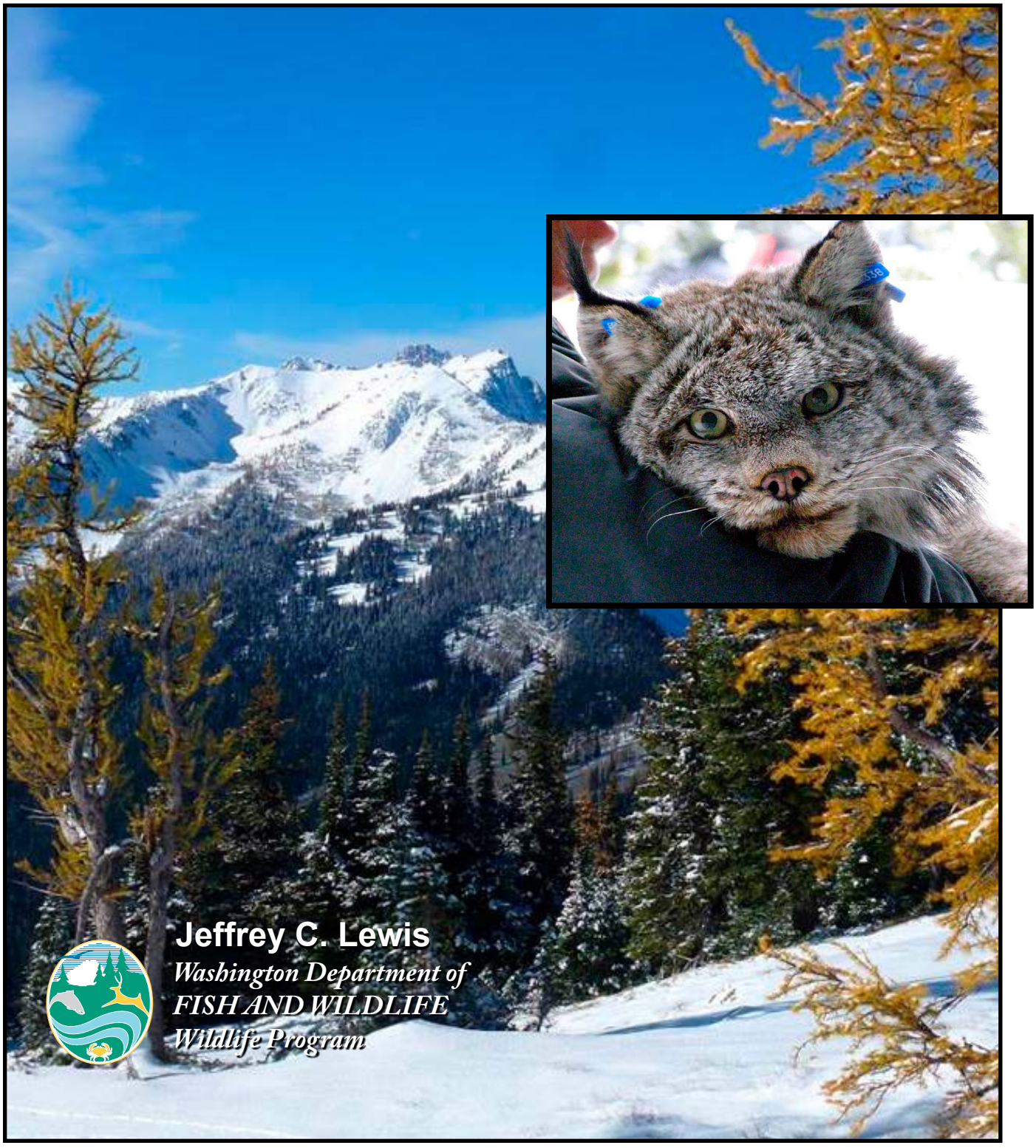
STATE OF WASHINGTON October 2016

Periodic Status Review for the Lynx



Jeffrey C. Lewis
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FISH AND WILDLIFE
Wildlife Program

The Washington Department of Fish and Wildlife maintains a list of endangered, threatened, and sensitive species (Washington Administrative Codes 232-12-014 and 232-12-011). In 1990, the Washington Wildlife Commission adopted listing procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297). The procedures include how species listings will be initiated, criteria for listing and delisting, a requirement for public review, the development of recovery or management plans, and the periodic review of listed species.

The Washington Department of Fish and Wildlife is directed to conduct reviews of each endangered, threatened, or sensitive wildlife species at least every five years after the date of its listing by the Washington Fish and Wildlife Commission. The periodic status reviews are designed to include an update of the species status report to determine whether the status of the species warrants its current listing status or deserves reclassification. The agency notifies the general public and specific parties who have expressed their interest to the Department of the periodic status review at least one year prior to the five-year period so that they may submit new scientific data to be included in the review. The agency notifies the public of its recommendation at least 30 days prior to presenting the findings to the Fish and Wildlife Commission. In addition, if the agency determines that new information suggests that the classification of a species should be changed from its present state, the agency prepares documents to determine the environmental consequences of adopting the recommendations pursuant to requirements of the State Environmental Policy Act.

This document is a Periodic Status Review for the Lynx. It contains a review of information pertaining to the status of the Lynx in Washington. It was reviewed by species experts and was available for a 90-day public comment period from July 12 to October 10, 2016. All comments received were considered during the preparation of the final periodic status review. The Department intends to present the results of this periodic status review to the Fish and Wildlife Commission at a meeting in Olympia in November 2016.

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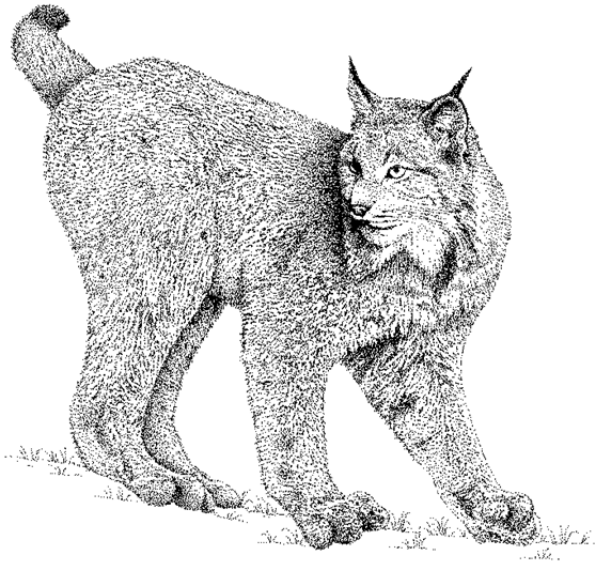

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EXECUTIVE SUMMARY

The lynx is one of three wild felids that are native to Washington State and it historically occurred throughout the boreal forests within the Cascade Range and northeastern Washington. To protect the species, lynx trapping in Washington was prohibited in 1991, and lynx were federally (2000) and state (2001) listed as a threatened species.

Numerous surveys have been conducted throughout the historical range of the lynx since it was listed as a state and federally threatened species; numerous research projects have also been conducted within western Okanogan County since that time. These survey and research efforts indicated that a single resident population occurs in Washington and is restricted mainly to western Okanogan County in the Northeastern Cascades. While lynx have been occasionally detected within their historical range in Ferry, Stevens and Pend Oreille Counties, these detections are too few to represent a resident population.

A number of factors likely contributed to the contraction of the lynx range to western Okanogan County. The resident population in wester Okanogan County has been impacted by numerous large wildfires in the past 20 years which removed large areas of suitable habitat for lynx. The loss and fragmentation of habitat as a result of wildfires and the direct and indirect effects of climate change are considered substantial threats to this population. The effects of small population size, the population's position at the margin of the species' range, a possible lack of immigration from British Columbia, and Allee effects are also likely to work in concert with habitat loss and fragmentation to threaten the remaining lynx population in Washington.

Management to protect lynx habitat includes the implementation of the national lynx conservation strategy that is employed on national forest lands within the range of the lynx in Washington and the implementation of a lynx habitat management plan by the Washington Department of Natural Resources on the Loomis State Forest. Threatened status provides protection to lynx by prohibiting the harassment, take or commercial harvest of lynx. The prohibition on the use of body gripping traps in Washington State also provides protection from injury or death in traps set for other species.

Given the 1) range contraction observed in Washington following protection efforts, 2) the substantial loss of habitat in the last 20 years, and 3) the ongoing and anticipated threats to lynx population persistence, we recommend that the status of the lynx in Washington be changed from Threatened to Endangered.

DESCRIPTION & LEGAL STATUS

Figure 1. Lynx

The lynx (*Lynx canadensis*) is the rarest of the three native felids that occur in Washington State, which also include bobcats (*Lynx rufus*) and mountain lions (*Felis concolor*). Lynx are slightly larger than bobcats and smaller than cougars, with adults averaging 8.5-10.0 kg and males being slightly larger and heavier than females. The lynx's longer legs, larger paws, fuller facial ruff, longer ear tufts (Figure 1), and the entirely black tip of its tail distinguish it from bobcats. Lynx were prized as a fur-bearing species but concern about decreasing population size led to protection from trapping or hunting in Washington in 1991. The species was listed as a state threatened species in 1993 and a recovery plan was developed for the lynx in Washington (Stinson 2001); lynx were federally listed as a threatened species in 2000 (USFWS 2000). A federal status review for the lynx is currently being conducted by the U.S. Fish and Wildlife Service (USFWS 2015).

DISTRIBUTION

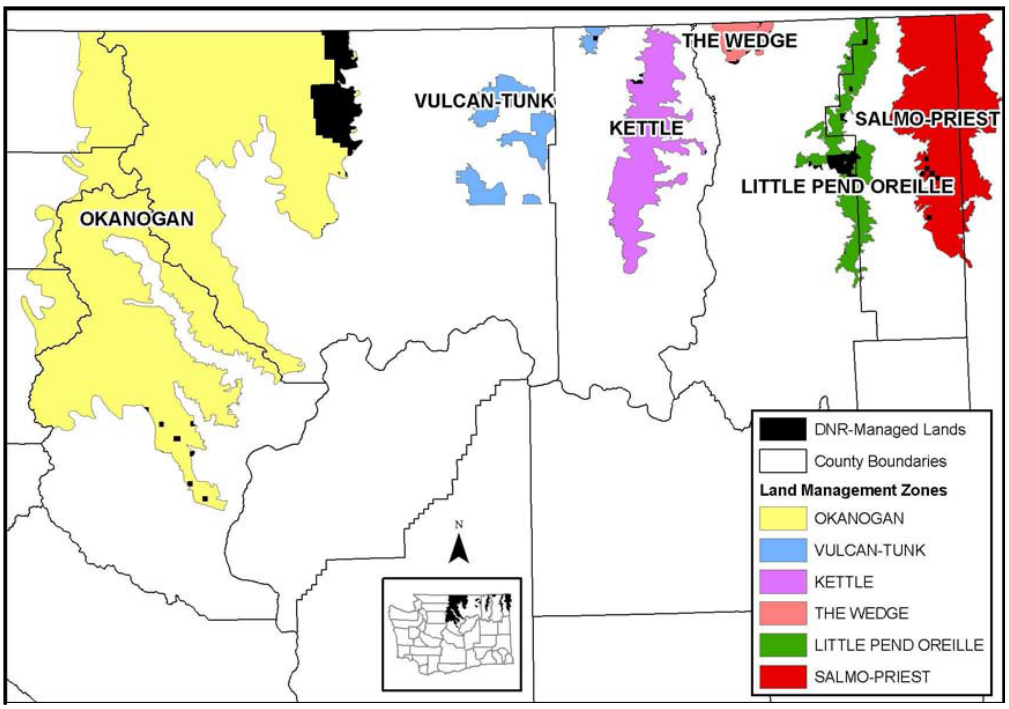

Figure 2. Lynx management zones (LMZs) in Washington indicate the general areas historically occupied by lynx in northcentral and northeastern Washington.

The range of the lynx includes much of the boreal forest of North America, and its range extends south from northern Canada and Alaska to several areas of the contiguous United States including Washington, the northern and central Rocky Mountains (in Idaho, Montana, Wyoming, Utah, and Colorado), and the northern portions of Minnesota, Michigan, Vermont, New Hampshire and Maine (Anderson and Lovallo 2003, Poole 2003). Lynx once occurred throughout the high-elevation conifer forests of northcentral and northeastern Washington from the Cascade crest in western Okanogan and Chelan Counties east to Pend Oreille County (Figure 2). Historical observations suggest that lynx may have also occupied portions of the southern Cascade Range and the Blue Mountains (Dalquest 1948).

NATURAL HISTORY

Habitat requirements. Lynx inhabit boreal, sub-boreal and subalpine forests in North America (Aubry et al. 2000, Mowat et al. 2000). In Washington, lynx currently occur in mid to high-elevation forested habitats (generally >1400 m elevation) in the northeastern portion of the Cascade Range (Koehler et al. 2008). Forests dominated by Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and lodgepole pine (*Pinus contorta*) were selected by lynx, whereas those dominated by Douglas-fir (*Pseudotsuga menziesii*) or ponderosa pine (*Pinus ponderosa*) were avoided (Koehler 1990, Koehler et al. 2008, Maletzke et al. 2008). Koehler et al. (2008) found that lynx selected forest stands at elevations ranging from 1525 m to 1829 m with moderate canopy and understory cover, and avoided open areas, recently burned areas (<10 years after a burn), and areas with steep slopes.

Lynx are highly specialized predators; snowshoe hares (*Lepus americanus*) generally comprise 50-100% of the lynx's diet throughout its range (Aubry et al. 2000, Mowat et al. 2000, Roth et al. 2007). A dependence on snowshoe hares was also indicated by the coincidence of the lynx range with that of the snowshoe hare (Anderson and Lovallo 2003, Murray 2003) and the synchronized population cycles of these two species in much of northern North America (Krebs et al. 2001). Snowshoe hares were the dominant prey in the lynx diet in Washington as indicated by the detection of snowshoe hares in 23 of 29 (79%) scats collected by Koehler (1990) and in 40 of 46 (87%) collected by von Kienast (2003); red squirrels (*Tamiasciurus hudsonicus*) were the second most important prey species in both studies. The importance of snowshoe hares in the diet of Washington lynx was also apparent in the large proportion of prey chases (75% [Koehler 1990], 61% [von Kienast 2003]), and captures (81% [Maletzke et al. 2008]) of snowshoe hares found during lynx snowtracking studies.

Lynx select early seral forest habitats because these forests frequently support the greatest densities of snowshoe hares (Aubry et al. 2000). Snowshoe hares are closely tied to understory cover provided by shrubs or young trees, and hare density may increase with understory density (Hodges 2000). A moderate to dense understory is commonly found in early seral-forests. In northcentral Washington, Koehler (1990) found that snowshoe hares were most abundant in 20-year old lodgepole pine stands (i.e., early seral), and these same forests were commonly used by lynx, as well as Engelmann spruce and subalpine fir forests. Lewis et al. (2011) found that sapling density was the best predictor (+ relationship) of snowshoe hare density in northcentral Washington and was strongly correlated to understory cover. Importantly, snowshoe hares can be found in older forests as well. Although strong links between lynx and older forests have yet to be detected in Washington, studies in the nearby Rocky Mountains of Montana have documented selection for mature, multi-storied forests with high horizontal cover in winter (Squires et al. 2010).

In the southwestern portion of their range (i.e., southwestern Canada, northwestern US), den sites of radio-collared lynx have been located within late seral forests (stands >200 years old) of Engelmann spruce, lodgepole pine and subalpine fir (Koehler and Brittell 1990, Koehler 1990, Aubry et al. 2000). Understory structure is likely the most important determinant for adequate denning cover as young-aged forests can also provide denning cover. Den sites were commonly located in spaces under a pile of fallen trees (following windthrow, disease or a burn) that provide cover for kittens (Interagency Lynx Biology Team 2013).

Movements and dispersal. Lynx make long distance movements (up to 1100 km) during juvenile dispersal or when individuals of both sexes and all ages leave established populations in northern boreal forests when snowshoe hare population are at the low phase of the population cycle (Poole 1997, 2003; Mowat et al. 2000; Schwartz et al. 2002). The long distance movements of lynx help to explain the limited genetic structure among lynx populations in North America (Schwartz et al. 2002).

POPULATION AND HABITAT STATUS

Occupied habitat. Washington's lynx population is now largely restricted to western Okanogan and northern Chelan Counties as well as the eastern edges of Whatcom and Skagit Counties and largely coincides with the Okanogan LMZ (Figure 3). The Okanogan LMZ is dominated by federal lands including the Okanogan-Wenatchee National Forest, North Cascades National Park, and the Mount Baker-Snoqualmie National Forest. The Loomis State Forest is managed by Washington Department of Natural Resources (WDNR; Figure 2) and comprises a significant portion of the lynx habitat in the Okanogan LMZ. The Colville National Forest is located in Ferry, Stevens and Pend Oreille Counties and comprises the bulk of the land in the five eastern LMZs. Lynx have been detected on three isolated occasions in Stevens and Pend Oreille Counties since 2005 (Figure 3), however numerous systematic lynx surveys conducted in northeastern Washington since 2005 failed to detect lynx (Table 1) and indicate that resident lynx populations no longer occupy Ferry, Stevens and Pend Oreille Counties.

Table 1. Location, timing, techniques used, and results of lynx surveys conducted in northeastern Washington since 2005.

LMZ	Year(s)	Survey technique[a]	Lynx detections[b]	Surveyors[c]
Little Pend Oreille	2014	Camera Stations (n=10)	0	Washington State Univ.
Kettle	2009-11	Hair-snare stations (n=50)	0	USFS, WDFW & CNW
Kettle	2008	Track surveys (158.5 miles)	0	WDFW & USFS
Kettle	2007	Track surveys (150.5 miles)	0	WDFW & USFS
Salmo-Priest	2006	Track surveys	0	WDFW & USFS
Kettle	2005	Track surveys	0	WDFW
Salmo-Priest	2005	Track surveys	0	USFS

[a] Track surveys involve looking for and identifying lynx tracks in the snow while driving a snowmobile on trails and roads within LMZs. Total number of miles surveyed are listed when known.

[b] Although lynx were not detected during these surveys, lynx were incidentally detected on 3 occasions in northeastern Washington since 2005 (Figure 3).

[c] USFS = U.S. Forest Service (Colville National Forest), WDFW = Washington Department of Fish and Wildlife, CNW = Conservation Northwest.

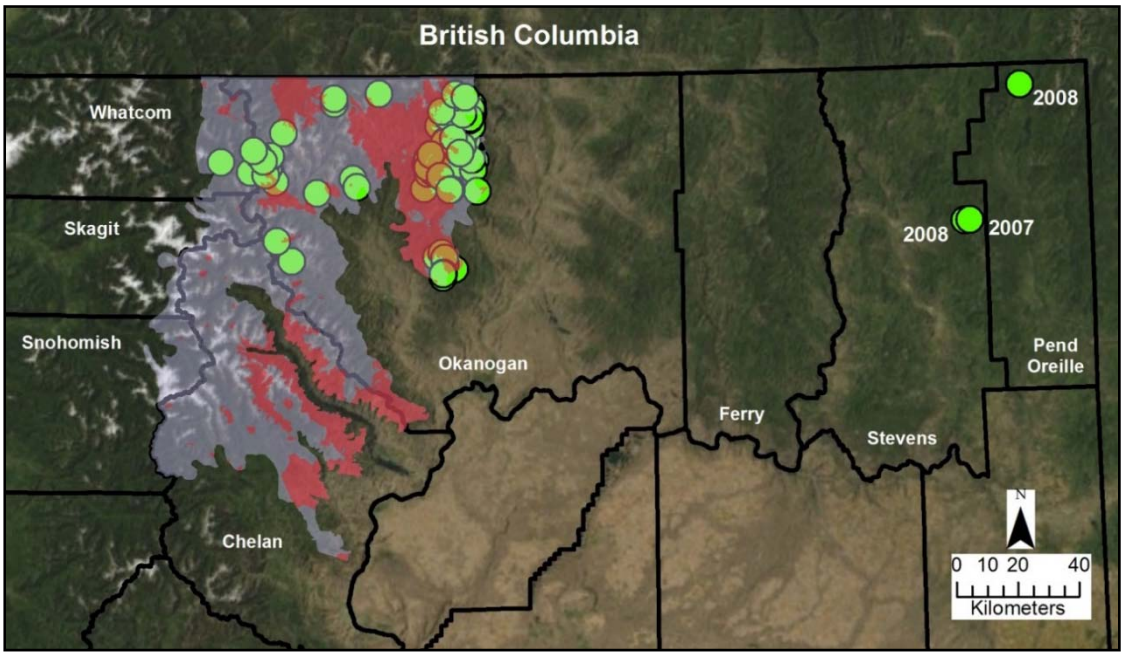

Figure 3. Lynx detections (green circles) from track surveys, lynx captures, or photographs in Washington from 2005-2015. The red shaded area delineates portions of the Okanogan LMZ burned from 1992-2015 (33.5% of the LMZ).

Population trend and viability. There is little information available to estimate the size of the lynx population that was present in Washington historically. In addition, even though recent telemetry and detection data indicate that lynx occupy the Okanogan LMZ, there are few data to indicate the distribution of lynx in this LMZ or the amount or configuration of suitable habitat required to support male or female lynx occupancy within this LMZ. Koehler et al. (2008) estimated the number of lynx occurring in Washington at approximately 87 individuals based on estimates of home range size and available suitable habitat. Revised estimates made in 2015 of average home range sizes of lynx in Washington and the extent of suitable habitat in the Okanogan LMZ (B. Maletzke, Washington Department of Fish and Wildlife, unpublished data) suggested that the carrying capacity for female lynx has declined from 43 in 1996 to 27 in 2014 (Table 2). The loss of suitable habitat has resulted largely from extensive wildfires that have occurred in this LMZ since 1992 (Figure 3). No formal population viability assessment has been conducted to evaluate the likelihood of lynx persisting in the Okanogan LMZ. However, the continued viability of this population is in question because of the risks associated with 1) the recent loss and fragmentation of suitable habitat (from wildfires), 2) the small estimated female carrying capacity, and 3) uncertainty about the extent that lynx immigration from British Columbia supports this population.

FACTORS AFFECTING CONTINUED EXISTENCE

Adequacy of Regulatory Protection

Federal Listing. The lynx has been federally listed as a threatened species since 2000, which protects the lynx from take or harassment. Throughout its range in the contiguous U.S. the lynx is threatened by human alteration of forests, low numbers as a result of past overexploitation, expansion of the range of competitors (bobcats (*Felis rufus*) and coyotes (*Canis latrans*), and elevated levels of human access into lynx habitat (USFWS 2000, 2015). In addition, the area of Washington State currently occupied by lynx is designated as critical habitat (USFWS 2014), providing an additional layer of evaluation to all proposed actions with a federal nexus. Critical habitat for lynx is predominantly composed of National Forest lands that are managed under the federal lynx conservation strategy (Interagency Lynx Biology Team 2013) or Washington Department of Natural Resources (WDNR) lands that are managed under a lynx habitat management plan (WDNR 2006).

State Listing. The lynx has been listed as a threatened species within Washington State since 1993 (Stinson 2001). This listing prompted the development of Washington Department of Natural Resources' (WDNR) Lynx Habitat Management Plan (WDNR 1996, 2006), which was implemented on over 5 million acres of state forest lands in lieu of a state-wide forest practices rule for the lynx. There has been no trapping or hunting season for lynx in Washington since 1991 (Stinson 2001), and the state listing protects lynx from take or harassment.

Loss and Fragmentation of Habitat. From 1992 to 2015, 3130 km^2 of forest cover in the Okanogan LMZ has been burned by wildfires (Figure 3). Given slow growing conditions in high-elevation forests where lynx occur, a regeneration period of 10-40 years is generally required to create suitable winter habitat for snowshoe hares and, consequently, foraging habitat for lynx (Interagency Lynx Biology Team 2013). Habitat may also be lost as a result of timber harvest within the Okanogan LMZ, but the bulk of habitat loss is due to large wildfires that burn subalpine fir, Engelmann spruce and lodgepole pine forests at mid and high-elevations. For example, approximately 18% of the Okanogan LMZ was burned in 2006 (865 km^2; 9% of the LMZ) and 2015 (857 km^2; also 9%), which resulted in the substantial loss of high-quality lynx habitat. Given the small and isolated nature of the population, the recent loss of habitat from wildfires, and the anticipated effects of climate change (Interagency Lynx Biology Team 2013), additional loss (and fragmentation) of habitat due to large wildfires is a major threat to the population in the Okanogan LMZ.

Demographic Factors. WDFW estimated that the Okanogan LMZ could support approximately 27 female lynx (Table 2; and presumably a similar number of males for a total of 54 lynx) (WDFW unpublished data); however this does not indicate the actual number of lynx that currently occupy the LMZ, which could be significantly fewer than 54 due to the fact that all suitable habitat may not be occupied. As a small population located at the margin of the species range, the Washington lynx population is vulnerable to a number of demographic factors that could influence its likelihood of persistence. These demographic factors include the stochastic effects of survival, reproduction, and sex ratio of litters (Lande 1993); density dependence or Allee effects (Gascoigne et al. 2009); and immigration from, or emigration to, British Columbia (Vanbianchi 2015).

Table 2. Estimated area of suitable habitat and female carry capacities of lynx management zones in northcentral and northeastern Washington in 1996 and in 2014 (B. Maletzke, WDFW, unpublished data).

Lynx Management Zone	1996		2014	
	Habitat (km^2)	Est.♀ carrying capacity	Habitat (km^2)	Est. ♀ carrying capacity
Okanogan	2581	43	1630	27
Kettle	404	8	376	7
Wedge, Little Pend Oreille, and Salmo Priest	785	7	784	7

Lynx are currently trapped for their fur in the area just to the north of the Washington border. Trapping in British Columbia thus removes potential immigrants that could bolster the population in the Okanogan LMZ or could remove emigrants from this population that might have returned. Moreover, immigration to Washington may be limited by the distribution of suitable habitats, as well as impediments and barriers to movement (e.g., highways, cities, rivers, and railroads) in southern British Columbia (Washington Wildlife Habitat Connectivity Working Group 2010).

Climate Change. Climate change is expected to have a significant influence on the continued existence of lynx in Washington by altering the extent and quality of habitats that can be successfully exploited and occupied by lynx (Interagency Lynx Biology Team 2013). Specifically, climate change is expected to reduce the extent of suitable habitat by 1) increasing the frequency, intensity or distribution of wildfires (McKenzie et al. 2004, Westerling et al. 2006), 2) promoting forest types that provide lower quality habitat for lynx and snowshoe hares (e.g., Douglas fir, ponderosa pine; Gonzalez et al. 2007), and 3) altering the spatial/elevational extent and physical qualities (e.g., depth, density, consistency) of the snowpack required by lynx and snowshoe hares (Interagency Lynx Biology Team 2013). In addition to eliminating suitable habitat, climate change effects could also decrease habitat quality (e.g., by reducing the availability of deep snow) and thereby diminish the competitive advantage lynx have over bobcats and coyotes for snowshoe hares that is conferred by lower foot-loading (Buskirk et al. 2000). Reduced snowpack could also expose lynx to a greater risk of predation by wolves or mountain lions (Buskirk et al. 2000). Climate change could also affect lynx by enabling novel disease-causing pathogens or parasites to become invasive or by increasing the prevalence of existing ones. The lynx management plan for British Columbia indicates that lynx populations in southern B.C. are likely to decline if climate change proceeds on its current trajectory (Apps and Kinley 2006).

Other Factors Affecting Lynx. Lynx may avoid areas with high levels of winter recreational use (i.e., snowmobiling and snowmobile trails), but appear to consistently use areas with moderate or low levels of use (Interagency Lynx Biology Team 2013). It has been hypothesized that snowmobile trails could improve the accessibility of lynx habitat to coyotes and bobcats, which are potential competitors of lynx for snowshoe hares (Buskirk et al. 2000); however, Kolbe et al. (2007) found that snowmobile trails did not appreciably influence the movements or foraging behaviors of coyotes. Although incidental captures, illegal killing, vehicle collision mortalities, and disease events have been reported in the literature (Interagency Lynx Biology Team 2013), the effects of these factors do not appear significant enough to affect the persistence of lynx in Washington.

MANAGEMENT ACTIVITIES

Habitat management. Lynx habitat management on National Forest lands follows the lynx conservation strategy as incorporated into specific National Forest management plans. This management involves identifying and protecting high quality habitat mosaics occupied by reproductive populations of lynx (i.e., core areas: Interagency Lynx Biology Team 2013). While the conservation strategy has been considered sound, the monitoring efforts associated with strategy implementation have been inadequate to determine if the strategy is successful in the Okanogan LMZ.

On the Loomis State Forest and other Washington state lands in northeastern Washington, WDNR lynx habitat management involves 1) providing a mosaic of forest successional stages over time that are suitable for lynx foraging, denning and travel within recognized lynx analysis units (i.e., units are approximately the size of an average female lynx home range), and 2) providing habitat connectivity between denning and foraging areas (WDNR 2006). In 2011, WDFW and WDNR created additional interim management guidelines for lynx habitat in the Okanogan LMZ to achieve "no net loss" of quality forage habitat for lynx (WDFW and WDNR, 2011, unpubl. guidelines). Monitoring efforts to detect lynx presence have been initiated in the Loomis in 2015, and these can provide an indication of the success of WDNR's habitat plan, however additional monitoring efforts are required to evaluate its overall success. It will be important for the upcoming update of WDNR's habitat management plan to include findings from recent and ongoing research on the habitat use of snowshoe hares and habitat selection by lynx. The plan should also incorporate monitoring results to show how habitat goals for lynx are being met, and to validate assumptions made in the plan to predict habitat availability at prescribed time-frames.

Population monitoring. From 2005 to 2014 there were a number of formal surveys conducted in the Kettle, Little Pend Oreille and Salmo-Priest LMZs that resulted in no detections of lynx (Table 1); no formal surveys were conducted during this time in the Vulcan-Tunk, Wedge, or Okanogan LMZs. Numerous lynx research projects within the Okanogan LMZ superceded extensive surveys in this area, and these research efforts have provided a number of verifiable detections of lynx since 2005 (Figure 3). New surveys for lynx were initiated in 2015 in the Kettle, Wedge, and Okanogan LMZs by Dan Thornton (Washington State Univ.) and his students; their preliminary results include only lynx detections within the Okanogan LMZ.

Research. Since 1990, there has been a substantial amount of field research focused in the Okanogan LMZ to evaluate home range composition (Koehler and Brittell 1990), density (Koehler and Brittell 1990; Koehler et al. 2008; A. Scully and D. Thornton, WSU, ongoing), habitat selection (Von Kienast 2003, Maletzke 2004), and habitat connectivity (Vanbianchi 2015) of lynx. Research has also focused on the habitat selection (Koehler 1990), habitat matrix and density (Koehler 1990; Walker 2005; Lewis et al. 2011) and predation of snowshoe hares (A.Wirsing and students, UW, ongoing).

Partners and Cooperators

A number of state and federal agencies, tribes, universities, and conservation organizations have been conducting and contributing to lynx surveys (Table 1) and research in Washington. These include, but are not limited to, the U.S. Forest Service, U.S. Fish and Wildlife Service, Washington Department of Natural Resources, Washington Department of Fish and Wildlife, Conservation Northwest, Colville Confederated Tribes, University of British Columbia Okanagan, Washington State University, and University of Washington. Representatives from these agencies and organizations have been involved in meetings/workshops at the 2014 and 2015 Wildlinks conferences (http://www.conservationnw.org/what-we-do/wildlife-habitat/wildlinks) to discuss and coordinate on lynx status and recovery in Washington.

CONCLUSIONS AND RECOMMENDATIONS

Available information indicates that the distribution of lynx in Washington has become more restricted recently and that western Okanogan County is the only area that currently supports a resident lynx population. Estimates of population size, while rudimentary, suggest that this population may include approximately 54 individuals. Threats to this population include loss and fragmentation of habitat due to wildfire, small population size, demographic stochasticity, and the unpredictable effects of climate change. The conservation status of Washington's lynx population has not improved since it was state (1993) or federally (2000) listed. Given the reduced distribution, small and restricted population, and an increase in the number and severity of threats to lynx in Washington, WDFW recommends that the status of the lynx in the state be changed from threatened to endangered. Up-listing the lynx from threatened to endangered status could result in new efforts to conserve lynx habitats and populations, and it could focus greater attention on these efforts and lynx conservation in Washington.

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i. Independent peer review; review is overseen by an independent third party.
ii. Internal peer review; review by staff internal to WDFW.
iii. External peer review; review by persons that are external to and selected by WDFW.
iv. Open review; documented open public review process that is not limited to invited organizations or individuals.
v. Legal and policy document; documents related to the legal framework for WDFW, including but not limited to: (A) federal and state statutes, (B) court and hearings board decisions, (C) federal and state administrative rules and regulations; and (D) policy and regulatory documents adopted by local governments.
vi. Data from primary research, monitoring activities or other sources.
vii. Records of best professional judgement of WDFW employees or other individuals.
viii. Other: sources of information that do not fit into one of the categories identified above.

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APPENDIX A. PUBLIC COMMENTS ON THE DRAFT

WDFW received responses to public comments during the 90-day public review period for the draft *Periodic Status Review for the Lynx in Washington* conducted from 12 July to 10 October 2016. WDFW received 188 individual comment letters from citizens, and 176 of these were form-letter emails. We also received more extensive comments from three organizations. Only one commenter opposed the recommendation to up-list the lynx. The comments presented here are summaries of the remarks provided by one or more people or organizations.

Report Section	Comment and Response
Recommendation and Conclusion	WDFW received 176 form letters that included the following text: I'm writing to support the recommendation to list Canada lynx in Washington state as endangered. Lynx are the most elusive and rare of the three wild cats that live in Washington, and I want to see lynx recover and rebound in the North Cascades and Kettle River Mountain Range. We need to do more for lynx in Washington, such as getting more lynx into the Kettle River Mountain Range, reducing trapping pressure in British Columbia, and protecting the North Cascades population. Uplisting to endangered status is a crucial step in the conservation and recovery of lynx that make their home in Washington. *WDFW is recommending that the status of the Lynx be up-listed from state threatened to state endangered. Thank you for your comments.*
	WDFW received comments from individuals that stated support for up-listing the lynx from a state threatened status to a state endangered status in Washington. *WDFW is recommending that the status of the Lynx be up-listed from state threatened to state endangered. Thank you for your comments.*
	In sum, given the historic loss of lynx habitat due to logging and development, the fragmentation of habitat that aggravates the effects of reduction of habitat extent, recent degradation of habitat to wildfires, projected reductions in snowpack due to global warming, as well as the danger described above from inbreeding depression and genetic drift stemming from the small population, there is no doubt that lynx in Washington State should be up-listed to endangered status. *WDFW is recommending that the status of the Lynx be up-listed from state threatened to state endangered. Thank you for your comments.*
Habitat and Population Status	The WDFW is considering listing this species as endangered because of one element that is "anticipated threats to lynx population persistence." The ESA is not a prophylactic that can be invoked when there is a hypothesis of a habitat effect on a population. This is an unreasonable use of the state and federal program as it was designed. *The federal ESA listing of lynx is outside the scope of this document. WDFW is proposing that state up-listing to endangered be considered because of 5 elements*

	that could affect the continued existence of lynx in Washington: 1) reduced range, 2) smaller population size as a result of reduced range, 3) loss of habitat as a result of large wild fires, 4) the threat of future loss and fragmentation of habitat due to large wildfires, which could exacerbated by climate change, and 5) limitations to immigration of lynx from BC because of lynx trapping in BC, and habitat loss or fragmentation. Because of the current status of the lynx population and the number and severity of threats affecting the population and it's habitat in Washington, a recommendation for up-listing the lynx in Washington is warranted.
	While the WDFW periodic review suggests a decline in the population over the last 20 years, it also states clearly that there "is little information available to estimate the size of the lynx population that was present in Washington historically." Having a historic population estimate is a metric necessary for elementary mathematics. Changing the listing status of this species to endangered because of nebulous speculation that they might be declining is unreasonable. *While we lack precise estimates for the lynx population that historically occurred in Washington, we do know the historic distribution of the species has greatly reduced. We recommend that the lynx be considered for up-listing based on the best available science which includes sound data that showing a significant reduction from the historical range to the current range in Washington. These data were obtained through numerous surveys within their historical range to detect lynx presence and from ongoing lynx research in western Okanogan County. In addition, a reduction in the range is expected to directly relate to a reduction in population size.*
	The WDFW report also states that the majority of suitable habitat loss was caused "largely from extensive wildfires that have occurred in [their hypothesized habitat] since 1992." To suggest the state elevate the listing of the lynx because they've been negatively impacted (so it is presumed) by wildfires is an unreasonable remedy to a problem that isn't known with certainty to even exist. *There is significant agreement among lynx scientists that the extensive wildfires in western Okanogan County in the last 20 years have reduced the amount of suitable lynx habitat.*
	The current population estimate is that there are 87 lynx in Washington, and this estimate is entirely based on speculation of habitat characteristics, not actual population counts. Listing this animal as endangered because of an entirely hypothesized number based on an area being somewhere a lynx might live making a regulatory decision based on biological uncertainty. There should be some semblance of structure in the listing process by the WDFW, and listing this species on such an outstanding guess would be a complete divorce from that process. *In the periodic status review we explained in detail how we estimated the population size at ~54 lynx, not 87 (Table 2, page 6). We acknowledge that the estimate is not precise but based upon sound research and that we consider the estimate valuable and representative of a small population at risk.*

	Okanogan County is where the vast majority of the (yet to actually be observed) population is expected to inhabit. While critical habitat designations on private lands that would accompany an endangered listing is obviously the aim of this proposed status elevation, it states that habitat loss "may also" be a factor because of timber harvesting, but that the "bulk of habitat loss is due to large wildfires that burn subalpine" forests. Designation of critical habitat on private lands is only going to encourage the magnitude of destructive forest fires in the region, should they occur. *The lynx status review does not address the designation of critical habitat (a federal action) and as such WDFW (a state agency) has no authority in this matter.*
	If wildfires are actually the main source of habitat loss and harm to the lynx population in Washington, how then could proposing restrictions on private lands do anything to mitigate that? *The status review does not propose restrictions on private lands.*
	This proposed listing is entirely based upon speculation and "loss of habitat" that no one even knows is actually lynx habitat. *The classification of certain forests in Okanogan County as lynx habitat has been based on scientific data collected by several researchers and published in peer-reviewed scientific journal. WDFW considers these data and the classification of lynx habitat to be highly credible.*
	"Given the reduced distribution, small and restricted population, and an increase in the number and severity if threats to lynx in Washington…" are all speculations based on habitat characteristics that don't even enjoy a confirmed lynx population. *Our conclusions are based on habitat analyses, numerous and extensive surveys, research studies involving numerous collared lynx, and sound biological principles.*
	Currently the Okanogan region is dominated by older forest and recent burns, except perhaps on DNR land, and is thus suboptimal for lynx. *We agree that there are substantial areas within the Okanogan Lynx Management Zone that are currently not optimal for lynx. The loss of habitat as a result of fire was one of the significant factors that prompted our recommendation to up-list the lynx.*
Factors Affecting Continued Existence	The low number of lynx in the state and the reduction in their estimated numbers from 87 in 2008 to 82 or fewer last year, based on calculations of habitat suitability, suggest the population may be imperiled for genetic reasons – in addition to the other threats it faces. Viability is compromised and weakened by genetic drift and inbreeding depression stemming from small population size. Given the trapping mortality that the larger lynx population in Canada is subject to, and that likely curtails lynx immigration to Washington, fewer than 100 animals is not nearly

	enough (nor even on the right scale of magnitude) to maintain viability. *We recognize the importance that the genetic characteristics of a small population can have on its likelihood of persistence, as well as the degree to which a small population is supported by immigration from a neighboring area. Unfortunately we have very little data to currently address the genetic characteristics of the Washington lynx population and no data to address the amount of immigration or emigration that occurs in this population, however research is currently underway to address these questions We agree with your assessment of the significance of these factors and we hope to have more data in the future to evaluate them. Until that time, we recommend the lynx be up-listed based on the best data available.*
	For example, while it is true that fires in the West have gone up over the past few decades (Westerling et al. 2006), the levels are still far below those seen prior to human settlement (Everett et al. 2000). Thus, it is premature to take management actions to account for future habitat conditions which cannot be reliably predicted and within the range of natural variability. *While the commenter's observations are valid, our concern with fire is based on the reduced area of habitat now available to a relatively small number of lynx in the Okanogan Lynx Management Zone and the significant percentage of habitat that could be lost if a large fire or a number of fires was to occur within this LMZ now.*
	Lynx habitat suitability across large areas in the Okanogan region was recently reduced due to fire. We posit that over the next few years, lynx habitat suitability in areas burned in the fires of 1992 and similar early years should increase as it takes 10 to 20 years following a stand-replacement fire for high quality habitat conditions to develop (Koehler 1990). *We agree that some forest stands that reach 10-20 years old can provided suitable habitat for lynx and snowshoe hares, however, the Interagency Lynx Biology Team* (ILBT 2013) *uses a broader range of ages (10-40 years), because a significant percentage of forest stands do not become suitable for lynx and snowshoe hares until they are older than 20 years of age. While some areas of Washington that were burned in 1992 may now be suitable, other areas are not yet providing habitat.*
	The Interagency Lynx Biology Team (ILBT 2013) identified maintenance of lynx habitat corridors between Canada and the contiguous US as crucial for genetic flow of lynx in northeastern Washington. Hence, the genetic and population risk typically associated with small population size may not apply to lynx. Lynx are also a species that would be a good candidate for reestablishment into historical ranges that are currently unoccupied. *The commenter states that the genetic and population risk associated with small population size may be less applicable to lynx or the Washington lynx population because the Washington population is considered continuous with the lynx population in southern British Columbia. However, we lack data to address this observation and could not evaluate it in-depth in the status review. We agree that an*

	evaluation of lynx reestablishment merits consideration, especially if a reintroduction feasibility assessment indicates that a reintroduction could be successful at reestablishing a self-sustaining population.
	Lynx management plans have been developed for two private landowners and WDNR lands (Stinson 2001, WDNR 2006). The WDNR policy is to provide a mosaic of forest successional stages for lynx habitat. Since lynx require early seral forest for optimum hare populations, we fully support this management policy. Policies that view lynx habitat as a permanent feature of a zone on a map will misjudge what lynx need and lead to suboptimal population performance. Engagement by WDNR with other land owners, especially federal land managers in the lynx habitat zone, to implement a similar policy would likely result in greater availability of high quality habitat conditions. *We agree.*

WASHINGTON STATE STATUS REPORTS, PERIODIC STATUS REVIEWS, RECOVERY PLANS, AND CONSERVATION PLANS

Status Reports

2015	Tufted Puffin
2007	Bald Eagle
2005	Mazama Pocket Gopher, Streaked Horned Lark, and Taylor's Checkerspot
2005	Aleutian Canada Goose
2004	Killer Whale
2002	Peregrine Falcon
2000	Common Loon
1999	Northern Leopard Frog
1999	Olympic Mudminnow
1999	Mardon Skipper
1999	Lynx Update
1998	Fisher
1998	Margined Sculpin
1998	Pygmy Whitefish
1998	Sharp-tailed Grouse
1998	Sage-grouse
1997	Aleutian Canada Goose
1997	Gray Whale
1997	Olive Ridley Sea Turtle
1997	Oregon Spotted Frog
1993	Larch Mountain Salamander
1993	Lynx
1993	Marbled Murrelet
1993	Oregon Silverspot Butterfly
1993	Pygmy Rabbit
1993	Steller Sea Lion
1993	Western Gray Squirrel
1993	Western Pond Turtle

Periodic Status Reviews

2016	Taylor's Checkerspot
2016	Columbian White-tailed Deer
2016	Killer Whale
2016	Streaked horned Lark
2016	Greater Sage-grouse
2016	Snowy Plover
2016	Northern Spotted owl
2016	Western Gray Squirrel
2015	Brown Pelican
2015	Steller Sea Lion

Recovery Plans

2012	Columbian Sharp-tailed Grouse
2011	Gray Wolf
2011	Pygmy Rabbit: Addendum
2007	Western Gray Squirrel
2006	Fisher
2004	Sea Otter
2004	Greater Sage-Grouse
2003	Pygmy Rabbit: Addendum
2002	Sandhill Crane
2001	Pygmy Rabbit: Addendum
2001	Lynx
1999	Western Pond Turtle
1996	Ferruginous Hawk
1995	Pygmy Rabbit
1995	Upland Sandpiper
1995	Snowy Plover

Conservation Plans

2013	Bats

Status reports and plans are available on the WDFW website at:
http://wdfw.wa.gov/publications/search.php