advantage to bobcats (Hoving 2001, Fig. 2.2, p. 51). Litvaitis and Tash (2005, p. A-263) modeled bobcat habitat in New Hampshire and concluded that most low-elevation areas that were predicted to have a higher probability of lynx occurrence were also predicted to have moderate-to-high bobcat populations. Conversely, most high-elevation areas that were predicted to have a high probability of lynx occurrence were expected to be avoided by bobcats. The elevation at which snow benefits lynx versus bobcats in the Northeast is unknown and likely variable. While historical records indicate that lynx use high-elevation areas in the Northeast, it is unknown if high elevations support high-quality foraging habitat in sufficiently large areas that would support breeding individuals. The White Mountain National Forest has the most extensive high-elevation habitat in the Northeast, but only one recent record of lynx occurrence is available (Staats 2013b, pers. comm.). Lynx may utilize these habitats, although it is possible that snow conditions at high elevation are too severe, hare densities may be insufficient to support lynx (or the habitat too dense for lynx to hunt hares efficiently), the high elevations may not be large enough to support home ranges, or lynx may have to compete with bobcats, especially during summer months.

Stand-level hare densities in spruce-fir forest in western Maine, northern New

Hampshire, and Vermont should be similar to densities documented in northern Maine (Litvaitis and Tash 2005, p. A-297). However, landscape hare densities are likely lower because spruce-fir habitat is a lower percentage of the landscape and more fragmented than in core lynx habitat in northern Maine (Hoving 2001, Fig. 2.6, p. 56). Hare habitat modeling in western Maine indicated patchier and more widely distributed hare habitats compared to northern Maine due to differences in the size and distribution of regenerating clearcuts (Robinson 2006, Fig. 3.3, pp. 99, 181). These areas of western Maine have a higher prevalence of northern hardwoods, which support much lower hare densities. Snowshoe hare habitat in New Hampshire and Vermont is likely patchy as well.

Carroll (2007, entire) used the Hoving lynx model as a basis to predict lynx distribution in the Northeast under several scenarios affecting forestry, trapping in Canada, and climate change. A reduced snow model (p. 31) predicted lynx would disappear in all of Maine and persist only in the higher elevation areas of the Adirondacks and White Mountain National Forest. However, Hoving (2001, p.76) used different snowfall projections and models that predict lynx would continue to occur in northern Maine with reduced snow. Carroll's (2007) climate change model was based on predicted annual snowfall for 2055. Predictions were derived from the output of the Parallel Climate Model, a general circulation model developed by a consortium of researchers in support of the Intergovernmental Panel on Climate Change (Kiehl and Gent 2004, entire). The IPCC climate scenario that was used is in the intermediate to high ranges among the 35 scenarios evaluated by the IPCC. Because these predictions provided only coarse resolutions (~200 km), Carroll interpolated the percent change in

annual snowfall predicted and multiplied by finer-scale data for current annual snowfall to produce a "sharpened" estimate of future snowfall patterns. Carroll's modelling included a lake effect and thus differed slightly in output from that used by Hoving *et al.* (2005). Although climate change models are being refined for the Northeast, additional information is needed to understand what areas may support lynx in the future under a variety of climate change projections and to resolve high levels of uncertainty. In addition to the potentially conflicting climate models which make projecting lynx conservation into the future challenging, the biological response of lynx to climate change at the regional and stand scales is complex and poorly understood at this time.

Due to the uncertainty regarding the long-term persistence of the newly established breeding areas, the relative importance of these areas for conservation of the DPS is unclear. These are peripheral boreal forest areas with higher northern hardwood composition and patchier habitat (Hoving 2001, Fig. 2.6, p. 56), and they represent the southern extent of the lynx range (Litvaitis and Tash 2005, p. A-298). Based on the best available data, northern Vermont and New Hampshire do not appear to contain adequate lynx habitat to support persistent populations; nor do lynx in these areas appear to be considered potential source populations (Litvaitis and Tash 2005, p. A-298). Although Brocke *et al.* (1993, pp. 1-14) predicted that in the absence of trapping, New Hampshire's lynx population would be expected to increase at the very modest rate of 1.65 percent per year, this estimate did not account for other sources of lynx mortality (i.e., interspecific interactions with bobcat or road mortality). Therefore, the Service has determined that the small number of lynx currently breeding in New Hampshire is

unlikely to be a source population for other areas. Similarly, because Vermont contains even smaller amounts of lynx habitat, we surmise that Vermont is also unlikely to provide surplus animals that would disperse to other areas. Additionally, lynx habitat in eastern and western Maine are of lower quality (Hoving *et al*. 2004, Fig. 1, p. 290), and eastern Maine lacks a snow regime that favors lynx over bobcats. Western Maine is unlikely to be a source of lynx for other areas, but it is an important corridor between populations in northern Maine and New Hampshire and Vermont.

In summary, lynx reproduction in small areas of northern Vermont, northern New Hampshire, and eastern and western Maine has been documented since 2009–2010. Although lynx were known to occur in Vermont and New Hampshire historically, evidence of persistent lynx populations is lacking. Resident lynx likely were extirpated when habitat was modified through forestry practices, a bounty program was in place that increased mortality, and the ability of animals to recolonize the area was compromised by regional-scale influences that suppressed lynx populations. Since that time, habitat has regenerated and source populations of lynx in Maine have recovered to the point where lynx have dispersed and now occur in the Vermont and New Hampshire part of their former range. Their recent arrival and the complex ecological interactions functioning at landscape scales makes it difficult to assess the long-term status of lynx in these areas, as well as their potential contribution to the conservation of the DPS. Lynx have had a persistent historical presence in western Maine, but no documented breeding until 2010; therefore, western Maine was not considered occupied at the time of listing. While surveys in western Maine are incomplete and the status of lynx in that area is not well

known, those occurrences and habitat are contiguous with northern New Hampshire. However, habitat is of lower quality and interactions with bobcat populations are uncertain. In eastern Maine, lynx have sporadically occurred, but the snow regime is not suitable for long-term persistence.

The best available data indicates that Vermont, New Hampshire, and eastern Maine were not occupied by lynx at the time of listing. In addition, habitat within Vermont and New Hampshire is fragmented, landscape-level hare densities are low, and bobcat densities are relatively high; consequently, these areas are unlikely to support robust lynx populations capable of generating dispersing animals that could occupy other portions of the species' range. Additionally, evaluations of lynx and their habitats indicate that lynx populations in New Hampshire are reliant upon frequent dispersers from other populations. Because habitats in Vermont are even more localized and fragmented, the same situation most likely exists in that State. Within these areas, the status of lynx and their habitats may deteriorate further as a result of climate change. Taking all of these factors into consideration, we conclude that Vermont, New Hampshire, and eastern and western Maine likely do not contain the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation. Additionally, we find that these areas are not essential to the conservation of the lynx DPS. As a result, these areas do not meet the definition of critical habitat for the lynx DPS. Consequently,we are not proposing to designate any areas in New Hampshire, Vermont, or eastern or western Maine as critical habitat for the contiguous U.S. lynx DPS.

When determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for lynx. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Given the scale of the proposed lynx critical habitat units, it was not feasible to completely avoid inclusion of water bodies, including lakes, reservoirs and rivers; grasslands; or human-made structures such as buildings, paved and gravel roadbeds, parking lots, and other structures that lack the PCE for the lynx. These areas, including any developed areas and the land on which such structures are located, that exist inside proposed critical habitat boundaries are not proposed for designation as critical habitat. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

We are proposing for designation of critical habitat lands that we have determined were occupied by lynx at the time the DPS was listed and which contain the PCE (sufficient quantities and spatial arrangements of all the physical or biological features essential to support lynx life-history processes). All proposed units and subunits contain

all of the identified elements of physical or biological features in adequate quantities and spatial arrangements and support multiple life-history processes and persistent lynx populations.

The critical habitat designation is defined by the maps, as modified by any accompanying regulatory text, presented at the end of this document in the rule portion. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on *http://www.regulations.gov* at Docket No. FWS–R6–ES–2013–0101, on our Internet site *http://www.fws.gov/montanafieldoffice,* and at the Montana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** above).

Proposed Revised Critical Habitat Designation

We are proposing to designate five units as critical habitat for the lynx (Table 1). The critical habitat units described below constitute our best assessment at this time of areas: (1) We determined to be occupied at the time of listing, (2) all the physical and biological features in the appropriate quanity, quality, and spatial arrangement found to be ssential to the conservation of the species, and (3) that may require special management considerations or protection. The five areas proposed as critical habitat are Unit 1 in northern Maine (Aroostook, Franklin, Penobscot, Piscataquis, and Somerset Counties); Unit 2 in northeastern Minnesota (Cook, Koochiching, Lake, and St. Louis

Counties); Unit 3 in the Northern Rocky Mountains of northwest Montana (Flathead, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Missoula, Pondera, Powell and Teton Counties) and northeast Idaho (Boundary County); Unit 4 in the North Cascade Mountains of north-central Washington (Chelan and Okanogan Counties); and Unit 5 in the Greater Yellowstone Area of southwest Montana (Carbon, Gallatin, Park, Stillwater, and Sweetgrass Counties) and northwest Wyoming (Fremont, Lincoln, Park, Sublette, and Teton Counties). To further understand the location of these proposed areas, please see the associated maps found at the end of this proposed rule (also available at our web site: http://www.fws.gov/mountain-prairie/species/mammals/lynx/criticalhabitat.htm). Table 1 shows the proposed critical habitat units, land ownership, and the approximate area being proposed for designation as critical habitat. Table 2 shows proposed critical habitat by ownership within each State included in the proposed designation.

TABLE 1. Proposed critical habitat units for Canada lynx by ownership (mi^2 (km^2))
[Area estimates reflect all land within proposed critical habitat unit boundaries, including areas considered for exclusion in accordance with section 4(b)(2) of the Act].

Unit	Federal	State	Private	Tribal	Total
1	0 (0)	823 (2,131)	10,230 (26,495)	87 (226)	11,162 (28,908)
2	3,864 (10,007)	2,732 (7,076)	1,473 (3,816)	78 (202)	8,147 (21,101)
3	8,652 (22,409)	381 (986)	1,072 (2,777)	370 (958)	10,474 (27,129)
4	1,830 (4,739)	164 (426)	4 (11)	0 (0)	1,999 (5,176)
5	9,465 (24,514)	30 (76)	271 (702)	0 (0)	9,766 (25,293)
Total	23,811 (61,669)	4,129 (10,695)	13,050 (33,800)	535 (1,385)	41,547 (107,607)

Note: Area sizes may not sum due to rounding and because minor "Other" ownership is not included.

TABLE 2. Proposed critical habitat for Canada lynx by state and ownership (mi^2/km^2)
[Area estimates reflect all land within proposed critical habitat unit boundaries, including areas considered for exclusion in accordance with section 4(b)(2) of the Act].

	Federal	State	Private	Tribal	Other
Idaho	45 (117)	0.04 (0.1)	0 (0)	0 (0)	0 (0)

Maine	0 (0)	823 (2,130)	10,230 (26,495)	87 (226)	22 (57)
Minnesota	3,864 (10,007)	2,732 (7,076)	1,473 (3,816)	78 (202)	0 (0)
Montana	11,326/ (29,334)	395 (1,024)	1,276 (3,305)	370 (958)	0.5 (1.4)
Washington	1,830 (4,739)	164 (426)	4 (11)	0 (0)	0 (0)
Wyoming	6,746 (17,472)	15 (38)	68 (176)	0 (0)	0 (0)
Total	23,811 (61,669)	4,129 (10,695)	13,050 (33,800)	535 (1,385)	23 (58)

Note: Area sizes may not sum due to rounding.

We present brief descriptions below of all units, the reasons why they meet the definition of critical habitat for lynx, changes in the current proposal from the 2009 designation, and other potential changes that may be considered between this proposal and our subsequent final designation.

Unit 1: Northern Maine

Unit 1 consists of 11,162 mi^2 (28,908 km^2) located in northern Maine in portions of Aroostook, Franklin, Penobscot, Piscataquis, and Somerset Counties. This area was occupied by the lynx at the time of listing and is currently occupied by the species (Hoving et al. 2003, entire; Vashon *et al*. 2012, pp. 12-14, 58-60; Interagency Lynx Biology Team 2013, pp. 39-42). This area contains the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation and as a result these areas meet the definition of critical habitat for the lynx DPS. Lynx in northern Maine have high productivity: 91 percent of available adult females (greater than 2years) produced litters, and litters averaged 2.83 kittens (Vashon *et al*. 2005b, pp. 4-6; Vashon *et al*. 2012, p. 18). This area contains the physical and biological features essential to the conservation of the lynx as it comprises the PCE and its components laid out in the appropriate quantity and spatial arrangement. This area is

also important for lynx conservation because it is the only area in the northeastern region of the lynx's range within the contiguous United States that currently supports persistent breeding lynx populations and likely acts as a source or provides connectivity with Canada for more peripheral portions of the lynx's range in the Northeast. Timber harvest and management is the dominant land use within the unit; therefore, special management is required depending on the silvicultural practices implemented (68 FR 40075; July 3, 2003). Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares.

In this area, climate change is predicted to significantly reduce lynx habitat and population size. Carroll (2007, pp. 1100-1103) modeled a 59 percent decline in lynx numbers in the northeastern United States and eastern Canada by 2055 due to climate change, with greater vulnerability among small, peripheral, low-elevation populations like that in Maine. Under this modeled scenario, there would be difficulty sustaining such populations, and the lynx distribution would likely contract to the core of the population on the Gaspe Peninsula in Quebec, Canada (Carroll 2007, p. 1102). Gonzalez *et al*. (2007, p. 14) modeled potential climate-induced loss of snow and concluded that snow suitable for lynx may disappear from Maine entirely by the end of this century.

Changing forest management practices are also likely to result in reduced hare and lynx habitat in this unit. Much of the lynx and hare habitat in this unit is the result of broad-scale clear-cut timber harvest in the 1970s and 1980s in response to a spruce budworm outbreak. These clear-cut stands are now at a successional (regrowth) stage

(about 35 years postharvest) that features very dense conifer cover and provides optimal hare and lynx habitats, likely supporting many more hares and lynx than occurred historically. The Maine Forest Practices Act (1989) limited the size of clear-cuts resulting in a near complete shift away from clear-cuts to partial harvesting. This transition to partial harvest timber management is unlikely to create or maintain the extensive tracts of hare and lynx habitats that currently exist as a result of previous clear-cutting. As the clear-cut stands continue to age, their habitat value to hares and lynx is expected to decline. Even in the absence of climate change considerations, forest succession and reduced clearcutting are expected to result in a substantially smaller lynx population in this unit by 2035 (Simons 2009, pp. 153-154, 162-165, 206, 216-220; Vashon *et al.* 2012, pp. 58-60). Therefore, lack of forest management planning represents a habitat-related threat to lynx. Other habitat-related threats to lynx in this unit are traffic and development (68 FR 40075).

The area currently proposed for designation in this unit includes all lands that we designated in 2009 (FR 74 8616), as well as 87 mi^2 (226 km^2) of Tribal lands and 943 mi^2 (2,443 km^2) of lands managed under the Maine Healthy Forest Reserve Program, both of which were excluded from the 2009 designation and which we are again considering excluding (see **Exclusions** and *Government-to-Government Relationship with Tribes,* below). It also includes 108 mi^2 (281 km^2) formerly but no longer enrolled in the Healthy Forest Reserve Program. The proposed unit also includes additional lands in the Van Buren area of eastern Aroostook County (217 mi^2 (562 km^2)) and the Herseytown-Stacyville area of northern Penobscot County (304 mi^2 (788 km^2)) that were not

designated in 2009. New information on lynx and habitats in these two areas demonstrates that they contain the physical and biological features essential to the conservation of lynx and meet the criteria (above) for designation as critical habitat. Radio-telemetry data, incidental capture of lynx in traps set for other species, and lynx mortalities from vehicle collisions have all recently documented lynx occupancy in both areas (U.S. Fish and Wildlife Service 2013a, p. 12). Based on recent refined habitat mapping and understanding of lynx use of this area, we have determined that both proposed additions were likely occupied at the time of listing, although occupancy data were not available then. Both areas are within the "core area" classified in the Recovery Outline (U.S. Fish and Wildlife Service 2005, pp. 3-5, 21), and both are contiguous with the critical habitat area designated in 2009 and include similar habitats and snow regimes, as well as comparable hare densities (U.S. Fish and Wildlife Service 2013a, p. 12). The predominant land use in both areas is commercial timber production, which requires special management considerations for the conservation of lynx. The proposed Van Buren addition is a contiguous area of forest connecting lynx habitat in Maine with lynx habitats and populations in Quebec and New Brunswick.

Unit 2: Northeastern Minnesota

Unit 2 consists of 8,147 mi^2 (21,101 km^2) located in northeastern Minnesota in portions of Cook, Koochiching, Lake, and St. Louis Counties, and Superior National Forest. In 2003, when we formally reviewed the status of the lynx, numerous verified records of lynx existed from northeastern Minnesota (68 FR 40076, July 3, 2003). The

area was occupied at the time of listing and is currently occupied by the species (Moen *et al*. 2008b, pp. 29-32; Moen *et al*. 2010b, entire; Catton and Loch 2010, entire; 2011, entire; 2012, entire; Interagency Lynx Biology Team 2013, pp. 44-47). Lynx are currently known to be distributed throughout northeastern Minnesota, as has been confirmed through DNA analysis, radio- and GPS-collared animals, and documentation of reproduction (Moen *et al*. 2008b, entire; Moen *et al*. 2010b, entire). This area contains the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation and as a result these areas meet the definition of critical habitat for the lynx DPS.

This area is essential to the conservation of lynx because it is the only area in the Great Lakes Region for which we have evidence of recent lynx reproduction. It likely acts as a source or provides connectivity for more peripheral portions of the lynx's range in the region. Timber harvest and management is a dominant land use (68 FR 40075). Therefore, special management is required depending on the silvicultural practices conducted. Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares. In this area, climate change may affect lynx and their habitats; however, Gonzalez *et al*. (2007, p. 14) suggested that snow conditions in northern Minnesota should continue to be suitable for lynx through the end of this century. Fire suppression or fuels treatment, traffic and habitat fragmentation associated with road-building, and development are other habitat-related threats to lynx (68 FR 40075). Incidental capture of lynx in traps set for other species has been documented recently in Minnesota, as have lynx mortalities from vehicle collisions (U.S. Fish and

Wildlife Service 2013d, unpubl. database).

The area currently proposed for designation includes all lands that we designated in 2009 (FR 74 8616), as well as 78 mi^2 (202 km^2) of Tribal lands, which we excluded from the 2009 designation and which we again propose to exclude (see *Government-to-Government Relationship with Tribes,* below). No additional areas are proposed for designation of critical habitat.

Unit 3: Northern Rocky Mountains

Unit 3 consists of 10,474 mi^2 (27,129 km^2) located in northwestern Montana and a small portion of northeastern Idaho in portions of Boundary County in Idaho and Flathead, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Missoula, Pondera, Powell and Teton Counties in Montana. It includes National Forest lands and BLM lands in the Garnet Resource Area. This area was occupied by lynx at the time of listing and is currently occupied by the species (Squires *et al*. 2010, entire; Squires *et al*. 2012, entire; Squires *et al*. 2013, entire; Interagency Lynx Biology Team 2013, pp. 57-61). Lynx are known to be widely distributed throughout this unit and breeding has been documented in multiple locations (Gehman *et al*. 2004, pp. 24-29; Squires *et al*. 2004a, pp. 8-10, 2004b, entire, and 2004c, pp. 7-10). This area contains the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation and as a result these areas meet the definition of critical habitat for the lynx DPS. This area is essential to the conservation of lynx because it appears to support the

highest density lynx populations in the Northern Rocky Mountain region of the lynx's range. It likely acts as a source for lynx and provides connectivity to other portions of the lynx's range in the Rocky Mountains, particularly the Yellowstone area. Timber harvest and management is a dominant land use (68 FR 40075); therefore, special management is required depending on the silvicultural practices conducted. Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares. In this area, climate change is expected to result in the potential loss of snow conditions suitable for lynx by the end of this century (Gonzalez *et al*. 2007, p. 14). Fire suppression or fuels treatment, traffic, and development are other habitat-related threats to lynx (68 FR 40075).

The area currently proposed for designation includes lands that we designated in 2009 (FR 74 8616), as well as 370 mi^2 (958 km^2) of Tribal lands, which we excluded from the 2009 designation and which we again propose to exclude (see *Government-to-Government Relationship with Tribes,* below). It also includes State trust lands in western Montana managed in accordance with the recently finalized State of Montana Department of Natural Resources and Conservation Multi-species Habitat Conservation Plan (HCP) (Montana DNRC and U.S. Fish and Wildlife Service 2010, pp. 2-45–2-61, 4-27–4-36, 7-29–7-34). We are proposing to exclude 271 mi^2 (703 km^2) of lands managed under this HCP from designation as critical habitat in this unit (see **Exclusions**, below**)**. The area proposed for designation in northeast Idaho has been adjusted to reflect improvements in lynx habitat mapping approved by both the USFS and the Service (U.S. Forest Service 2008b, entire), resulting in a reduction of about 5 mi^2 (13 km^2) of

proposed critical habitat in that portion of the unit. Other National Forests with lands in this proposed critical habitat unit are working on refinements to lynx habitat mapping protocols and/or modeling. If the Service approves of the methodologies used to improve lynx habitat mapping, the results may be considered in our subsequent final critical habitat designation. At this time, no new areas are proposed for designation of critical habitat in this unit.

Unit 4: North Cascades

Unit 4 consists of 1,999 mi^2 (5,176 km^2) located in north-central Washington in portions of Chelan and Okanogan Counties and includes mostly Okanogan-Wenatchee National Forest lands as well as BLM lands in the Spokane District and Loomis State Forest lands. This area was occupied at the time lynx was listed and is currently occupied by the species (Interagency Lynx Biology Team 2013, pp. 64-65). This unit supports the highest densities of lynx in Washington (Stinson 2001, p. 2). Evidence from recent research and DNA analysis shows lynx distributed within this unit, with breeding being documented (von Kienast 2003, p. 36; Koehler *et al*. 2008, entire; Maletzke *et al*. 2008, entire). Although researchers have fewer records in the portion of the unit south of Highway 20, few surveys have been conducted in this portion of the unit. This area contains boreal forest habitat and the components essential to the conservation of the lynx. Further, it is contiguous with the portion of the unit north of Highway 20, particularly in winter when deep snows close Highway 20. The northern portion of the unit adjacent to the Canada border also appears to support few recent lynx records;

however, it is designated wilderness, so access to survey this area is difficult. This northern portion contains extensive boreal forest vegetation types and the components essential to the conservation of the lynx. Additionally, lynx populations exist in British Columbia directly north of this unit (Interagency Lynx Biology Team 2013, pp. 65).

This area contains the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation and as a result these areas meet the definition of critical habitat for the lynx DPS. This area is essential to the conservation of lynx because it is the only area in the Cascades region of the lynx's range that is known to support breeding lynx populations. Timber harvest and management is a dominant land use; therefore, special management is required depending on the silvicultural practices conducted. Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares. In this area, Federal land management plans are being amended to incorporate lynx conservation. Climate change is expected to reduce lynx habitat and numbers in this unit, with potential loss of snow suitable for lynx (Gonzalez *et al*. 2007, p. 14) and the potential complete disappearance of lynx from the area by the end of this century (Johnston *et al*. 2012, pp. 7-11). Traffic and development are other habitat-related threats to lynx (68 FR 40075).

The area currently proposed for designation includes all lands that we designated in 2009 (FR 74 8616). It also includes 164 mi^2 (425 km^2) of lands managed in accordance with the State of Washington Department of Natural Resources Lynx Habitat Management Plan (Washington DNR 2006, entire), which we excluded from the 2009

designation and which we again propose to exclude under section 4(b)(2) of the Act (see **Exclusions** below). No additional areas are proposed for designation of critical habitat in this unit.

Unit 5: Greater Yellowstone Area

Unit 5 consists of 9,765 mi^2 (25,293 km^2) located in Yellowstone National Park and surrounding lands of the Greater Yellowstone Area in southwestern Montana and northwestern Wyoming. Lands in this unit are found in Carbon, Gallatin, Park, Stillwater, and Sweetgrass Counties in Montana; and Fremont, Lincoln, Park, Sublette, and Teton Counties in Wyoming. This area was occupied by lynx at the time of listing and is currently occupied by the species (Interagency Lynx Biology Team 2013, pp. 57-61). This area contains the physical and biological features in the appropriate quantity, quality, and spatial arrangement to be essential to lynx conservation and as a reuult these areas meet the definition of critical habitat for the lynx DPS. The Greater Yellowstone Area is naturally marginal lynx habitat with highly fragmented foraging habitat (68 FR 40090; 71 FR 66010, 66029; 74 FR 8624, 8643–8644; Hodges *et al*. 2009, entire). For this reason lynx home ranges in this unit are likely to be larger and incorporate large areas of non-foraging matrix habitat. Climate change is expected to reduce lynx habitat and numbers in this unit, with potential loss of snow suitable for lynx over most of the area by the end of this century, though with potential snow refugia in the Wyoming Range (Gonzalez *et al*. 2007, p. 14). Fire suppression or fuels treatment, traffic, and development are other habitat-related threats to lynx in this unit (68 FR 40075).

Therefore, special management is required depending on the fire suppression and fuels treatment practices conducted and the design of highway development projects.

The area currently proposed for designation includes all lands that we designated in 2009 (FR 74 8616). It also includes a small amount of State trust lands in southwestern Montana managed in accordance with the recently finalized State of Montana Department of Natural Resources and Conservation Multi-species Habitat Conservation Plan (HCP) (Montana DNRC and U.S. Fish and Wildlife Service 2010, pp. 2-45–2-61, 4-27–4-36, 7-29–7-34). We are proposing to exclude 1.3 mi^2 (3.3 km^2) of lands managed under this HCP from designation as critical habitat in this unit (see **Exclusions**, below**)**. The proposed unit also includes additional lands in Lincoln, western Sublette, and Teton counties that were not designated in 2009. In particular, we propose to add 77 mi^2 (200 km^2) of lands in the northeast part of Grand Teton National Park and 182 mi^2 (470 km^2) of BLM lands east of the Bridger-Teton National Forest. Both areas are within the "core area" classified in the Recovery Outline (U.S. Fish and Wildlife Service 2005, pp. 3-5, 21), both are contiguous with the critical habitat area designated in 2009, and both include similar habitats and snow regimes. Both areas have recent verified occurrences of lynx, and are immediately adjacent to an area known to support a small but persistent lynx subpopulation.

The areas proposed in Grand Teton National Park have had verified lynx occurrences in the vicinity in the past 5 years (U.S. Fish and Wildlife Service 2013b, p. 1). The proposed BLM lands are considered occupied and are composed of high-quality

lynx/snowshoe hare habitat including mature spruce/fir, mixed conifer/aspen, and aspen stands with documented corresponding high densities of hares (U.S. Fish and Wildlife Service 2013c, pp. 1-2). These BLM lands also include a documented movement corridor (often referred to as Hoback Rim or Bondurant) through this area that may be of key importance to lynx moving through the landscape from the WY Range to the Togwotee Pass area to the north (U.S. Fish and Wildlife Service 2013c, p. 1). This information suggests that these areas contain the physical and biological features essential to the conservation of lynx and meet the criteria (above) for designation as critical habitat (U.S. Fish and Wildlife Service 2013b, entire and 2013c, entire). As in Unit 3, some National Forests with lands in this proposed critical habitat unit are working on refinements to lynx habitat mapping protocols and/or modeling. To the extent that we receive the refinements in time, we will evaluate the results for consideration in our subsequent final critical habitat designation.

This proposed critical habitat designation is designed for the conservation of the physical and biological features essential to the conservation of the lynx and necessary to support lynx life-history functions. The physical and biological features described in the PCE defined above comprise the essential features of boreal forest that (1) provide adequate prey resources necessary for the persistence of local populations (subpopulations of the metapopulation) of lynx through reproduction; (2) allow subpopulations to act as possible sources of lynx for more peripheral boreal forested areas; (3) enable the maintenance of lynx home ranges; (4) include snow conditions for which lynx are highly specialized that give lynx a competitive advantage over potential

competitors; (5) provide denning habitat; and (6) provide habitat connectivity for travel within home ranges, exploratory movements, and dispersal within critical habitat units. Lynx use habitat at a landscape scale, which means that no single locality (small scale) contains all of the required habitat elements that lynx need to ensure survival and reproduction. Therefore, individual portions of each unit (for example, an individual forest stand) may not contain all of the physical and biological features listed above; however, each unit, as a landscape, does contain each of the physical and biological features in adequate quantities and spatial arrangements to support lynx populations over time, and it is the landscape as a whole, therefore, that contains the PCE.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of "destruction or adverse modification" (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al*., 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq*.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not Federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the "Adverse Modification" Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for Canada lynx. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal

action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the lynx. These activities include, but are not limited to:

(1) Actions that would reduce or remove understory vegetation within boreal forest stands on a scale proportionate to the large landscape used by lynx. Such activities could include, but are not limited to, forest stand thinning, timber harvest, and fuels treatment of forest stands. These activities could significantly reduce the quality of snowshoe hare habitat such that the landscape's ability to produce adequate densities of snowshoe hares to support persistent lynx populations is at least temporarily diminished.

(2) Actions that would cause permanent loss or conversion of the boreal forest on a scale proportionate to the large landscape used by lynx. Such activities could include, but are not limited to, recreational area developments; certain types of mining activities and associated developments; and road building. Such activities could eliminate and fragment lynx and snowshoe hare habitat.

(3) Actions that would increase traffic volume and speed on roads that divide lynx critical habitat. Such activities could include, but are not limited to, transportation projects to upgrade roads or development of a new tourist destination. These activities

could reduce connectivity within the boreal forest landscape for lynx, and could result in increased mortality of lynx within the critical habitat units, because lynx are highly mobile and frequently cross roads during dispersal, exploratory movements, or travel within their home ranges.

In matrix habitat, activities that change vegetation structure or condition would not be considered an adverse effect to lynx critical habitat unless those activities would create a barrier or impede lynx movement between patches of foraging habitat and between foraging and denning habitat within a potential home range, or if they would adversely affect adjacent foraging habitat or denning habitat. For example, a pre-commercial thinning or fuels reduction project in matrix habitat would not adversely affect lynx critical habitat, and would not require consultation. However, a new highway passing through matrix habitat that would impede lynx movement may be an adverse effect to lynx critical habitat, and would require consultation. The scale of any activity should be examined to determine whether direct or indirect alteration of habitat would occur to the extent that the value of critical habitat for the survival and recovery of lynx would be appreciably diminished.

If you have questions regarding whether specific activities may constitute destruction or adverse modification of critical habitat, contact the Supervisor of the appropriate Ecological Services Field Office (see list below).

STATE	ADDRESS	PHONE NUMBER
MAINE	17 Godfrey Drive, Suite #2 Orono, ME 04473	(207) 866–3344
MINNESOTA	4101 American Boulevard East Bloomington, Minnesota 55425	(612) 725–3548
MONTANA	585 Shepard Way Helena, Montana 59601	(406) 449–5225
IDAHO AND WASHINGTON	11103 E. Montgomery Drive Spokane, Washington 99206	(509) 893–8015
WYOMING	5353 Yellowstone Road Suite 308A Cheyenne, Wyoming 82009	(307) 772–2374

All of the units proposed as critical habitat, as well as specific areas that are considered for exclusion under section 4(b)(2) of the Act (below), contain features essential to the conservation of the lynx DPS. All units are within the geographical range of the DPS, and all are currently occupied by the species based on surveys and research documenting the presence and reproduction of lynx (68 FR 40076, July 3, 2003). Under section 7 of the Act, Federal agencies already consult with us on activities in areas currently occupied by the lynx, or if the species may be affected by the action, to ensure that their actions do not jeopardize the continued existence of the lynx.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and

management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: "The Secretary shall not designate as critical habitat any lands or other geographic areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a

benefit to the species for which critical habitat is proposed for designation."

There are no Department of Defense lands with a completed INRMP within the critical habitat designation and, therefore, no analysis of potential exclusions under section 4(a)(3) of the Act is necessary.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise her discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When identifying the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus; the educational benefits of mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When identifying the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation, strengthening, or encouragement of partnerships; or implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide.

In the case of lynx, the benefits of critical habitat include public awareness of lynx presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for lynx due to the protection from adverse modification or destruction of critical habitat. In practice, a Federal nexus exists

primarily on Federal lands or for projects undertaken by Federal agencies. Since lynx were listed in 2000, we have had few projects on privately owned lands that had a Federal nexus to trigger consultation under section 7 of the Act. On Federal lands we have been consulting with Federal agencies on their effects to lynx since lynx were listed. These consultations have resulted in a series of comprehensive conservation plans for Federal lands over much of the range.

When we evaluate the existence of a conservation plan when considering the benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

Based on the information provided by entities seeking exclusion, as well as any additional public comments received, we will evaluate whether certain lands in the proposed critical habitat units are appropriate for exclusion from the final designation pursuant to section 4(b)(2) of the Act. If the analysis indicates that the benefits of excluding lands from the final designation outweigh the benefits of designating those lands as critical habitat, then the Secretary may exercise her discretion to exclude the lands from the final designation.

After considering the following areas under section 4(b)(2) of the Act, we are considering excluding them from the critical habitat designation for lynx. In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), the Department of the Interior's manual at 512 DM 2, and Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we are considering excluding Tribal lands from the critical habitat designation (see also *Government-to-Government Relationship with Tribes*, below).

We are also considering excluding from critical habitat designation the following lands based on the management plans that govern activities on them: (1) lands in Maine managed in accordance with the Natural Resources Conservation Service's (NRCS)

Healthy Forest Reserve Program (75 FR 6539), (2) State lands in Washington managed in accordance with the State of Washington Department of Natural Resources (DNR) Lynx Habitat Management Plan for DNR-managed Lands (Washington DNR 2006, entire), and (3) State lands in western Montana managed in accordance with the Montana Department of Natural Resources and Conservation (DNRC) Forested State Trust Lands Habitat Conservation Plan (HCP) (Montana DNRC and U.S. Fish and Wildlife Service 2010, entire). Table 3 below provides approximate areas (mi^2, km^2) of lands that meet the definition of critical habitat but which we are considering excluding from the final critical habitat rule under section 4(b)(2) of the Act. For additional details on these plans, see Exclusions Based on Other Relevant Impacts, below.

TABLE 3. Areas considered for exclusion by critical habitat unit.

Unit	Specific Area	Areas Meeting the Definition of Critical Habitat, in mi^2 (km^2)	Areas Considered for Exclusion, in mi^2 (km^2)
1. Maine	Tribal Lands: Houlton Band of Maliseet Indians, Aroostook Band of Micmac Indians, Passamaquoddy Tribe, Penobscot Indian Nation	87.2 (225.9)	87.2 (225.9)
1. Maine	Maine Healthy Forest Reserve Program	943.2 (2,443.0)	943.2 (2,443.0)
2. Minnesota	Tribal Lands: Grand Portage Reservation, Bois Forte Reservation - Vermillion Lake District	77.9 (201.9)	77.9 (201.9)
3. Northern Rocky Mountains	Tribal Lands: Flathead Reservation	369.8 (957.7)	369.8 (957.7)
3. Northern Rocky Mountains	Montana DNRC Multi-species Habitat Conservation Plan	271.4 (703.0)	271.4 (703.0)

4. North Cascade Mountains	Washington DNR Lynx Habitat Management Plan	164.2 (425.2)	164.2 (425.2)
5. Greater Yellowstone Area	Montana DNRC Multi-species Habitat Conservation Plan	1.3 (3.3)	1.3 (3.3)

If these areas are excluded from the final designation, a total of 1,915 mi^2 (4,960 km^2) would be excluded from the critical habitat designation, reducing the total area proposed for designation to 39,632 mi^2 (102,647 km^2), which woud be 632 mi^2 (1,637 km^2)—1.6 percent—larger that the area we designated in 2009. However, we specifically solicit comments on the inclusion or exclusion of such areas. In the paragraphs below, we provide a more detailed analysis of our consideration of exclusion of these lands under section 4(b)(2) of the Act.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In our draft (73 FR 62450) and final (Industrial Economics, Inc. 2008, entire) economic analyses of the 2009 final revised critical habitat designation, we evaluated the potential economic effects on small business entities from conservation actions related to the listing of the Canada lynx and revised designation of the species' critical habitat. The activities affected by Canada lynx conservation efforts may include land development, transportation and utility operations, and conservation on public and Tribal lands. The following is a summary of the information contained in the final economic analysis:

(a) Development

According to the final economic analysis, Canada lynx development-related costs accounted for less than 1 percent of forecast incremental costs, and were estimated at $8,130 (in 2008 dollars) over 20 years. The costs consisted of administrative costs of conducting consultations under section 7 of the Act on development projects. As a result of this information, we determined and certified that the final revised designation was not anticipated to have a significant economic impact on a substantial number of small businesses with respect to development activities.

(b) Forest Management

Potential costs to forest management in designated habitat accounted for another 16 percent of forecast costs. Undiscounted costs were estimated at $233,000 (in 2008 dollars) over 20 years. The costs consisted of administrative costs of conducting consultations under section 7 of the Act on forest management. These costs were expected to be borne by Federal and State governments, private timber landowners, Tribal landowners, and other private landowners across the units of the designation. The administrative costs would be divided among many entities and projects over a 20-year period. As a result of this information, we determined and certified that the final revised designation was not anticipated to have a significant economic impact on small forest management businesses.

(c) Recreation

Future costs associated with managing recreation accounted for an additional 19 percent of forecast costs. Costs were estimated to be $285,000 (in 2008 dollars) over 20 years. The costs consisted of administrative costs of conducting consultations under section 7 of the Act associated with managing recreation (i.e., reductions of snowmobile opportunities) in Unit 4 (North Cascades). Incremental costs would be incurred by State and Federal agencies. The final economic analysis specifically addressed the potential impacts to recreational snowmobilers and supporting businesses in Washington State (and elsewhere) and concluded that significant economic or other social impacts were not anticipated (Industrial Economics, Inc. 2008, pp. 6-3–6-16). As a result of this information, we determined and certified that the final revised designation was not anticipated to have a significant economic impact on a substantial number of small recreation businesses.

(d) Lynx Management Plans

Future costs associated with development of lynx management plans accounted for approximately one percent of forecast costs. Costs were estimated to be $12,300 (in 2008 dollars) over 20 years. The costs consisted of administrative costs of conducting consultations under section 7 of the Act on lynx management plans by Federal agencies. As a result of this information, we determined and certified that the final revised

designation of critical habitat was not anticipated to have a significant economic impact on a substantial number of small businesses.

(e) Mining/Oil and Gas

Future costs associated with mining and oil and gas exploration and development activities accounted for an additional 8 percent of forecast costs. Costs were estimated at $115,000 (in 2008 dollars) over 20 years. The costs consisted of administrative costs of conducting consultations under section 7 of the Act on mining and oil and gas projects by Federal agencies in Units 2, 4, and 5. As a result of this information, we determined and certified that the final revised designation of critical habitat was not anticipated to have a significant economic impact on a substantial number of small mining or oil and gas businesses.

We are not proposing to exclude any areas under section 4(b)(2) based solely on economic impacts. However, to evaluate potential economic impacts of this proposed revised critical habitat designation, we will update and revise the 2008 economic analysis based on public comment, evaluation of potential impacts of proposed additions to the 2009 critical habitat designation as described in this proposed rule, and to reflect current dollar values. The 2008 economic analysis is available for downloading from the Internet at *http://www.regulations.gov*, or by contacting the Montana Ecological Services Field Office directly (see **FOR FURTHER INFORMATION CONTACT** section). During the development of a final designation, we will consider economic impacts, public

comments, and other new information, and areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense (DOD) where a national security impact might exist. In preparing this proposal, we have determined that the lands within the proposed designation of critical habitat for lynx are not owned or managed by the Department of Defense, and, therefore, we anticipate no impact on national security. Consequently, the Secretary does not propose to exert her discretion to exclude any areas from the final designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur

because of the designation.

Land and Resource Management Plans, Conservation Plans, or Agreements based on Conservation Partnerships

We consider a current land management or conservation plan (HCPs as well as other types) to provide adequate management or protection if it meets the following criteria:

(1) The plan is complete and provides a conservation benefit for the species and its habitat;

(2) There is a reasonable expectation that the conservation management strategies and actions will be implemented for the foreseeable future, based on past practices, written guidance, or regulations; and

(3) The plan provides conservation strategies and measures consistent with currently accepted principles of conservation biology.

We have made the preliminary determination that the Maine Healthy Forest Reserve Program (HFRP), the State of Washington Department of Natural Resources (DNR) Lynx Habitat Management Plan for DNR-managed Lands, and the State of Montana Department of Natural Resources and Conservation (DNRC) Forested State Trust Lands Habitat Conservation Plan (HCP) fulfill the above criteria, and are considering the exclusion of the non-Federal lands covered by these plans that provide for the conservation of lynx.

Maine Healthy Forest Reserve Program (HFRP)

In 2003, Congress passed the Healthy Forest Restoration Act. Title V of this Act designates a Healthy Forest Reserve Program with objectives to: (1) promote the recovery of threatened and endangered species, (2) improve biodiversity, and (3) enhance carbon sequestration. In 2006, Congress provided the first funding for the HFRP, and Maine, Arkansas, and Mississippi were chosen as pilot States to receive funding through their respective Natural Resources Conservation Service (NRCS) State offices. Based on a successful pilot program, in 2008, the HFRP was reauthorized as part of the Farm Bill, and in 2010, NRCS published a final rule in the **Federal Register** (75 FR 6539) amending regulations for the HFRP based on provisions amended by the bill.

In 2006 and 2007, the NRCS offered the HFRP to landowners in the proposed Canada lynx critical habitat unit in Maine to promote development of Canada lynx forest management plans. At that time, five landowners enrolled in the Maine HFRP—the Passamaquoddy Tribe (42.8 mi^2; 110.9 km^2), The Nature Conservancy (284.5 mi^2; 736.9 km^2), the Forest Society of Maine as conservation easement holder for the Merriweather LLC-West Branch Project (444.2 mi^2; 1,150.4 km^2), Katahdin Forest Products (213.4 mi^2; 552.6 km^2), and Elliotsville Plantation, Inc., (84.9 mi^2; 219.9 km^2). Collectively, the landowners signed contracts (with NRCS) committing to developing lynx forest management plans on 1,069.8 mi^2 (2,770.7 km^2). However, one of the landowners has since discontinued enrollment in the program. Because of that and other mapping

refinements, the amount of land currently managed in accordance with Maine HFRP is 943.2 mi^2 (2,443.0 km^2), or 8.5 percent of the total proposed critical habitat in Unit 1. Lynx maintain large home ranges; therefore, forest management plans at large landscape scales will provide substantive recovery benefits to lynx.

The NRCS requires that lynx forest management plans must be based on the Service's "Canada Lynx Habitat Management Guidelines for Maine" (McCollough 2007, entire). These guidelines were developed from the best available science on lynx management for Maine and have been revised as new research results became available. The guidelines require maintenance of prescribed hare densities that have resulted in reproducing lynx populations in Maine. The guidelines are:

1. Avoid upgrading or paving dirt or gravel roads traversing lynx habitat. Avoid construction of new high-speed/high-traffic-volume roads in lynx habitat. Desired outcome: Avoid fragmenting potential lynx habitat with high-traffic/high-speed roads.

2. Maintain through time at least one lynx habitat unit of 35,000 ac (14,164 ha) (~1.5 townships) or more for every 200,000 ac (80,937 ha) (~9 townships) of ownership. At any time, about 20 percent of the area in a lynx habitat unit should be in the optimal mid-regeneration conditions (see Guideline 3). Desired outcome: Create a landscape that will maintain a continuous presence of a mosaic of successional stages, especially mid-regeneration patches that will support

resident lynx.

3. Employ silvicultural methods that will create regenerating conifer-dominated stands 12–35 ft (3.7–10.7 m) in height with high stem density (7,000–15,000 stems/ac; 2,800–6,000 stems/ha) and horizontal cover above the average snow depth that will support greater than 2.7 hares/ac (1.1 hares/ha). Desired outcome: Employ silvicultural techniques that create, maintain, or prolong use of stands by high populations of snowshoe hares.

4. Maintain land in forest management. Development and associated activities should be consolidated to minimize direct and indirect impacts. Avoid development projects that occur across large areas, increase lynx mortality, fragment habitat, or result in barriers that affect lynx movements and dispersal. Desired outcome: Maintain the current amount and distribution of commercial forest land in northern Maine. Prevent forest fragmentation and barriers to movements. Avoid development that introduces new sources of lynx mortality.

5. Encourage coarse woody debris for den sites by maintaining standing dead trees after harvest and leaving patches (at least .75 ac; .30 ha) of windthrow or insect damage. Desired outcome: Retain coarse woody debris for denning sites.

Notably, HFRP forest management plans must provide a net conservation benefit for lynx, which will be achieved by employing the lynx guidelines, identifying baseline

habitat conditions, and meeting NRCS standards for forest plans. Plans must meet NRCS HFRP criteria and guidelines and comply with numerous environmental standards. NEPA compliance will be completed for each plan. The NRCS held public informational sessions about the HFRP and advertised the availability of funds. Plans must be reviewed and approved by the NRCS with assistance from the Service. The details of the plans are proprietary and will not be made public per NRCS policy.

Plans must be developed for a forest rotation (70 years) and include a decade-by-decade assessment of the location and anticipated condition of lynx habitat on the ownership. Some landowners are developing plans exclusively for lynx, and others are combining lynx management (umbrella species for young forest) with pine marten (umbrella species for mature forest) and other biodiversity objectives. Broad public benefits will derive from these plans, including benefits to many species of wildlife that share habitat with the lynx. Landowners are writing their own plans. The Nature Conservancy contracted with the University of Maine, Department of Wildlife Ecology to develop a lynx–pine marten plan that serves as a model for lynx/biodiversity forest planning and will be shared with other northern Maine landowners.

Landowners who are enrolled with the NRCS commit to a 10-year contract. Landowners must complete their lynx forest management plans within 2 years of enrollment. Currently, two plans are completed and two are in the final stage of editing. The majority (50 to 60 percent) of HFRP funds are withheld until plans are completed. By year 7, landowners must demonstrate on-the-ground implementation of their plan.

The NRCS will monitor and enforce compliance with the 10-year contracts. At the conclusion of the 10-year cost share contract, we anticipate that Safe Harbor Agreements or other agreements to provide regulatory assurances will be developed by all landowners as an incentive to continue implementing the plans.

We completed a programmatic biological opinion for the HFRP in 2006 that assesses the overall effects of the program on lynx habitat and on individual lynx and provides the required incidental take coverage. Separate biological opinions will be developed under this programmatic opinion for each of the four enrollees. These tiered opinions will document environmental baseline, net conservation benefits, and incidental take for each landowner. If additional HFRP funding is made available to Maine in the future, new enrollees will be tiered under this programmatic opinion. This programmatic opinion will be revised as new information is obtained, or if new rare, threatened, or endangered species are considered for HFRP funding.

Commitments to the HFRP are strengthened by several other conservation efforts. The Nature Conservancy land enrolled in the HFRP is also enrolled in the Forest Stewardship Council (FSC) forest certification program, which requires safeguards for threatened and endangered species. The Forest Society of Maine is under contract to manage a conservation easement held by the State of Maine on the Katahdin Forest Management lands, which is also enrolled in the HFRP. This easement requires that threatened and endangered species be protected and managed. The Forest Society of Maine also holds a conservation easement on the Merriweather LLC–West Branch

property, which contains requirements that threatened and endangered species be protected and managed. These lands are also certified under the Sustainable Forestry Initiative and FSC, which require that there be programs for threatened and endangered species. The Passamaquoddy enrolled lands are managed as trust lands by the Bureau of Indian Affairs, and projects occurring on those lands are subject to NEPA review and section 7 consultation.

In the final revised critical habitat designation, published in the **Federal Register** on February 25, 2009 (74 FR 8649–8652), we determined that the benefits of excluding lands managed in accordance with the Maine HFRP outweighed the benefits of including them in the designation, and that doing so would not result in extinction of the species. We, therefore, again consider excluding 943.2 mi^2 (2,443.0 km^2) of lands currently managed in accordance with the Maine HFRP from the revised lynx critical habitat designation. However, in the final rule, we will again weigh the benefits of inclusion versus exclusion of these lands in the final critical habitat designation.

State of Washington Department of Natural Resources Lynx Habitat Management Plan for DNR-managed Lands (WDNR LHMP)

The WDNR LHMP encompasses 197 mi^2 (510 km^2) of WDNR-managed lands distributed throughout north-central and northeastern Washington in areas delineated as Lynx Management Zones in the Washington State Lynx Recovery Plan (Stinson 2001, p. 39; Washington DNR 2006, pp. 5-13). Of the area covered by the plan, 164.2 mi^2 (425.2

km^2) overlaps the area proposed for designation as critical habitat. The WDNR LHMP was finalized in 2006, and is a revision of the lynx plan that WDNR had been implementing since 1996. The 1996 plan was developed as a substitute for a species-specific critical habitat designation required by Washington Forest Practices rules in response to the lynx being State-listed as threatened (Washington DNR 2006, p. 5). The 2006 WDNR LHMP provided further provisions to avoid the incidental take of lynx (Washington DNR 2006, p. 6). WDNR is committed to following the LHMP until 2076, or until the lynx is delisted (Washington DNR 2006, p. 6). WDNR requested that lands subject to the plan be excluded from critical habitat.

The WDNR LHMP contains measures to guide WDNR in creating and preserving quality lynx habitat through its forest management activities. The objectives and strategies of the LHMP are developed for multiple planning scales (ecoprovince and ecodivision, Lynx Management Zone, Lynx Analysis Unit (LAU), and ecological community), and include:

1. Encouraging genetic integrity at the species level by preventing bottlenecks between British Columbia and Washington by limiting size and shape of temporary non-habitat along the border and maintaining major routes of dispersal between British Columbia and Washington;
2. Maintaining connectivity between subpopulations by maintaining dispersal routes between and within zones and arranging timber harvest activities that result in temporary non-habitat patches among watersheds so that connectivity is maintained within each zone;

3. Maintaining the integrity of requisite habitat types within individual home ranges by maintaining connectivity between and integrity within home ranges used by individuals and/or family groups; and
4. Providing a diversity of successional stages within each LAU and connecting denning sites and foraging sites with forested cover without isolating them with open areas by prolonging the persistence of snowshoe hare habitat and retaining coarse woody debris for denning sites (Washington DNR 2006, p. 29).

The LHMP identifies specific guidelines to achieve the objectives and strategies at each scale; it also describes how WDNR will monitor and evaluate the implementation and effectiveness of the LHMP (Washington DNR 2006, pp. 29-63). WDNR has been managing for lynx for almost two decades, and the Service has concluded that the management strategies implemented are effective.

In the final revised critical habitat designation, published in the **Federal Register** on February 25, 2009 (74 FR 8657–8658), we determined that the benefits of excluding lands managed in accordance with the WDNR LHMP outweighed the benefits of including them in the designation, and that doing so would not result in extinction of the species. We, therefore, again consider excluding 164.2 mi^2 (425.2 km^2) of lands managed in accordance with the WDNR LHMP from the revised lynx critical habitat designation. However, in the final rule, we will again weigh the benefits of inclusion versus exclusion of these lands in the final critical habitat designation.

State of Montana Department of Natural Resources and Conservation Forested State Trust Lands Habitat Conservation Plan (MDNRC HCP)

The Montana DNRC worked closely with the Service in developing and completing NEPA analysis on this multi-species HCP (Montana DNRC and U.S. Fish and Wildlife Service 2010, entire). It includes a Lynx Conservation Strategy that minimizes impacts of forest management activities on lynx, complements lynx conservation objectives set forth in the States' Comprehensive Fish and Wildlife Conservation Strategy (Montana Department of Fish, Wildlife and Parks 2005, entire), and describes conservation commitments that are based on recent information from lynx research in Montana (Montana DNRC and U.S. Fish and Wildlife Service 2010, pp. 2-45–2-61). It also commits to active lynx monitoring and adaptive management programs (Montana DNRC and U.S. Fish and Wildlife Service 2010, pp. 4-27 – 4-37).

In our biological opinion regarding potential impacts to lynx of implementation of the HCP, the Service concluded that the HCP "…promotes the conservation of lynx and their habitat through increased conservation commitments by DNRC for forest management practices, maintenance of the habitat mosaic, structure, and components required to support lynx and their primary prey, the snowshoe hare, monitoring, and adaptive management" (U.S. Fish and Wildlife Service 2011, p. III-94). We determined that the proposed action is not likely to jeopardize the continued existence of Canada lynx within the contiguous U.S. DPS and that forest management activities managed under the

conservation commitments of the DNRC HCP would not appreciably reduce the likelihood of survival and recovery of Canada lynx (U.S. Fish and Wildlife Service 2011, p. III-94). Therefore, we propose to exclude 271.4 mi^2 (703.0 km^2) of forested State Trust lands in western Montana managed in accordance with the DNRC HCP from the revised lynx critical habitat designation in Unit 3, and 1.3 mi^2 (3.3 km^2) in southwest Montana from designation in Unit 5. However, we will weigh the benefits of inclusion versus exclusion of these lands in the final critical habitat designation.

Tribal Lands

Tribal lands in Maine, Minnesota, and Montana fall within the boundaries of the proposed critical habitat designation in the Maine, Minnesota, and Northern Rocky Mountains units. These Tribal lands include those of the Houlton Band of Maliseet Indians, Aroostook Band of Micmac Indians, Passamaquoddy Tribe, and Penobscot Indian Nation in Maine (Unit 1), Grand Portage Indian Reservation and Bois Forte Indian Reservation – Vermillion Lake District in Minnesota (Unit 2), and the Flathead Indian Reservation in Montana (Unit 3). The amount of Tribal lands that occur within the proposed designation is relatively small in size, totaling approximately 534.9 mi^2 (1,385.4 km^2), or 1.3 percent of the total proposed designation. The areas being considered for exclusion includes 87.2 mi^2 (226 km^2) in Maine, 77.9 mi^2 (202 km^2) in Minnesota, and 369.8 mi^2 (958 km^2) in Montana. In the final rule designating revised critical habitat, published in the **Federal Register** on February 25, 2009 (74 FR 8648–8649), we determined that the benefits of excluding Tribal lands in Maine, Minnesota,

and Montana outweighed the benefits of including them. We determined that exclusion of Tribal lands from the designation of critical habitat for the lynx will not result in the extinction of the species because the Houlton Band of Maliseet Indians, Aroostook Band of Micmac Indians, Passamaquoddy Tribe, Penobscot Indian Nation, Grand Portage Indians, Bois Forte Indians, and Flathead Indian Reservation Tribes implement programs for the conservation of the species, and physical and biological features essential to it, in occupied areas. The protections afforded to the lynx under the jeopardy standard will remain in place for the areas considered for exclusion from revised critical habitat. Therefore, and in light of Secretarial Order 3206 and Tribal management of lynx and their habitat, we are considering excluding these Tribal lands from the revised lynx critical habitat designation. (See also *Government-to-Government Relationship with Tribes*, below).

Economic Analysis

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific information available and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as critical habitat. We cannot exclude such areas from critical habitat when such exclusion will result in the extinction of the species concerned.

We prepared a final economic analysis to evaluate the potential economic impacts

of our 2009 critical habitat designation. To ensure that we adequately consider the economic impacts of the current proposed designation, we will prepare an economic analysis of this proposed designation and make it available for public comment. The economic analysis will address issues raised by the court that were described earlier in this proposed rule.

Peer Review

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, and analyses. We have invited these peer reviewers to comment during this public comment period.

We will consider all comments and information received during this comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of

publication of this proposed rule in the **Federal Register**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with

these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.*)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq*.) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C 801 *et seq*.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include such businesses as manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5

million in annual business, and forestry and logging operations with fewer than 500 employees and annual business less than $7 million. To determine whether small entities may be affected, we will consider the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Importantly, the incremental impacts of a rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the proposed critical habitat designation, but the per-entity economic impact is not significant, the Service may certify. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify.

Under the RFA, as amended, and following recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking only on those entities directly regulated by the rulemaking itself, and not the potential impacts to indirectly affected entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried by the Agency is not likely to adversely modify critical habitat. Therefore, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding

destruction and adverse modification) imposed by critical habitat designation. Under these circumstances, it is our position that only Federal action agencies will be directly regulated by this designation. Therefore, because Federal agencies are not small entities, the Service certifies that the proposed critical habitat rule will not have a significant economic impact on a substantial number of small entities.

In conclusion, based on our interpretation of directly regulated entities under the RFA and relevant case law, this designation of critical habitat will directly regulate only Federal agencies, which are not by definition small business entities. And as such, we certify that, if promulgated, this designation of critical habitat will not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. As described above, the final rule designating revised critical habitat for lynx, published in the **Federal Register** on February 25, 2009 (74 FR 8616), was considered a significant regulatory action under E.O. 12866 due to potential novel legal and policy issues. OMB's guidance in M-01-27 for implementing this Executive Order outlines nine outcomes that may constitute "a significant adverse effect" when compared to no regulatory action. The final economic

analysis found that none of these outcomes would result from the critical habitat designation for lynx (Industrial Economics, Inc., 2008, refer to Appendix B). The costs consisted of administrative costs of conducting consultations under section 7 of the Act on mining and oil and gas projects by Federal agencies in Units 2, 4, and 5. As such, we do not expect the designation of this proposed critical habitat to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our revised economic analysis, and review and revise this assessment as warranted.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.*)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq*.), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or Tribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless

the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary

Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule would significantly or uniquely affect small governments. The 2008 final economic analysis for the final rule designating revised critical habitat, published in the **Federal Register** on February 25, 2009 (74 FR 8616), evaluated potential impacts of critical habitat designation for the Canada lynx on timber management, recreation, land development, mining, oil and gas development, and the development of management plans (Industrial Economics, Inc., 2008, entire). The analysis estimated costs of the rule to be $2.11 million at then-present value over a 20-year period ($142,000 annualized) assuming a 3 percent discount rate, and $1.49 million ($141,000 annualized) assuming a 7 percent discount rate (all values are in 2008 dollars). Most of the impacts were expected to affect Federal agencies through administrative costs associated with consultations under section 7 of the Act. Impacts on small governments were not anticipated, or they were anticipated to be passed through to consumers. The SBA does not consider the Federal Government to be a small governmental jurisdiction or entity. Consequently, we do not believe that the designation of critical habitat for the Canada lynx will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required. However, we will further evaluate this issue as we revise and update the economic analysis to address this proposed designation, and we will review and revise this assessment if appropriate.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), this rule is not anticipated to have significant takings implications. As discussed above, the designation of critical habitat affects only Federal actions. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. Due to current public knowledge of the species protections and the prohibition against take of the species both within and outside of the proposed areas, we do not anticipate that property values will be affected by the critical habitat designation. However, we have not yet completed the economic analysis for this proposed rule. Once the economic analysis is available, we will review and revise this preliminary assessment as warranted, and prepare a Takings Implication Assessment.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed

critical habitat designation with appropriate State resource agencies in Maine, Minnesota, Montana, Idaho, Washington, and Wyoming. The designation of critical habitat in areas currently occupied by the lynx may impose nominal additional regulatory restrictions to those currently in place and, therefore, may have little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments because the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features necessary to the conservation of the species are specifically identified. This information does not alter where and what Federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, the rule identifies the elements of physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.*)*

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq*.). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.*)*

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National

Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). However, when the range of the species includes States within the Tenth Circuit, such as that of the Canada lynx, under the Tenth Circuit ruling in *Catron County Board of Commissioners* v. *U.S. Fish and Wildlife Service*, 75 F.3d 1429 (10th Cir. 1996), we will undertake a NEPA analysis for critical habitat designation. We completed a NEPA analysis for the 2009 designation; we will update and revise that analysis based on the current proposal and notify the public of the availability of the draft environmental assessment for this proposal when it is finished.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work

directly with tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

Tribal lands in Maine, Minnesota, and Montana fall within the boundaries of the proposed critical habitat designation in the Maine, Minnesota, and Northern Rocky Mountains units. Tribal lands that fall within the proposed designation include those of the Houlton Band of Maliseet Indians, Aroostook Band of Micmac Indians, Passamaquoddy Tribe, and Penobscot Indian Nation in Maine (Unit 1), Grand Portage Indian Reservation and Bois Forte Indian Reservation - Vermillion Lake District in Minnesota (Unit 2), and the Flathead Indian Reservation in Montana (Unit 3). During development of the 2009 final rule, we contacted and met with a number of Tribes to discuss the proposed designation, and we also received comments from numerous Tribes requesting that their lands not be designated as critical habitat because of their sovereign rights, in addition to concerns about economic impacts and the effect on their ability to manage natural resources. As described above (see *Application of Section 4(b)(2) of the Act*—Exclusions Based on Other Relevant Impacts), we determined in the 2009 final rule that the benefits of excluding these Tribal lands from the proposed lynx critical habitat designation outweighed the benefits of including them, and that doing so would not result in extinction of the species.

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(1) Be logically organized;

(2) Use the active voice to address readers directly;

(3) Use clear language rather than jargon;

(4) Be divided into short sections and sentences; and

(5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

References Cited

A complete list of references cited in this rulemaking is available on the Internet at *http://www.regulations.gov* and upon request from the Montana Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this package are the staff members of the Montana Fish and Wildlife Office, the Maine Fish and Wildlife Office, and the New England Fish andWildlife office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544;–4245; unless otherwise noted.

2. In § 17.11(h), revise the entry for "Lynx, Canada" under "Mammals" in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Mammals							
* * * * * * *							
Lynx, Canada	*Lynx canadensis*	U.S.A. (AK, CO, ID, ME, MI, MN, MT, NH, NY, OR, UT, VT, WA, WI, WY), Canada, circumboreal	Where found within contiguous U.S.A.	T	692	17.95(a)	17.40(k)
* * * * * * *							

3. In § 17.95, amend paragraph (a) by revising the entry for "Canada Lynx *(Lynx canadensis)",* to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

(a) *Mammals.*

* * * * *

Canada Lynx *(Lynx canadensis)*

(1) Critical habitat units are depicted on the maps below for the following States and counties:

(i) Idaho: Boundary County;

(ii) Maine: Aroostook, Franklin, Penobscot, Piscataquis and Somerset counties;

(iii) Minnesota: Cook, Koochiching, Lake, and St. Louis counties;

(iv) Montana: Carbon, Flathead, Gallatin, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Missoula, Park, Pondera, Powell, Stillwater, Sweetgrass, and Teton counties;

(v) Washington: Chelan and Okanogan counties; and

(vi) Wyoming: Fremont, Lincoln, Park, Sublette, and Teton counties.

(2) Within these areas the primary constituent element for the Canada lynx is boreal forest landscapes supporting a mosaic of differing successional forest stages and containing:

(i) Presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface;

(ii) Winter conditions that provide and maintain deep fluffy snow for extended periods of time;

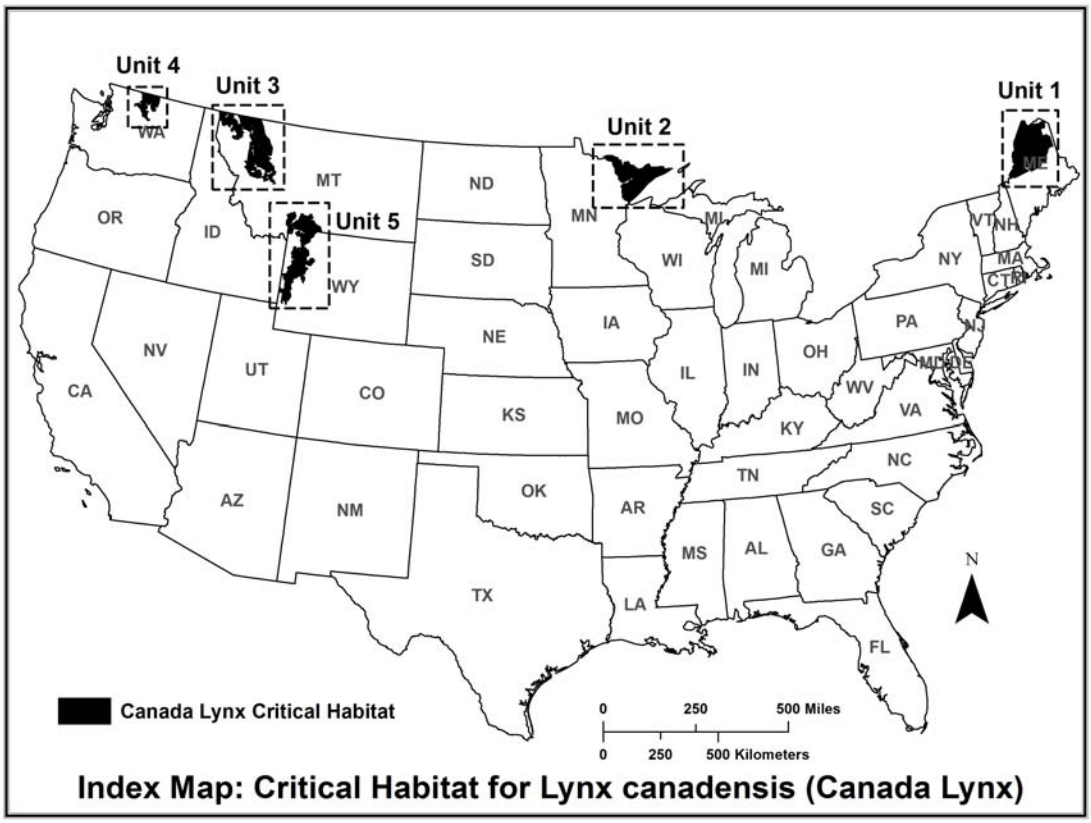
(iii) Sites for denning that have abundant coarse woody debris, such as downed trees and root wads; and

(iv) Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT THE EFFECTIVE DATE OF THE FINAL RULE].

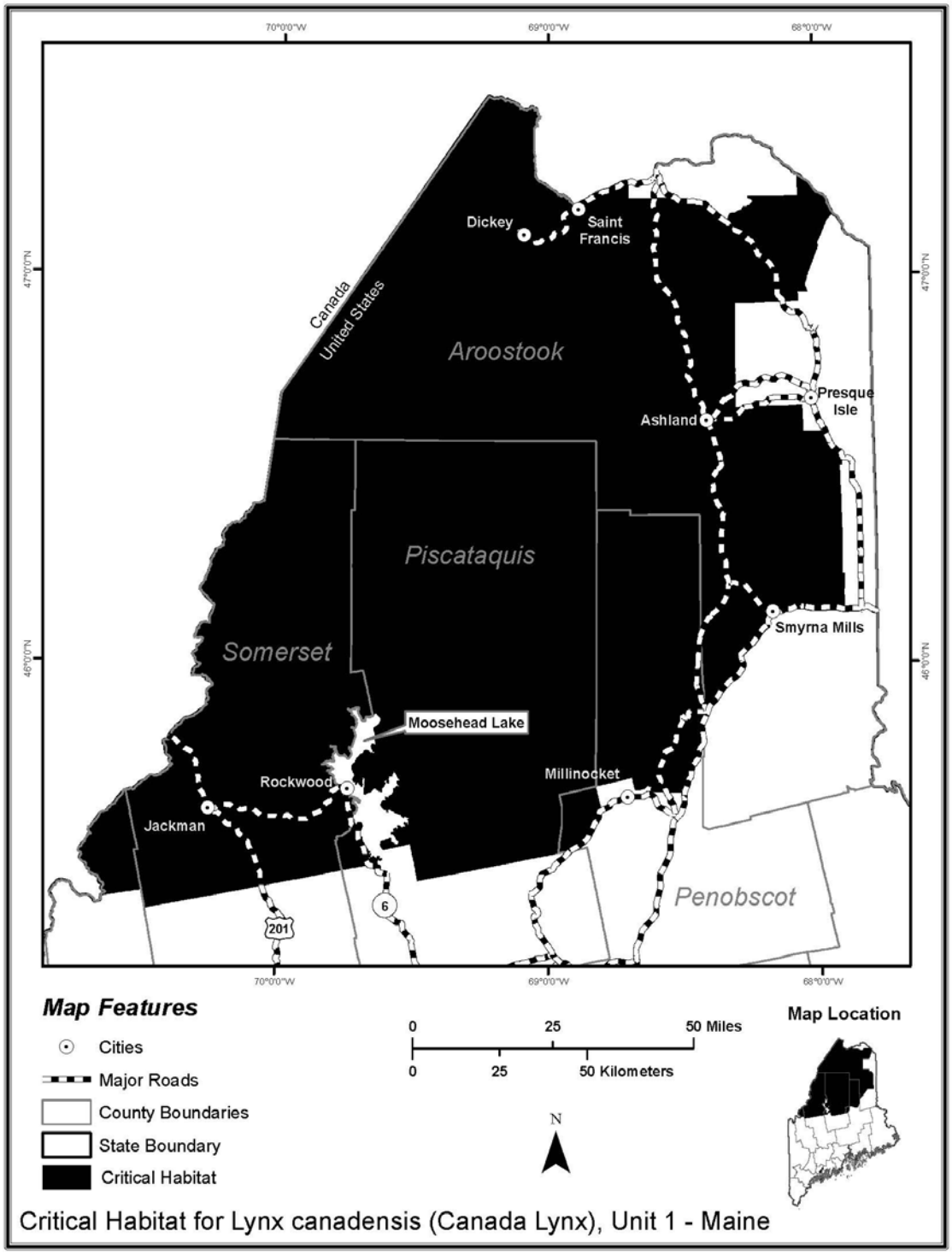
(4) Critical habitat map units. Data layers defining map units were created using a USA Contiguous Albers Equal Area Conic projection. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's internet site, *http://www.fws.gov/montanafieldoffice/*, at *http://www.regulations.gov* at Docket No. FWS–R6–ES–2013–0101) and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Note: Index map of critical habitat for Canada lynx follows:



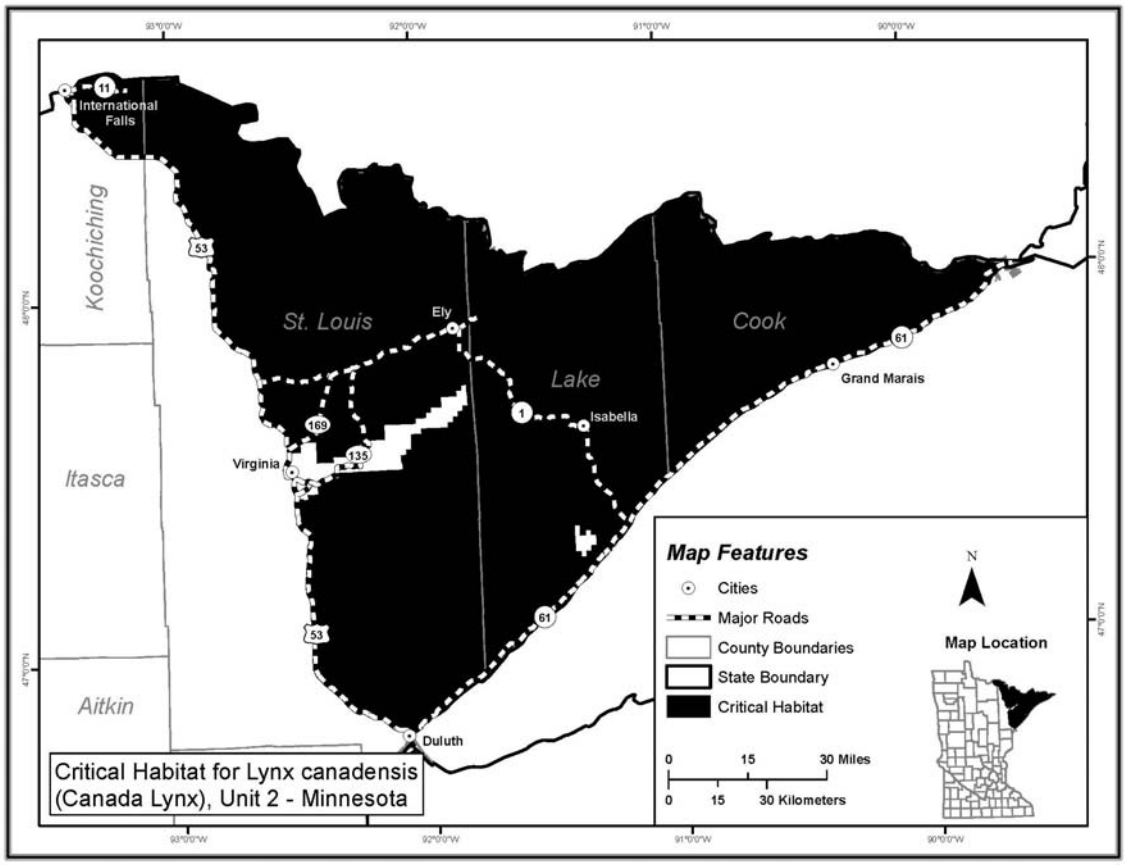
Index Map: Critical Habitat for Lynx canadensis (Canada Lynx)

(6) Unit 1: Maine. Map of Unit 1, Maine, follows:

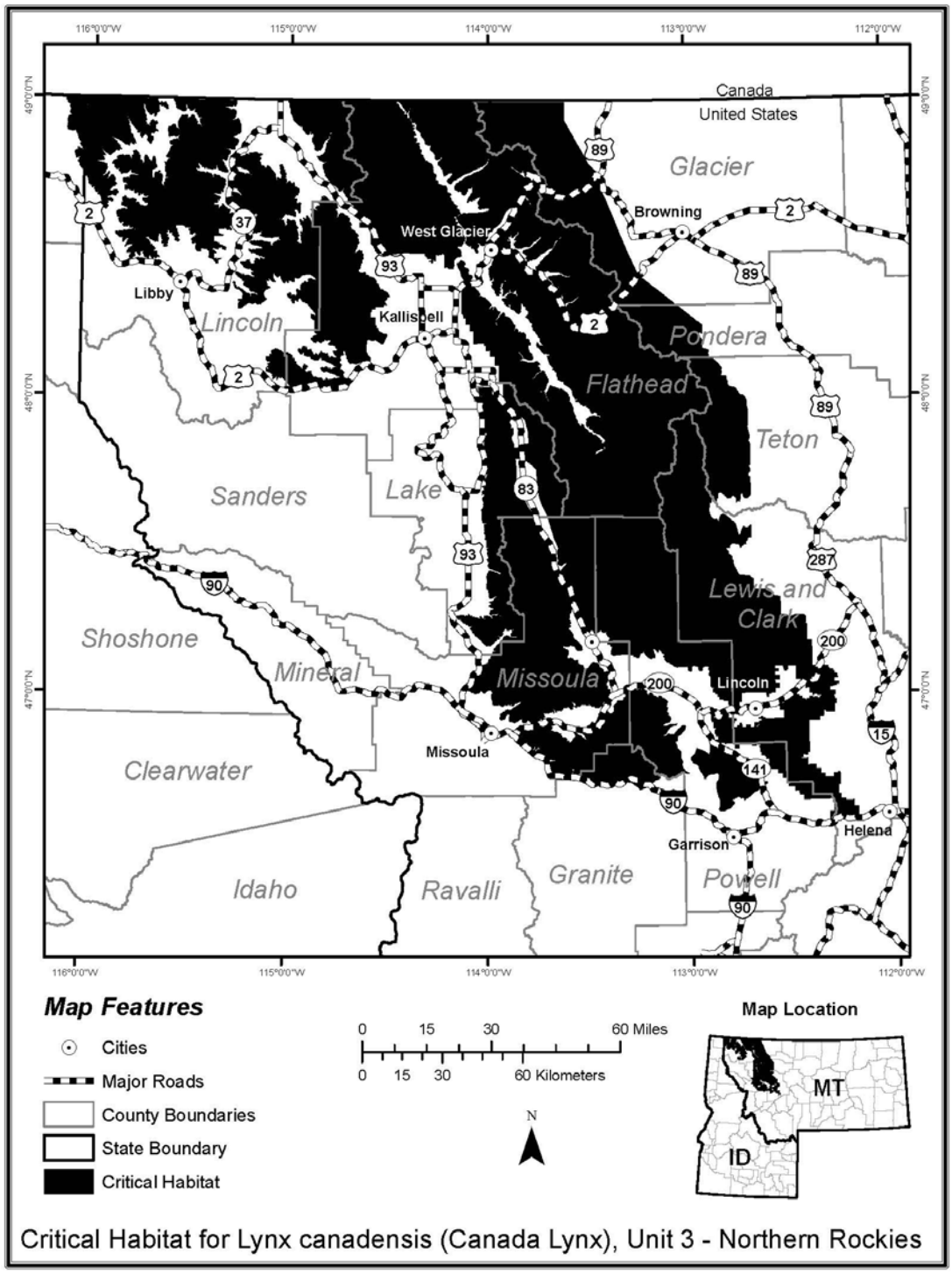


Critical Habitat for Lynx canadensis (Canada Lynx), Unit 1 - Maine

(7) Unit 2: Minnesota. Map of Unit 2, Minnesota, follows:

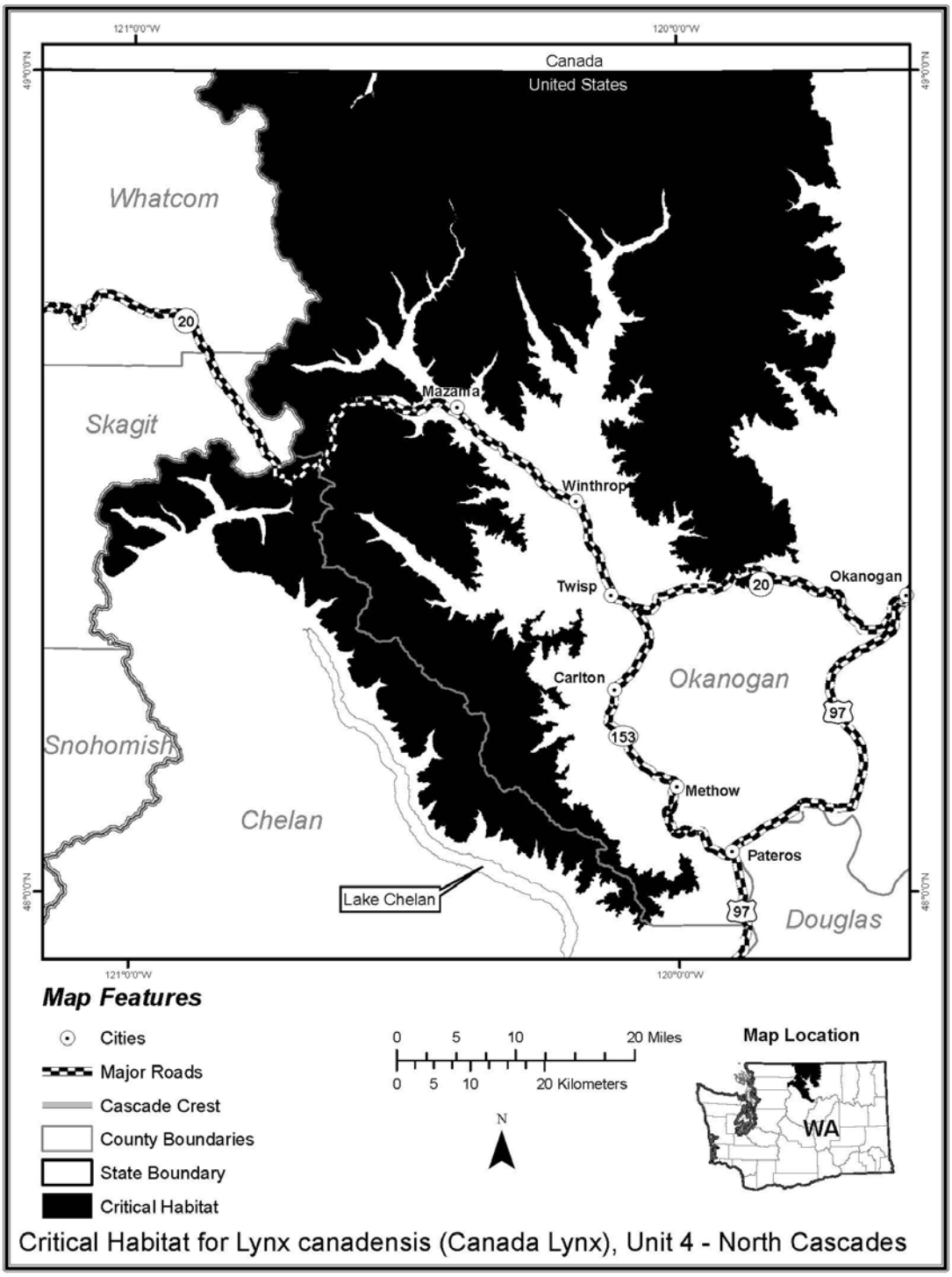

International Falls
Koochiching
St. Louis
Ely
Cook
Lake
Isabella
Grand Marais
Virginia
Itasca
Aitkin
Duluth
Critical Habitat for Lynx canadensis (Canada Lynx), Unit 2 - Minnesota
Map Features
Cities
Major Roads
County Boundaries
State Boundary
Critical Habitat
0 15 30 Miles
0 15 30 Kilometers
N
Map Location

(8) Unit 3: Northern Rockies. Map of Unit 3, Northern Rockies, follows:



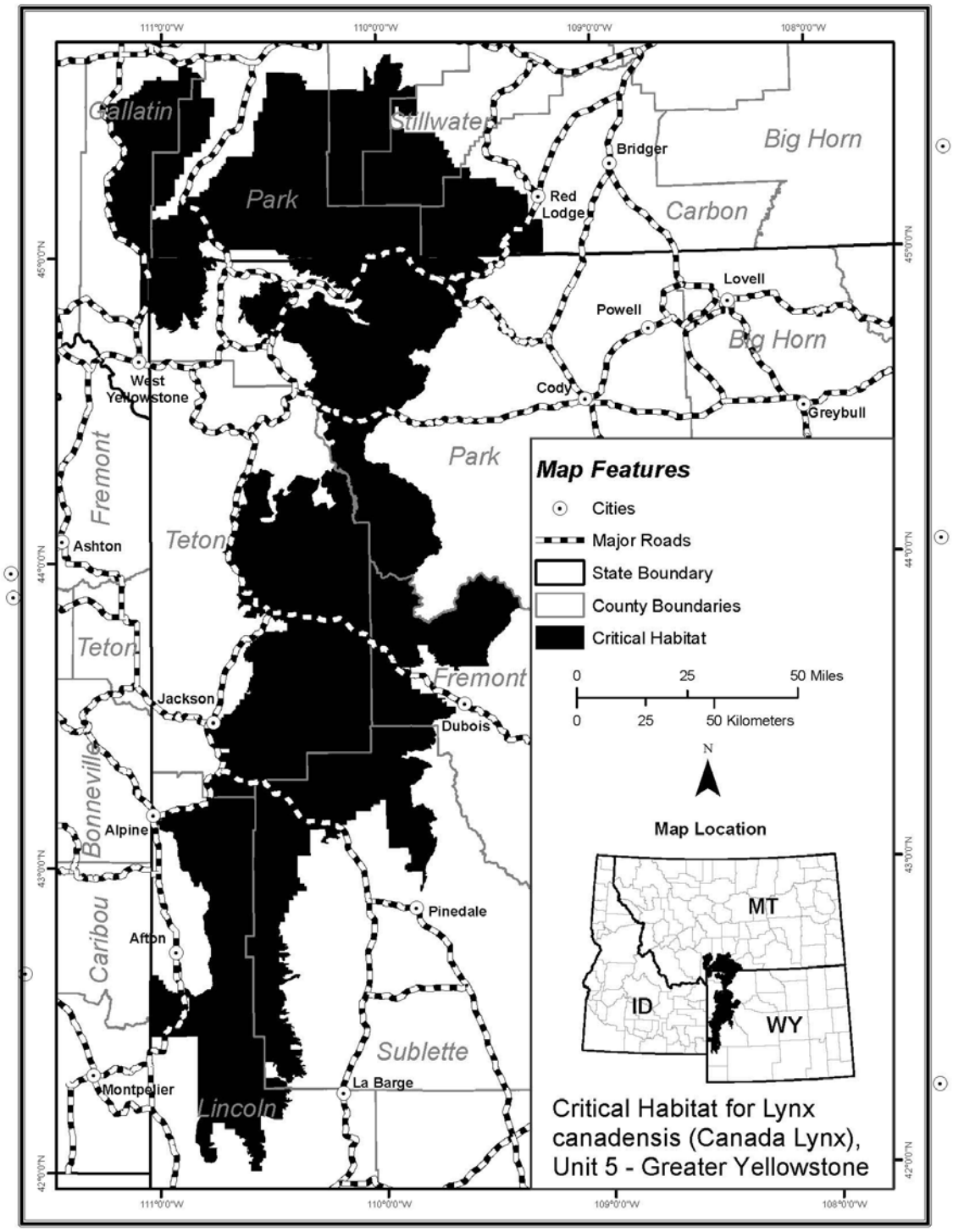
Critical Habitat for Lynx canadensis (Canada Lynx), Unit 3 - Northern Rockies

(9) Unit 4: North Cascades. Map of Unit 4, North Cascades, follows:



Critical Habitat for Lynx canadensis (Canada Lynx), Unit 4 - North Cascades

(10) Unit 5: Greater Yellowstone Area. Map of Unit 5, Greater Yellowstone Area, follows:


Gallatin
Park
Stillwater
Big Horn
Carbon
Bridger
Red Lodge
Lovell
Powell
Big Horn
Cody
Greybull
West Yellowstone
Fremont
Park
Teton
Ashton
Teton
Fremont
Jackson
Dubois
Bonneville
Alpine
Caribou
Afton
Pinedale
Sublette
La Barge
Montpelier
Lincoln
111°0'0"W
110°0'0"W
109°0'0"W
108°0'0"W
45°0'0"N
44°0'0"N
43°0'0"N
42°0'0"N
Map Features
Cities
Major Roads
State Boundary
County Boundaries
Critical Habitat
0 25 50 Miles
0 25 50 Kilometers
N
Map Location
MT
ID
WY
Critical Habitat for Lynx canadensis (Canada Lynx), Unit 5 - Greater Yellowstone

* * * * *

Dated: September 16, 2013.

Michael J. Bean,

Acting Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[Billing Code 4310-55-P]

[FR Doc. 2013-23189 Filed 09/25/2013 at 8:45 am; Publication Date: 09/26/2013]