PETITION TO PROTECT
THE HUMBOLDT MARTEN (*Martes caurina humboldtensis*)
UNDER OREGON’S ENDANGERED SPECIES ACT

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Cascadia Wildlands is a non-profit, public interest environmental organization headquartered in Eugene, Oregon. Cascadia Wildlands educates, agitates, and inspires a movement to protect and restore Cascadia’s wild ecosystems, including the species therein. We envision vast old-growth forests, rivers full of wild salmon, wolves howling in the backcountry, and vibrant communities sustained by the unique landscapes of the Cascadia bioregion. We have worked for over a decade on Pacific marten issues in the Pacific Northwest.

The Center for Biological Diversity is a non-profit conservation organization with more than 1 million members and supporters dedicated to the conservation of endangered species and wild places, including members throughout the Pacific Northwest. The Center has been working to protect the Humboldt marten and its habitat for more than a decade.

Defenders of Wildlife is a national non-profit conservation organization founded in 1947 to protect all native animals and plants in their natural communities. Defenders works on mesocarnivore conservation and habitat connectivity in the range of the Humboldt marten through our field offices in Oregon and California.

Environmental Protection Information Center is a community based, non-profit organization that advocates for science-based protection and restoration of Northwest California’s Forests. EPIC was founded in 1977 when local residents came together to successfully end aerial applications of herbicides by industrial logging companies in Humboldt County.

Klamath-Siskiyou Wildlands Center is a non-profit, public interest organization that protects and restores wild nature in the Klamath-Siskiyou region of northern California and southern Oregon. KS Wild promotes science-based land and water conservation through policy and community action.

Oregon Wild is a non-profit, public interest conservation organization. For more than four decades, Oregon Wild has worked to protect and restore old-growth forests in Oregon, as well as the fish and wildlife that depend on them, including Pacific marten.
Pursuant to ORS 496.176, the above petitioners formally request that the Oregon Commission on Fish and Wildlife (Commission) list the Humboldt marten \textit{(Martes caurina humboldtensis)} as “endangered” under the State of Oregon Endangered Species Act. Should the commission decline to list the marten as “endangered,” which the petitioners believe is warranted, then we also request consideration of a “threatened” listing.
TABLE OF CONTENTS

Executive Summary 5

Introduction 5

Natural History 6

- Description 6
- Taxonomy 6
- Range 7
- Population Status 11
- Conservation Status 12
- Habitat 13
- Diet 14
- Life History and Demography 15

Threats 16

- Trapping 16
- Vehicle Mortality 17
- Habitat Loss and Fragmentation 17
- Small, Isolated Populations 19
- Fire and Fire Suppression 21
- Climate Change 22
- Disease 23

Implications for Land Management 24

Inadequacy of Existing Regulations 27

Significant Portion of Range 30

Conclusion 31

Request for Listing 31

References 32
Executive Summary

The Humboldt marten (*Martes caurina humboldtensis*) is a stealthy, mid-sized forest carnivore related to minks and otters that lives in coastal old-growth forest and dense coastal shrub. The cat-like animal has experienced an overall range decline of 95 percent and there are only four known populations of Humboldt martens, one in central coastal Oregon, one in southern coastal Oregon, one in California near the Oregon border, and one in northern California. Each of the surviving populations is estimated to consist of fewer than 100 individuals per population.

The Humboldt marten is threatened by multiple factors and there are no existing regulatory mechanisms that adequately protect it from these threats which include trapping, vehicle mortality, habitat loss and fragmentation, population isolation, predation, wildfire, poisoning, and global climate change. This petition summarizes the natural history of the Humboldt marten, its population status, and the threats to the rare subspecies and its habitat. Petitioners demonstrate that the Humboldt marten is in dire need of regulatory protection to avoid extinction and urge the Oregon Fish and Wildlife Commission to classify the Humboldt marten as “endangered” on the Oregon Endangered Species List to ensure its survival for future generations.

Introduction

Though it was once a common denizen of coastal old-growth forests, the Humboldt marten is now at high risk of extinction. Historical fur trapping and widespread logging of old growth forests nearly wiped out the secretive animal and it was thought to be extinct until it was rediscovered in the redwood forests of Northern California in 1996. Subsequent genetic work then revealed that the martens living in Oregon’s coastal forests are actually part of the rare Humboldt marten subspecies instead of the more common subspecies in the Cascade Range. Only two populations of Humboldt martens are currently known in Oregon, an isolated atypical population in the shrubby shore pine forests on the Oregon Dunes National Recreation Area, and a population on the Siskiyou National Forest near the California border.

Though Humboldt martens are currently not known to occur on state or private lands in Oregon, management by the state of Oregon will play a central role in determining the future of the marten because two of the four currently known populations are within the state’s borders and the subspecies is in dire need of conservation actions to ensure its persistence. Martens are currently largely confined to National Forest lands in Oregon because habitat conditions on state-managed and private lands are not suitable to support marten survival, dispersal, or recovery. The state’s two populations are small, isolated, and at high risk of extirpation.

The U.S. Forest Service with stakeholders has prepared a conservation assessment and strategy for the Humboldt marten with the goal of establishing self-sustaining, interacting populations of
Humboldt martens throughout their historical range by protecting existing populations, re-
establishing populations, and restoring habitat in specific areas to increase population size and
connectivity (Slauson et al. 2017, p. ix, 72).

Currently, management plans for forests regulated by the state of Oregon do not protect the
Humboldt marten or its habitat, and therefore proactive regulatory measures need to be taken
to assure the long-term recovery of the rare carnivore.

**Natural History and Ecology**

**Description**

North American martens, including the Humboldt marten, are identifiable by their long and
narrow bodies, overall brown fur with distinctive yellowish throat coloration, large triangular
ears, and bushy tails that are proportionally equivalent to about three-quarters of their body
length (Clark et al. 1987, Powell et al. 2003). Compared to the other subspecies of martens in
Oregon, the Humboldt subspecies has a smaller, patchier throat patch that is more cream
colored than yellow or orange, darker fur with a rich golden underfur tone, a smaller skull, and
a more narrow face (Grinnell and Dixon 1926 cited in Slauson et al. 2017).

**Taxonomy**

All of the martens in Oregon belong to the Pacific marten species (*Martes caurina*) (Dawson and
Cook 2012, Dawson et al. 2017), and there are three subspecies of Pacific martens in the state--
Humboldt martens (*M. c. humboldtensis*) in the Coast Range, the nominal subspecies (*M. c.
caurina*) in the Cascade Range, and a third subspecies (*M. c. vulpina*) in the Blue Mountains

The recognition of the Humboldt marten subspecies of Pacific marten in coastal Oregon results
from recent genetic analyses of mitochondrial and nuclear DNA revealing that Oregon’s coastal
martens are more closely related to California’s coastal martens than to the martens in the
and Pilgrim (2017) conclude:

> It is clear from the combination of mitochondrial and nuclear DNA that a conservation
unit that can be called *M. c. humboldtensis* exists along the California Coast Range
beyond the border between California and Oregon. The Humboldt subspecies appears
to be confined to low elevation forests of the Marine West Coast Forest ecoregion
whereas a distinct group of marten appear to be in the high elevation forests of the
Northwestern Forested Mountains ecoregion (p. 13).

Prior to Dawson and Cook (2012) using genetic and morphologic differences to split Pacific
martens from the martens in the eastern United States, all martens in Oregon were considered
to be American pine martens (*Martes americana*), the species that occurs east of the Rocky Mountains.

**Range**

The recent reclassification of Oregon’s coastal martens as the Humboldt marten subspecies extends the historical range of the subspecies from Sonoma County, California, north through the western Klamath-Siskiyou Mountains and Coast Range to the Columbia River (Zielinski et al. 2001, Schwartz and Pilgrim 2017, Slauson et al. 2017).

There are four known surviving populations of Humboldt martens, all of which are currently considered to be small and isolated (Figure 1; Slauson et al. 2017, p. 67; Linnell et al. 2018, p. 1; FWS 2015, p. 38). It is estimated that the Humboldt marten has experienced a range reduction of more than 95 percent overall, as well as approximately a 95 percent range reduction in both California and in Oregon (Slauson et al. 2017, p. vi).

To estimate the overall range contraction of coastal martens in California, Oregon, and Washington, Zielinski et al. (2001) surveyed 237 sample units in the historical range of coastal martens from 1989-1998 using remote camera and track-plate stations and detected martens at only 12 out of 237 (5 percent) survey sample units (Zielinski et al. 2001, p. 478). Out of 35 sample units in coastal Oregon, they detected martens at 6 units in the central and southern portions of the Oregon Coast Range (Zielinski et al. 2001, p. 484).

In Oregon there are two recognized extant population areas, one on the central coast and one on the south coast extending to the California border (Figure 1). The central coastal population is on or near the Siuslaw National Forest in Lincoln, Lane, Douglas, and Coos counties and is concentrated on forested portion of the Oregon Dunes National Recreation Area (Moriarty et al. 2016; Linnell et al. 2018). The south coastal population is on or near the Siskiyou National Forest in Curry County.

Based on early trapping records, coastal martens once occurred in the northern Oregon counties of Clatsop, Tillamook, Washington, and Yamhill, but they are unlikely to occur in this area today due to timber harvest and trapping (Zielinski et al. 2001, p. 483). Humboldt martens are now unlikely to occur in the coastal area north of the Siuslaw National Forest and Siuslaw River to the Columbia River because much of the area is privately owned commercial forest or managed state forest where habitat is currently unsuitable because very little mature forest remains (Zielinski et al. 2001, p. 486).
Figure 1. Extant population areas of Humboldt martens (Figure 3 from CDFW 2018). Gray represents the historical range of the subspecies and yellow delineates the four surviving populations.
In Oregon prior to 2016 there were only 26 verified contemporary (1989–2012) records of coastal martens (Moriarty et al. 2016, p. 71). To determine the Humboldt marten’s current distribution in Oregon, Moriarty et al. (2016) used track plates and remote cameras to survey more than 70 percent of its predicted historical range by surveying within 5 km and 50 km of prior detections to confirm the persistence of historical subpopulations (5 km), and to determine the extent of their current distribution (p. 72). Their study was the largest carnivore survey ever conducted in Oregon and covered a 25,330 km² area (Figure 2). They detected only 28 individual martens on the central and south coast. The researchers detected fewer individuals than expected, did not locate new populations despite an extensive effort to survey new areas, and determined that their efforts were unlikely to miss a thriving, sizable population (p. 71, 77). They also determined that the Oregon populations are isolated from each other (p. 77).
Figure 2. Recent Humboldt marten survey locations and detections in Oregon (Figure 1 from Moriarty et al. 2016).
Population Status

Currently the total Humboldt marten population in Oregon and California is unknown but is estimated at fewer than 400 individuals, fewer than 200 of which are in Oregon.

To estimate the size of the population on Oregon’s central coast, Linnell et al. (2018) used telemetry and spatial mark-resight and estimated the population consists of 71 adult martens (95% CRI [41-87]) across two subpopulations bounded by the Siuslaw and Coos rivers and separated from each other by the Umpqua River. They used population viability analysis to determine extinction risk for the two central coast subpopulations and found that extirpation risk ranges from 32 percent to 99 percent within 30 years with two or three annual human-caused mortalities per year such as from trapping or vehicular mortality. The central coast population appears to be completely isolated with a lack of connectivity to the southern Oregon population (Linnell et al. 2018, p. 13).

The size of the population on the southern Oregon coast is unknown but is considered to be small like the other populations which have already been surveyed. From the early 1990’s through 2015 there were only 35 documented marten detections on or adjacent to the Rogue River-Siskiyou National Forest in southern coastal Oregon based on from track plate stations, photographic bait stations, and snow-track surveys (FWS 2015, p. 30).

In California, though surveys have recently been conducted at more than 3,000 locations within the historical range, representing more than 50,000 days of survey effort, only two surviving populations have been detected (Slauson et al. 2017, p. 36). The largest population in California is on the north coast and supports fewer than 100 martens. A second smaller population was recently detected near the Oregon border in Del Norte County, but it is currently unknown if this population is isolated or if it is connected to either the north coastal California population or to the southern Oregon coastal population (Slauson et al. 2017, p. 37). In the status review recommending that the state of California list the marten as endangered, the California Department of Fish and Game reported that the northernmost population in California was separated from the southern Oregon population by habitat changes resulting from recent wildfires (p. 3).

In 2001 Zielinski et al. concluded that coastal martens were at risk of extinction, stating, “Our survey results should be cause for concern about the persistence of M. a. humboldtensis" (p. 486) and, “Our surveys have demonstrated a serious conservation problem that appears to affect populations and subspecies and that requires prompt attention if martens are to persist in forest communities of the Pacific coast” (p. 488).

All subsequent studies have further substantiated this extinction concern. Slauson et al. (2009) concluded that coastal marten populations are “small and isolated” and there are “serious concerns about the viability of these coastal populations of martens” (p. 4). Moriarty et al.
(2016) concluded that Humboldt marten populations in coastal Oregon and California are currently vulnerable to local extirpation (p. 78). Linnell et al. (2018) estimated that the central coastal population is at a 32 to 99 percent risk of extirpation within 30 years.

**Conservation Status**

NatureServe (2018) ranks the Humboldt marten as a critically imperiled subspecies (G5T1) due to small, much reduced range, the disjunct distribution of populations, and the significant and ongoing loss, degradation, and fragmentation of mature coniferous forest habitat.

In Oregon, the Pacific marten is listed as sensitive on the state sensitive species list (OAR 635-100-0040). The state created a sensitive species list to provide a proactive approach to species conservation by focusing management, research, and monitoring activities on species that need conservation attention. The state defines “sensitive” as referring to fish and wildlife that are facing one or more threats to their populations and/or habitats. Consistent with OAR 635-100-0040(2), “Sensitive Species” are defined as having small or declining populations, are at-risk, and/or are of management concern.

In 2016 the Oregon Department of Fish and Wildlife updated the Oregon Conservation Strategy (Strategy), an overarching plan for wildlife conservation that is part of a “nationwide framework for proactive, voluntary partnership-based fish and wildlife conservation.” The Strategy lists “Strategy Species,” which are Oregon’s “Species of Greatest Conservation Need.” Strategy Species have “small or declining populations, are at-risk, and/or are of management concern.” The Strategy includes the American marten with the Coast Range as a corresponding ecoregion, which would include the Humboldt marten, though the taxonomy in the Strategy should be updated to reflect the 2012 reclassification of Oregon’s martens as the Pacific marten (*Martes caurina*) species and the recent expansion of the Humboldt marten subspecies through coastal Oregon.

In Oregon the marten is listed as a “fur-bearing mammal” (ORS 496.004(8)) and the state still permits a trapping season for all martens under OAR 635-050-0110, including the critically imperiled Humboldt marten. The petitioners have submitted a rule-making petition to the state seeking a ban on trapping of Humboldt martens.

The U.S. Fish and Wildlife Service is currently conducting a status review to determine whether Endangered Species Act protection is warranted for the Humboldt marten.

In California the Humboldt marten is currently a candidate for protection under the California Endangered Species Act and the Department of Fish and Wildlife has recommended to the Fish and Game Commission that they list the Humboldt marten as endangered in California (CDFW 2018).
The Pacific marten is listed as a “Sensitive Species” by Regions 5 and 6 of the U.S. Forest Service. The status of martens was considered during the planning process for the Northwest Forest Plan and it was judged to be one of the least likely mammal species to remain well distributed on Northwest Forest Plan lands (United States Department of Agriculture 1993). Slauson et al. (2009) examined the distribution of martens in coastal California and determined that the Northwest Forest Plan may not be providing vulnerable marten populations with the necessary protection for population persistence and growth (p. 4).

**Habitat**

Humboldt martens typically prefer moist, late-seral coniferous forests including Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), and mixed evergreen forests characterized by closed canopies, large trees, and abundant standing and downed woody material (Zielinski et al. 2001, Moriarty et al. 2016, Slauson et al. 2017). Micro-habitat and stand-scale selection depends heavily on sufficient structures for resting, denning, foraging, and protection from predators (FWS 2015). The majority of denning and resting structures are made up of large-diameter trees, snags and logs, which are seasonally important in providing shelter not only from predators, but also to protect the species from harsh weather during late fall through late spring (FWS 2015, Slauson and Zielinski 2009, pp. 41–42). At the home-range scale, Humboldt martens select high quality late-successional forest habitat to support their year-round needs, including but not limited to prey and denning structures (FWS 2015). Martens are considered to be a management indicator species because of their association with forested patches with a multiple layer canopy and large snags, logs, and trees (Moriarty et al. 2016).

Though Humboldt martens are typically considered to be old-growth forest specialists, contemporary detections of Humboldt martens have occurred in two atypical habitats—moist forest types on coastal serpentine soils, and shore-pine- associated dune forests on coastal terraces (Slauson et al. 2017). These two specialized habitat types have limited distributions compared to the more extensive coastal forest types that comprised the majority of the historical marten range. Within the three forest habitat types where Humboldt martens are currently known to persist, a consistent feature is a dense, spatially extensive shrub layer dominated by shade-tolerant ericaceous species (Slauson et al. 2017). This ericaceous shrub layer habitat association has not been described elsewhere in the distribution of other North American marten species and thus retention and regeneration of shade-tolerant ericaceous shrub layers is likely to have important consequences for marten habitat suitability and population conservation (Slauson et al. 2017, p. 69).

The central Oregon coastal dune forests with martens are dominated by young shorepine (*Pinus contorta contorta*) and Sitka spruce with a dense shrub canopy reaching more than 2.5 m in height dominated in seasonally flooded areas by willow (*Salix hookeri*), Pacific waxmyrtle (*Myrica californica*), salal (*Gaultheria shallon*), and slough sedge (*Carex obnupta*) and
dominated on dry sites by ericaceous shrubs berry-bearing shrubs such as evergreen huckleberry (*Vaccinium ovatum*) and salal (Linnell et al. 2018, p. 4).

The dune-associated marten population in central coastal Oregon likely occupies a narrow band of young forests growing on sand dunes along the margin of the Pacific Ocean west of Highway 101, and despite extensive surveys, researchers have found no evidence of martens greater than 3 km inland (Moriarty et al., 2016; Linnell et al. 2018, p. 2). Humboldt marten territory sizes are smaller and density is higher in central coastal Oregon compared to other North American marten populations (Linnell et al. 2018). Based on habitat suitability modelling, existing conditions on the central coast may only be sufficient to support the single known surviving population (Slauson et al. 2017, p. 37).

Though most contemporary marten detections in California have occurred in largely unmanaged forests where martens select large patches (>80 ha) of late-successional forest, recent research in more intensively managed forest has found some Humboldt martens in stands harvested several decades ago that harbor large-diameter residual conifers, conspicuous numbers of large live and dead trees, and large live hardwoods and residual hardwood structures (Slauson et al. 2017). Survival in this younger intensively-managed habitat, however, is lower, with nearly half of the martens monitored having been killed by bobcats, which select for young regenerating forests (Slauson et al. 2017, p. vii, 69). This regenerating habitat type is thus not ideal because population modelling reveals that survival is the most sensitive vital rate for martens, so predation related to landscape composition likely represents a limiting factor for Humboldt marten population recovery (Slauson et al. 2017, p. viii).

**Diet**

Humboldt martens are omnivorous and primarily consume small mammals, but also eat birds, reptiles, berries, larvae of ground-nesting wasps, hornets, honey bees, and honey based on seasonal availability. Squirrels and chipmunks are key prey species comprising more than 40 percent of the annual diet. Their key prey species use food resources and den and cache sites in large live and dead standing woody structures associated with mature and late-successional forest conditions. Many of the Humboldt marten’s key prey species including western red-backed voles (*Myodes californicus*), flying squirrels (*Glaucomys oregonensis*), and Douglas’s squirrels (*Tamiasciurus douglasii*) reach their highest densities in forest stands with mature and late-successional structural features due to the abundance of conifer seed crops and truffles. On the Oregon coast, the density of the ericaceous shrub layer, density of large snags, and abundance of coarse woody debris is positively correlated with the density and abundance of small mammals (Slauson et al. 2017, p. 41-42). Forest structure is also important for the martens’ foraging behavior because martens use rest sites to conserve energy and avoid predators between foraging bouts, typically selecting the largest available live and dead woody structures (Slauson et al. 2017, p. viii; 39-42).
An analysis of the diet of the main California population based on scat collection found that mammals and birds were eaten year-round, while reptiles, insects, and berries were eaten only seasonally. The majority of prey during any one season was composed of only four taxa—chipmunks, medium-size birds, western red-backed voles, and either Douglas’s squirrels during summer and fall or Humboldt flying squirrels during winter, or large birds during spring. The frequency of berries in Humboldt marten scats was higher than that reported for other North American martens, and over 90 percent of the berries identified were ericaceous species including huckleberry (*Vaccinium* sp.), salal (*Gaultheria shallon*), and manzanita (*Arctostaphylos* sp.) (Slauson et al. 2017, p. 40-41). The low-latitude coastal marten populations have a broad diet because they can make use of seasonal foods unavailable to montane and high latitude marten subspecies during winter (Linnell et al. 2018, p. 14).

In a study of Pacific marten movement in thinned forests in the California Cascade Range, Moriarty et al. (2016b) found that martens avoided stands with simplified structure, and their altered patterns of movement suggested that thinning treatments may negatively affect the ability of martens to forage without increased risk of predation (p. 621).

**Life History and Demography**

The reproduction of Humboldt martens has not been studied specifically so the information that is available on marten life history is based on studies of other subspecies or captive martens. The following information is reviewed in Slauson et al. (2017, pp. 42-50).

Mating occurs during summer and females give birth in spring, with females raising the young on their own. Females do not reproduce until they are two years old. Litter size varies from one to five kits with an average of two to three, and fecundity varies with age with three to five year old females producing the most kits. Captive martens have been reported to reach 15 years of age, but there is no evidence to suggest wild individuals attain this age as most studies have found few martens over five years of age in the wild. Martens are more vulnerable to predation in logged environments, and an important factor shaping marten evolution has been predator avoidance, with martens avoiding open areas and selecting for highly complex forest structure. Bobcats in particular are a documented source of mortality for Humboldt martens in clearcuts in California.

Juvenile martens generally do not disperse long distances with most studies in logged or unlogged landscapes recording dispersal distances of less than 5 km. Dispersal success in regenerating forests is lower than in mature forests. Landscape pattern affects dispersal distance, success, and survival.

Population modelling indicates that variation in survival across all stages, and especially among adults, has a much larger impact on population growth than variation in fecundity (Slauson et al. 2017, p. 61). Survival is the most important variable in marten population persistence and growth.
Threats

The Humboldt marten faces multiple threats including mortality from trapping, vehicle strikes, habitat fragmentation, rodenticide poisoning, wildfire, disease, isolated population effects, and climate change. The marten needs protection by the state of Oregon to ensure population persistence and recovery.

Trapping

Historically habitat loss and lethal trapping were the primary drivers of Humboldt marten decline (Zielinski et al. 2001). California banned Humboldt marten trapping in 1946, but martens are still listed as furbearers in Oregon with a legal trapping season that includes the range of the critically imperiled Humboldt marten subspecies. Only three lethally trapped Humboldt martens were reported from 2006-2011 (Moriarty et al. 2016), but population models indicate that survival is the most important variable in marten population persistence and growth (Slauson et al. 2017, p. 51). Slauson et al. (2017) found that:

[A]dult and juvenile survival are the most important demographic parameters affecting stability and growth of marten populations. As such, individual or cumulative factors that reduce or increase survival rates represent significant impacts (negatively or positively, respectively) on population growth and persistence (p. 68).

Recent analysis of the central Oregon coastal population found that the population is at significant risk of extirpation and scientists have recommended curtailing human-caused mortalities as a first step towards recovery (Moriarty et al. 2016, Linnell et al. 2018).

Banning Humboldt marten trapping in Oregon would have negligible economic impact but would be of great conservation benefit. The average market value of a marten pelt from 2011-2016 was $28, bringing the value of the documented take over that six year period to $84 total, which averages to $14 per year (ODFW 2016 Furtaker License and Harvest Data). The central coastal Oregon marten population is estimated at 71 total individuals, and the southern population is estimated at fewer than 100 individuals; thus, if all Humboldt martens in the state were to be trapped, the total market value would be less $5000 but the social, moral, and ecological costs would be incalculable and irreparable.

Oregon should enact an immediate ban on Humboldt marten trapping as scientists have documented that the survival of every individual is important given the much diminished populations and their highly restricted range. Linnell et al. (2018) state, “Given the small population size and vulnerability to trapping, eliminating fur harvest in the central coast of Oregon would decrease immediate risk of marten extirpation” (p. 16).
Vehicle Mortality

On the central Oregon coast, the most common verified mortality source for martens has been vehicular strikes along Highway 101 (Moriarty et al. 2016). Because the central coastal population of Humboldt martens in Oregon is so small and isolated, mortality from vehicle strikes poses a serious threat to the survival of the population that should not be downplayed.

Linnell et al. (2018) estimated population viability of the central coastal population at differing levels of human-caused mortality and found that the extirpation risk for the two subpopulations (approximately 30 individuals each, separated by the Umpqua River) ranged from 32 to 99 percent within three decades with just two or three annual human-caused mortalities. They concluded that absent population expansion, limiting human-caused mortalities would likely have the greatest conservation impact (Linnell et al. 2018, p. 1).

In addition to listing the marten, to reduce vehicle mortality, Oregon should create well-placed wildlife corridors on Highway 101, increase signage for wildlife crossing areas, and reduce speed limits.

Habitat Loss and Fragmentation

Extensive habitat loss and fragmentation due to timber harvesting is one of the primary factors that caused the historical decline in the distribution and abundance of martens in coastal California and coastal Oregon (Slauson et al. 2017, p. 3-4). In both Oregon and California more than 90 percent of coastal old-growth forests have been logged (Bolsinger and Waddell 1993, Fox 1996, Ohmann and Spies 1998, Slauson et al. 2017).

In the Oregon Coast Range old-growth patches were historically large, ranging up to 850,000 hectares, but today patches have been reduced to a maximum of 647 hectares (Wimberly 2002, Wimberly et al. 2004, Slauson et al. 2017). Prior to wide-scale commercial timber harvesting, patches were also more connected with most forest patches more than 200 years old located within one kilometer of another old-growth patch (Slauson et al. 2017).

In their recommendation to the California Fish and Game Commission that the Humboldt marten be listed as endangered in the state of California, the California Department of Fish and Wildlife wrote:

Humboldt marten habitat suitability may be reduced under commonly used timber harvest methods through reduction of overstory canopy cover and the loss of dense shrub cover. Shrub layers can be destroyed or degraded through post-harvest stand management treatments such as burning, mechanical clearing, herbicide application, and through competitive exclusion by densely planted conifers in plantations which shade out understory shrubs. Shrub cover has been found to be more patchily
distributed in thinned stands than in old growth stands on federal forest lands, and decades are required to restore dense shrub layers following harvests (p.3).

Replacement of old-growth forests with other forest types has vastly diminished habitat for Humboldt martens. Industrial timberlands largely lack the key habitat elements needed by martens for foraging, resting, denning, and cover from predators (Slauson and Zielinski 2007, Slauson et al. 2010). To avoid predators, martens avoid areas lacking overhead and escape cover and select for highly complex forest structure (Slauson et al. 2017, p. 44).

Landscape condition affects marten mortality and predation rates, with predation accounting for the majority of reported mortalities in moderately to heavily logged forests compared to forest reserves (Hodgman et al. 1997, Bull and Heater 2001, McCann et al. 2010).

In a study of martens on the edge of the California population in intensively managed forests, predation was implicated in all cases where cause of mortality was determinable, with bobcats being identified as the primary predator due to their association with regenerating forests with abundant herbivorous prey species (Slauson et al. 2014).

Landscape condition resulting from intensive timber harvest has been linked to reduced juvenile survival of martens. In a study of American martens, Johnson et al. (2009) found that in intensively logged landscapes the daily and total dispersal distances of martens were reduced by approximately half and that the success rate of juvenile martens dispersing to establish home ranges was also reduced by half.

Slauson et al. (2017) conclude that human-induced changes to forest structure are associated with increased predation risk for Humboldt martens and that the magnitude of the effect has important implications for reduced abundance and growth of marten populations (p. 45-52).

Slauson et al. (2017) state:

Larger-bodied carnivores, especially habitat generalists, are the most common predators of martens across their range in North America, and predation is expected to be a primary driver of survival, which in turn is a very influential predictor of marten population growth and persistence. Predation rates on marten populations are highest in landscapes that have been fragmented by intensive logging methods, including clearcut, shelterwood, and closely related silvicultural systems (p. 68).

Increased mortality resulting from predation has important implications for the long-term recovery of martens in Oregon because lack of cover and poor landscape condition reduces the ability of martens to successfully disperse and has resulted in population isolation.

In addition to logging, marten habitat has been lost, degraded and fragmented due to other factors including wildfire and development. Highway 101 on the Oregon Coast is hindering
dispersal of martens from the shore pine forests on the Oregon Dunes to the more interior portions of the Siskiyou National Forest. Logging and development in the Coast Range north of the Siskiyou National Forest has rendered the area unsuitable for martens.

Small Population Size and Population Isolation

The degree of connectivity of the four known surviving Humboldt marten populations is unknown, but all recently published papers indicate that they are isolated by unsuitable habitat conditions (Zielinski et al. 2001, Moriarty et al. 2016, Slauson et al. 2017, CDFW 2018, Linnell et al. 2018). The California Department Fish and Wildlife concluded that “the four extant marten populations in coastal California and Oregon appear to be isolated from one another by unsuitable habitat degraded by logging, severe wildfire, and urbanization” (p. 4) and “extant population areas appear to be isolated from one another by substantial areas of currently suboptimal habitat” (p. 9).

A landscape-scale habitat suitability model for Humboldt martens predicts that suitable habitat now occurs in less than 15 percent of the historical range and that though there may be some suitable areas that provide connectivity between the California and south coastal Oregon populations, there is little suitable habitat between the south and central coastal Oregon populations (Slauson et al. 2017, p. 64-66, Figure 3). The habitat that could provide connectivity, however, was recently degraded by the 2017 Chetco Bar Fire which may “have likely isolated the California-Oregon border Humboldt marten population from the two extant Oregon population areas” (CDFW 2018, p. 3).

Linnell et al. (2018) report that the population on the central Oregon coast “appears completely isolated with a lack of connectivity to the southern Oregon population” (p. 13). Thus, researchers had already concluded that the central coastal Oregon population was isolated from the southern Oregon population (Linnell et al. 2018, Moriarty et al. 2016), but were uncertain of the degree of connectivity between the southern Oregon population and the population just south of the state border (Slauson et al. 2017). With the Chetco Bar Fire resulting in the separation of the northern California border population from the southern Oregon population (CDFW 2018), the southern Oregon population is also now isolated.

The four extant populations are separated by distances of up to 60 km (Linnell et al. 2018, p. 13). While dispersal distances of greater than 70 km have been reported for record-breaking martens, most studies have found that juvenile martens in both logged and unlogged landscapes typically disperse much shorter distances. Broquet et al. (2006) reported distances of less than 5 km for American martens, and Phillips (1994) and Pauli et al. (2012) reported distances of less than 15 km. Linnell et al. (2018) found that the high-density marten populations in the shore pine dunes on the central Oregon coast are not successfully dispersing to the mature forests east of Highway 101.
Figure 3. Landscape habitat suitability model for the Humboldt marten throughout its historical range shows little to no connectivity between the central and southern Oregon populations (Figure 19 from Slauson et al. 2017).
Unsuitable landscape conditions contribute to lower dispersal success, higher rates of predation, and less foraging success. Johnson et al. (2009) compared dispersing juvenile American martens in an unharvested forest landscape with others in a regenerating forest landscape and found that in the regenerating landscape, juvenile martens traveled slower, moved shorter distances, had poorer body condition, and suffered twice the mortality rate (49 percent vs. 25 percent). These authors noted the findings of Andruskiw et al. (2008), who found that martens were more successful in obtaining prey in the unlogged versus the logged landscape (Slauson et al. 2017, p. 47).

Due to small population size, consistent annual human-caused mortality, and isolation, the central Oregon coast population is particularly vulnerable to extirpation (Linnell et al. 2018, p. 16). The southern Oregon population is likewise at risk. Slauson et al. 2017 state:

> The largest California population is estimated to be at fewer than 100 individuals in 2012; its small size puts it at risk of extirpation. The uncertainty about the sizes of Oregon populations—which are likely to be smaller than the largest California population, based on the current knowledge of the sizes and distributions of occupied habitat patches—is also of significant concern (p. 67, emphasis added).

The increased extinction risk for small isolated populations is well established in the scientific literature. Small populations are at risk of going extinct because of stochastic environmental and genetic events and due to genetic drift. Population size is one of the best predictors of extinction risk for vertebrate taxa, with larger populations having higher long-term viability (Primack 1993, O’Grady et al. 2004).

For example, in the event of a major tsunami, the entire central coastal marten population could be wiped out because they occupy a narrow band of isolated habitat west of Highway 101. The entire central coastal population is in the Cascadia subduction zone where the probability of a large earthquake and tsunami eliminating near-coastal forests in the next 50 years approaches 20 percent (Linnell et al. 2018, p. 13).

Every effort should be made to curtail human-caused mortality and increase the size and connectivity of Oregon’s Humboldt marten populations.

**Fire and Fire Suppression**

Though wildfire is a natural occurrence, it can pose a high magnitude threat for rare species with limited distributions. Fire is currently an unlikely threat to the central Oregon coastal population of Humboldt martens, but a serious threat for the southern population. In 2002 and again in 2017 large wildfires burned through portions of the current range of the southern coastal Oregon population, and likely caused further habitat loss in the areas that experienced
high burn severity (Slauson et al. 2017). Following fires, wind throw, landslides, and invasive species could further habitat harm.

Martens are reluctant to cross open areas and depend on dense shrub and canopy cover for successful foraging and dispersal, and depend on suitable structures for resting and denning which take many decades to develop. Exacerbating the threat, martens have low reproductive rates that result in slow population recovery from large-scale stressors such as wildfires (Buskirk and Ruggiero 1994, Moriarty et al. 2016).

Modifications to forest cover to reduce wildlife risk are also a threat to marten populations. Fuels treatments that simplify forest structure by removing cover and structures can have negative effects on marten movements, foraging strategies, and predator avoidance (Moriarty et al. 2016).

The California recommendation for endangered listing states:

Wildfires and the associated salvage logging of damaged trees can threaten the already small Humboldt marten population by reducing and fragmenting the remaining habitat. On federal lands in north coastal California there was a net 5.6% loss of old forest habitat over the period of 1993-2012, primarily attributed to wildfires, despite gains from forest succession. Connectivity between old forest stands was found to have decreased over the same period, mainly due to fragmentation caused by wildfires. Large fires in southwest Oregon (the 2002 Biscuit Complex Fire and 2017 Chetco Bar Fire) have likely isolated the California – Oregon border Humboldt marten population from the two extant Oregon population areas. Additionally, vegetation management activities designed to reduce the risk of wildland fire by removing shrubs, reducing canopy cover, and removing snags and logs can degrade marten habitat and contribute to habitat fragmentation. Humboldt marten researchers and land managers consider wildland fire a serious threat to the extant population in California, estimating that a single large fire could eliminate 31% to 70% of the currently occupied habitat. The negative impacts of wildland fires on marten habitat vary with the intensity of the burn and include the removal of large tree structures and dense shrub layers as well as the fragmentation of habitat. The number of fires, mean fire size, and annual area burned in northwestern California were all found to have increased over the century from 1908 – 2008, suggesting the threat to Humboldt martens from wildland fires is increasing (p. 3).

The risk posed to martens by wildfires is exacerbated by other threats such as reduced population size, population isolation, and global climate change.

Climate Change

Climate change could threaten Oregon’s Humboldt martens via several mechanisms.
On the central coast, the entire known population occurs in the dunes west of Highway 101. Rising sea levels and increased storm surge could erode the narrow band of coastal habitat that supports the surviving remnant population.

In the southern portion of their range, climate change could exacerbate the risk posed by wildfires if fires increase in frequency or intensity.

The California Department of Fish and Wildlife reports that climate change could push martens further towards the coast and northwards, but the habitat corridors for their successful dispersal do not currently exist. CDFW (2018) states:

> Climatic conditions in the range of Humboldt martens appear to be changing in recent decades due to an influx of greenhouse gas emissions resulting from human activities. These changes are projected to continue and modeling suggests changes in precipitation patterns, temperature, and daily coastal fog intrusion will result in the contraction of suitable Humboldt marten habitat northwards and towards the coast (p. 4).

The central Oregon population is already limited to the narrow strip of shrubby shore pine habitat in the sand dunes west of Highway 101, so there is nowhere nearer the coast for them to move.

Slauson et al. (2017) project that climate change could present challenges to the restoration of marten habitat and populations, especially in the southern portions of their narrow range, stating:

> It appears that the overall extent of favorable conditions will be reduced, along with connectivity between areas where climate is favorable for habitat. This emphasizes the value of conservation actions that restore habitat in the remaining areas with the largest amounts of suitable habitat that have the potential to support meaningful populations, reduce threats in such areas, and ensure that these areas are connected to the greatest degree feasible (p. 31).

Climate change could also catalyze the spread of forest pests such as tree-killing insects that could render the marten’s habitat unsuitable.

**Disease**

Numerous diseases pose a potential threat to martens including canine distemper, parvovirus, toxoplasmosis, West Nile virus, and rabies. Given their small population size, lethal diseases could have catastrophic population effects (Slauson et al. 2017). Because populations are largely to entirely isolated by current unsuitable landscape conditions, an eradicated population area would be unlikely to be recolonized (FWS 2015).
The illegal use of rodenticides and other toxic chemicals in marijuana cultivation poses a serious threat to marten populations in southern Oregon (Slauson et al. 2017, p. 31). Widespread use of rodenticides and other toxic chemicals at illegal marijuana cultivation sites is a documented threat for mustelids in northern California. Residues of anticoagulant rodenticides were found in more than 85 percent of dead fishers (Pekania pennanti) tested for toxicant exposure in California (Slauson et al. 2017, p. 38). Fishers and martens are similar in foraging behaviors and diet composition, and the widespread occurrence of illegal marijuana cultivation in marten habitat makes rodenticide exposure a serious threat to the persistence and recovery of Humboldt marten populations, particularly in northern California and southern Oregon (Slauson et al. 2017, p. 38).

Because populations are so small, the survival of every individual is important for population persistence (Linnell et al. 2017, p. 14; Moriarty et al. 2016, p. 78; Slauson et al. 2017, p. 63).

**Implications for Private, State, and Federal Land**

Currently in Oregon Humboldt martens are only known to occur on or near the Siuslaw and Siskiyou national forests (Figure 4).

Because of the land ownership dynamic between private, state and federally owned land on the Oregon coast, it is vital to the Humboldt marten’s survival and recovery that regulatory measures be taken at the state level. There are no required surveys or management programs on Oregon State forest lands for the marten. Private lands are currently largely unsuitable to support martens (FWS 2015). Numerous steps and proactive measures could be taken to facilitate the recovery and stabilization of the Humboldt marten at the state level.

Once species are listed as endangered or threatened, the Oregon Fish and Wildlife Commission’s long-term goal is to manage the species and their habitats so that the status of the species improves to a point where listing is no longer necessary. This goal is accomplished through voluntary incentives, encouraging appropriate species management, coordinated planning, habitat protection and restoration, and other means as appropriate consistent with ORS § 496.182(1).

Specifically, once a species is listed as endangered under the Oregon Endangered Species Act, and it is confirmed that the species or its habitat is found on state land, the State Department of Fish and Wildlife determines its role as well as the land owning or managing agencies role in the conservation of the species. Conservation efforts by the land owning or managing agency may include, but are not limited to, the contribution toward conservation or take avoidance.

Currently there are insufficient regulations regarding the conservation of the Humboldt marten on Oregon coast range forestland, 64 percent of which is privately owned (Wimberly et al. 2000). Private land owners must comply with the Oregon Forest Practices Act which specifies forestry practices. Once a species is listed as endangered or threatened by the Commission,
data are required to be collected and analyzed to establish inventories under the Oregon Forest Practices Act. However, without a species being listed as threatened or endangered, there are no specific regulatory measures in place to aid in population stabilization. Without an agency supported habitat management plan, Humboldt marten population recovery in Oregon is unlikely.

If the Humboldt marten were listed under the Oregon Endangered Species Act, the effects to private land would be as follows: pursuant to ORS 496.182(2)(b), the Commission would work with private land owners to mitigate the adverse impact on local economies when the commission adds a species to the list of threatened species or endangered species pursuant to ORS 496.172. Further, private land owners may apply for, and would be issued an Incidental Take Permit if the Oregon Department of Fish and Wildlife (ODFW) determined that take would not adversely impact the long-term conservation of the species or its habitat. However, private landowners are not required to survey for threatened and endangered species and therefore Humboldt martens would have no guaranteed protections on private land.
Figure 4. Land ownership within the historical range of the Humboldt marten (Figure 2 from Slauson et al. 2017)
Inadequacy of Existing Regulatory Mechanisms

Humboldt marten populations in Oregon are currently vulnerable to extirpation and need additional actions for survival and recovery (Moriarty et al. 2016, Slauson et al. 2017, Linnell et al. 2018).

There are no existing regulatory mechanisms that ensure the viability of the Humboldt marten in Oregon. Due to the current distribution of suitable habitat, the central coastal population is separated from the southern coastal population and from forested habitat to the east (Linnell et al. 2018). Without additional protections, it is unlikely that habitat conditions will become suitable for successful marten dispersal and population growth.

Oregon’s coastal forests are subject to multiple management plans implemented by state and federal agencies depending on land ownership.

Currently the only known Humboldt marten populations in Oregon are on or near the Siskiyou National Forest and the Oregon Dunes National Recreation Area of the Siuslaw National Forest, but there are no specific management plans in place to account for the habitat needs of the Humboldt marten on federal lands in Oregon.

The Northwest Forest Plan (NWFP) was developed in 1994 to address habitat degradation on federal lands in the Pacific Northwest (Boisjolie et al. 2017). The NWFP was implemented with two purposes, to monitor multiple declining species, specifically the northern spotted owl (Strix occidentalis caurina), and to meet timber needs (Davis et al. 2011). Although the overall rate of northern spotted owl habitat loss has lessened, the species is still declining, and numerous rare species have not been adequately protected by the plan including the marten. The status of martens was considered during the planning process for the NWFP and it was judged to be one of the least likely mammal species to remain well distributed on NWFP lands (United States Department of Agriculture 1993). Slauson et al. (2009b) determined that the NWFP may not be providing vulnerable marten populations with the necessary protection for population persistence and growth (p. 4).

Even if conditions are federal lands were ideal, which they are not, federal lands alone do not provide enough habitats to ensure the future viability of the Humboldt marten without connectivity on private and state lands. Vast swaths of connecting habitat need to be restored to suitable conditions.

In 2010 the Center for Biological Diversity and the Environmental Protection Information Center petitioned the U.S. Fish and Wildlife Service to list the Humboldt marten (which was undergoing genetic revision) as either a subspecies or as a Distinct Population Segment under the Endangered Species Act. In 2012 the Service determined that the Humboldt marten may warrant listing as a coastal Distinct Population Segment of Pacific marten (‘coastal marten DPS’)(77 FR 01900). But then in 2015, contrary to the best available scientific information and
against the input of the vast majority of members of the review committee, the Service arbitrarily determined that the marten did not warrant protection (80 FR 18742) based on the unsupported assumptions of robustness and connectivity of the Oregon populations. The Center and allies challenged the not warranted finding in court and the judge agreed that the finding was not in accordance with the best available science and ordered the Service to issue a new finding (Center for Biological Diversity et al. vs. United States Fish and Wildlife Service et al., No. 3: 15-cv-05754-JST [N.D. Cal.]). The revised federal listing determination must be submitted for publication by September 30, 2018.

The 2015 federal not warranted finding assumed, without conducting surveys, that martens were abundant in central coastal Oregon and that the central and southern populations were connected. New survey information has revealed that Oregon’s Humboldt marten populations are actually small, isolated, and at risk of extirpation.

Beginning in 2014 a multi-agency effort was initiated to survey for martens in coastal Oregon. Before the 2014 large-scale intensive surveys were undertaken, there were only 26 verified contemporary (1989–2012) records for coastal martens in Oregon (Moriarty et al. 2016, p. 71). Moriarty et al. (2016) surveyed 348 sample units in coastal Oregon using a total of 72 track plate and 908 remote camera stations within a 25,330 km² area. Martens were detected at 72/348 sample units via photographs, tracks, or hair samples. Surveys were conducted within 5 km and within 50 km of prior detections to confirm the persistence of historical subpopulations and to determine the current geographical limits of martens with the surveys encompassing more than 70 percent of the marten’s predicted historical range in coastal Oregon. The researchers determined that the samples represented at least 28 individual martens (p. 71). They did not detect any new populations despite an extensive effort to survey new areas (p. 71). They conclude that “marten populations in coastal Oregon and California are currently vulnerable to local extirpation” (p. 78).

Linnell et al. (2018) used GPS telemetry, territory mapping, and spatial mark-recapture to estimate population size and density of Pacific martens in central coastal Oregon and estimated the total population size to be 71 adult martens (95% Credible Interval: 41-87). They then estimated population viability at differing levels of human-caused mortality and found that extinction risk for a subpopulation of 30 martens (the size of each central subpopulation) ranged from 32 percent to 99 percent with two or more annual human-caused mortalities.

Moriarty et al. (2016) recommend broad efforts to increase connectivity, especially where populations face significant barriers to movement (p. 71). Likewise, in a federal stakeholder review, Slauson et al. (2017) recommend efforts to reduce future reductions and increase population size and connectivity to conserve the Humboldt marten (p. 79).

With the input of stakeholders, the U.S. Forest Service has developed a conservation strategy for the Humboldt marten with the overall goal of establishing self-sustaining, interacting populations of Humboldt martens throughout their historical range by protecting existing
populations, re-establishing populations, and restoring suitable habitat conditions to increase population size and distribution (Slauson et al. 2017, p. ix, 72). Management by the state of Oregon will be essential to successfully recover marten populations.

Humboldt martens are not currently known to occur on private or state managed forests in Oregon due to lack of suitable habitat conditions. For the marten to recover and to provide connectivity between the populations, state forest management on state and private lands is of considerable importance to provide connectivity between the federal lands where martens still survive.

Adopted in 1972, “the Oregon Forest Practices Act (FPA) sets standards for all commercial activities involving the establishment, management, or harvesting of trees on Oregon’s forestlands.”¹ The purpose of the FPA is to “encourage economically efficient forest practices that ensure the continuous growing and harvesting of forest tree species”² on private land, “consistent with sound management of soil, air, water, fish and wildlife resources.”³ The Oregon Department of Forestry (ODF) “works with private landowners and operators to help them comply with the requirements of the FPA.”⁴ Specifically, “if sensitive wildlife sites are present in a proposed harvest area, harvest activities may have to be modified to protect these sites.”⁵ The FPA requires landowners who plan to harvest timber to submit a written plan per ORS 527.670(3) when harvesting near a sensitive wildlife site that involves “threatened or endangered wildlife species.”⁶ The written plan must be submitted before the operation and contain information regarding “specific resources”, “practices that may affect the protected resource(s)”, and the “techniques and methods that will be employed for resource protection.”⁷ The State Forester of ODF is responsible for notifying the landowner if a written plan is required due to listed species presence.⁸ Although harvest activities “may have to be modified”⁹ to protect wildlife, private landowners are not required to execute preliminary surveys prior to timber operations for species, regardless of their listed status under the Oregon Endangered Species Act. The lack of regulatory protections for species on private lands heightens the need for the ODFW to fulfil their mission to “protect and enhance Oregon’s fish and wildlife and their habitats for use and enjoyment by present and future generations.”¹⁰

² ORS § 527.630 (1).
³ Id.
⁵ Id.
⁶ OAR § 629-605-0170 (5) (a).
⁷ OAR § 629-605-0170 (13) (b) (c) (d).
⁸ OAR § 629-605-0170 (7).
¹⁰ Oregon Department of Fish and Wildlife, http://www.dfw.state.or.us/agency/.
Oregon must take action to protect the Humboldt marten. Currently degraded habitat conditions render Oregon’s surviving marten populations functionally isolated (Slauson et al. 2017, p. 16). In central and northern coastal Oregon, suitable habitat conditions are so curtailed that existing conditions are only sufficient to support a single, small population (Slauson et al. 2017, p. 49). Marten populations decline with as little as 30 percent of the forest cover removed, and martens are deterred by low-canopy-cover openings, seldom moving 17 m beyond cover and most often avoiding openings (Moriarty et al. 2016, p. 78). The small marten population on the central coast is essentially stranded by lack of suitable habitat connections and cannot successfully disperse to the southern population or to interior forest habitat to the east. To ensure that the Humboldt marten survives for future generations, state land management that specifically protects the marten is essential because the current lack of connectivity between populations due to unsuitable habitat conditions is undermining the marten’s long-term viability.

In addition, the state of Oregon is endangering the marten by allowing it to be legally trapped as a furbearer. Scientists have concluded that the population is sensitive to both juvenile and adult mortality (Slauson et al. 2017, p. 52, 80) and that the Oregon population is at risk of extirpation (Linnell et al. 2017, p. 15). In addition to banning the trapping of coastal martens, the state of Oregon should install wildlife underpasses to reduce marten vehicle strikes on Highway 101.

**Significant Portion of Range**

The Humboldt marten is threatened with extinction in the foreseeable future in both all and in significant portions of its range. In central coastal Oregon the marten is threatened by population isolation, vehicular strikes, trapping, and stochastic events such as tsunami risk because of the extreme coastal isolation of the population. The central coastal population of Humboldt marten is the northernmost surviving population and is unique in that it survives in shore pine forests on sand dunes with dense shrub cover whereas the other populations are associated with old-growth forests or serpentine soils. Recent surveys and models of the central coastal population show up to a 99 percent risk of extirpation if human-caused mortalities are not curtailed and population connectivity is not restored (Linnell et al. 2018).

The southern Oregon population is at higher risk from wildfires, rodenticide poisoning, forest management activities, and global climate change.

The Humboldt marten desperately needs and clearly qualifies for protection by the state of Oregon.
Conclusion

Fewer than 200 Humboldt martens are currently known to survive in Oregon, and the fate of the tiny carnivore is largely in the hands of state decision makers. The long-term viability of the two surviving populations is bleak without management to ban trapping, reduce road kills, restore habitat, and re-connect populations. Protection under the Oregon Endangered Species Act is necessary to protect the charismatic predator for future generations.

Request for Species Listing

Pursuant to ORS 635-100-0105 (1) “[t]he Commission by rule shall list a wildlife species as endangered or threatened on the state list upon a review of documented and verifiable scientific information, if the species meets the criteria in sections (3), (4) and (6) of this rule.” Section 3 states:

[t]o list a species as endangered, the commission shall determine that: (a) the species is native; and (b) is in danger of extinction throughout any significant portion of its range within this state.11

Section 4 states:

[t]o list a species as a threatened species, the commission shall determine that: (a) The species is native; and (b) Is likely to become an endangered species within the foreseeable future throughout any significant portion of its range within this state.12

Finally, section 6 states:

In listing a wildlife species as endangered or threatened, the commission shall determine that the natural reproductive potential of the species is in danger of failure due to limited population numbers, disease, predation or other natural or human actions affecting its continued existence and, to the extent possible, assess the relative impact of human actions. In addition, the commission shall determine that one or more of the following factors exist: (a) That most populations of the species are undergoing imminent or active deterioration of their range or primary habitat; (b) That overutilization of the species or its habitat for commercial, recreational, scientific or educational purposes is occurring or is likely to occur; or (c) That existing state or federal programs or regulations are inadequate to protect the species and its habitat.13

Humboldt martens are currently vulnerable to extirpation due to population isolation, habitat fragmentation, lethal trapping, road-kills, and other factors. The most recent studies have

11 ORS 635-100-0105 (3).
12 Id. at (4).
13 Id. at (6).
shown that isolated populations impede the likelihood of the juvenile recruitment needed to mitigate concerns about long-term viability (Moriarty et al. 2016, Linnell et al. 2018). The lack of regulatory mechanisms jeopardizes the future of the Humboldt marten in Oregon and it is paramount that the Commission takes action and lists the species under the Oregon Endangered Species Act.

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