PETITION TO UPLIST THE MARBLED MURRELET FROM THREATENED TO ENDANGERED UNDER OREGON'S ENDANGERED SPECIES ACT

PETITIONERS

Cascadia Wildlands is a non-profit, public interest environmental organization head quartered 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 marbled murrelet 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 marbled murrelet and its habitat for more than a decade.

Coast Range Forest Watch is a volunteer-run conservation group based in Coos Bay, Oregon. They perform citizen science surveys for the endangered marbled murrelet and advocate for the protection of ecologically sensitive areas in Oregon's Coast Range.

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 marbled murrelet. Oregon Wild has worked extensively to protect remaining habitat, and restore degraded habitat in the Siuslaw National Forest and on BLM lands, however, that work is being undercut by the lack of adequate protections on state and private lands in Oregon.

The **Audubon Society of Portland** is a non-profit environmental organization dedicated to wildlife conservancy in Portland, Oregon, U.S. Founded in 1902 and incorporated in 1909, it is one of the oldest such organizations in the world. The Audubon Society of Portland has been a loud and consistent voice advocating for the conservation of marbled murrelets and its habitat.

The **Oregon Chapter of the Sierra Club** represents the organization's 20,000 members in Oregon and has worked to protect Oregon's environment and natural resources since 1978. Today, the Sierra Club employs eight staff in Oregon who work with volunteer leaders to advance the chapter's conservation priorities, including a priority on the protection of the mature and old-growth forests relied upon by the marbled murrelet.

Submitted via electronic mail this 21st day of June 2016 to: odfw.commission@state.or.us

Pursuant to ORS 496.176, the above petitioners formally request that the Oregon Commission on Fish and Wildlife (Commission) reclassify by rule the marbled murrelet (*Brachyramphus marmoratus*) from "threatened" to "endangered" under the State of Oregon Endangered Species Act.

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EXECUTIVE SUMMARY

The marbled murrelet (*Brachyramphus marmoratus*) is a member of the alcid family. The marbled murrelet was protected as "threatened" under the federal Endangered Species Act (ESA) in 1992 and under the Oregon Endangered Species Act in 1987. While the marbled murrelet spends most of the year foraging in coastal waters, it is the only alcid in the Pacific Northwest that flies inland to nest and rear its young. From April to September, marbled murrelets fly up to 85 km inland to nest on large branches in the canopies of late-successional and old-growth coastal forests. Due to the high rate of timber harvest in Oregon over the past 150 years, only a small percentage of coastal late-successional and old-growth forests remain. Oregon's state forests contain over 23,000 acres of known occupied murrelet habitat, as well as extensive additional unsurveyed suitable habitat that is critical for the murrelet's persistence.

There is no ongoing effort or plan to recover marbled murrelets or their habitat on state or private forest lands in Oregon. While the federal ESA prohibits take of the species on these lands, surveys are not required on private lands, survey efforts for murrelets in general are not reliable in predicting an absence of the species, and standing rulings and a systemic lack of oversight and enforcement of the federal ESA on non-federal lands leaves a regulatory void that threatens the survival and recovery of the murrelet.

Oregon's State forestlands and private timberlands with late-successional forest are critical refuges for the marbled murrelet in Oregon, yet the amount of nesting habitat within those State forests continues to decrease as logging projects are routinely authorized in late-successional stands. The majority of this logging proceeds without first conducting surveys for the species, and there is no comprehensive strategy to ensure the species' continued survival that applies to state or private lands. The Oregon Department of Forestry (ODF) and Department of State Lands (DSL) formerly operated under a Habitat Conservation Plan (HCP) on the Elliott State Forest that provided a 50-year

plan for recovery and maintenance of nesting habitat for the murrelet. The state has since abandoned that plan, opting instead to initiate planning for logging in formerly reserved areas while only conducting surveys to avoid direct take of existing nests. The most urgent conservation measure required for the persistence of the species is the conservation of habitat, especially habitat on state and private lands. The recently released twenty year monitoring report for the marbled murrelet cited the urgent need to "arrest the loss of suitable habitat on all lands, especially on non-federal lands in the relatively near term." (Falxa & Raphael 2016). However, Oregon is currently working towards disposing the 93,000-acre Elliott State Forest and aggressively logging and removing habitat on the north coast state forests.

To ensure the persistence of the species, administrative rules or a comprehensive plan must apply to both state and private lands in Oregon. Substantial declines in marbled murrelet populations are associated with continuing habitat loss, increased rates of predation due to habitat fragmentation, and decreased marine prey sources. There is also an alarming lack of juveniles, raising concerns about the species' reproductive success. Some areas of the state will likely experience marbled murrelet extirpation. The Oregon Fish and Wildlife Commission must reclassify the marbled murrelet from "threatened" to "endangered" on the Oregon Endangered Species List to ensure the very survival of this unique seabird and ultimately its recovery.

BIOLOGY AND ECOLOGY OF THE MARBLED MURRELET

The marbled murrelet (*Brachyramphus marmoratus*) is a dove-sized alcid with a long, slender bill. Its non-breeding plumage is counter-shaded with white feathers ventrally and black feathers dorsally, and its breeding plumage is a cryptic mottled ("marbled") brown pattern (National Geographic Society 1987).

Marbled murrelets are unique among seabirds in that they fly long distances inland to nest in old-growth forest (Lank et al. 2003). The nesting of marbled murrelets (hereafter murrelets) was an ornithological mystery until 1974 when the first nest was found by an arborist in central California. Marbled murrelets lay a single egg per breeding season (Nelson & Hamer 1995) on a mossy limb in the forest canopy. Breeding lasts from March until September, during which murrelets make daily trips from their nests in old-growth trees to the ocean to forage on small fish and invertebrates (Marshall 1988). Repeated nest site surveys suggest high site fidelity, similar to other alcids (Evans-Mack et al. 2003, Nettleship & Birkhead 1985).

Although murrelets primarily nest in late successional coastal forests within 30 miles of the coast, nest sites have been found as far as 55 miles inland (Nelson & Hamer 1995, McShane et al. 2004). Grenier & Nelson (1995) found that occupied murrelet sites in Oregon were characterized as older forests containing large and tall dominant trees. Murrelet habitat use during the breeding season is positively associated with the presence and abundance of mature and old-growth forests, large core areas of old growth, low amounts of edge habitat, reduced habitat fragmentation, proximity to the marine environment, and forests that are increasing in stand age and height (USFWS 2009). Additionally, studies have shown that murrelet nest trees are larger in diameter and taller than non-nest trees (Hamer & Meekins 1999, Nelson & Wilson 2002). Suitable marbled murrelet nesting platforms are branches at least 4 inches in diameter and 33 feet above the forest floor. The presence of suitable nesting platforms is the most important factor in murrelet nesting habitat choice (Burger 2002, McShane et al. 2004). Preferred murrelet nesting habitat also contains a high density of large trees with mossy platforms (Manley 1999, Nelson & Wilson 2002). Although marbled murrelets generally nest in old-growth, they also nest in younger forests (60-80 years old) that include remnant trees with platforms or mistletoe platforms in the Sitka spruce/western hemlock forest type (Nelson & Wilson 2002).

Murrelets are generally year-round residents in marine waters adjacent to inland nesting habitat (Nelson 1997). Additionally, their abundance at sea is highly correlated with the presence of large, unfragmented old-growth forests adjacent to at-sea foraging habitat regardless of marine conditions (Miller et al. 2002, Raphael et al. 2015). Raphael et al. (2002) found that the number of murrelets entering a watershed is strongly correlated with the amount of unfragmented late-successional forest in the watershed. Raphael et al. (2015) looked at the relationship between at-sea factors (e.g., sea surface temperatures) and inland nesting habitat on murrelet abundance. They found that murrelet populations decline when the amount and cohesiveness of inland suitable habitat declines and that nearshore abundance was correlated with the amount of higher-suitability nesting habitat in the adjacent terrestrial environment. This correlation was not observed for at-sea factors (Raphael et al. 2015). It is therefore critical to conserve suitable nesting habitat to ensure the survival of the marbled murrelet (Falxa & Raphael 2016)

POPULATION STATUS

Murrelets in Washington, Oregon, and California collectively comprise a single Distinct Population Segment (DPS), which was protected as a threatened species under the federal ESA on October 1, 1992 (57 Fed. Reg. 45328). Although limited, anecdotal, and qualitative in nature, the historical data on murrelet populations suggest a general decline in population numbers and range over time (Carter & Erickson 1992, Ralph & Miller 1995, USFWS 1997). The historical and presently known distribution of murrelets within the DPS stretches from the central California coast north to the 49th parallel along the international border with Canada.

Numerous studies show localized population decreases and high rates of nest failure in response to ongoing anthropogenic factors such as habitat loss and fragmentation (Burger 2002, Burger & Waterhouse 2009, Piatt et al. 2007, Raphael et al. 2015, Peery et al. 2009, Nelson & Hamer 1995, Hamer & Meekins 1999, Manley 1999, Manley & Nelson 1999, Bradley 2002, Hébert

& Golightly 2007, Nelson & Wilson 2002, Manley 2003, Peery et al. 2004, Falxa & Raphael 2016). The Northwest Forest Plan (NWFP) divided the DPS into six Conservation Zones spanning the three states: Puget Sound (Zone 1), Western Washington Coast Range (Zone 2), Oregon Coast Range (Zone 3), Siskiyou Coast Range (Zone 4), Mendocino (Zone 5), and Santa Cruz Mountains (Zone 6). The NWFP also established an effectiveness monitoring program which includes annual at-sea population surveys for murrelets during the breeding season (Huff 2006, Miller et al. 2006, Raphael et al. 2007). The latest NWFP murrelet population monitoring shows a non-significant trend in Oregon's waters (Falxa et al. 2014), which include all of Conservation Zone 3 and the northern portion of Conservation Zone 4. However, steep declines were reported for the Washington population (Figure 2), underlining the need for greater conservation measures in Oregon to sustain the DPS as a whole.

The most troubling indicator of extinction risk in marbled murrelet populations is a steep decline in breeding productivity. Peery et al. (2007) determined that the ratio of adults to juveniles detected at sea may be an effective way of determining breeding productivity in murrelet populations. Since 2004, data on nesting success from radio telemetry studies and adult to juvenile ratios confirm that breeding success is too low to sustain murrelet populations (Becker et al. 2007, Norris et al. 2007, Ronconi & Burger 2008, Crescent Coastal Research 2008). Low nest success is also thought to be a contributing factor to population declines, with nest success rates far too low to sustain the population (Beissinger & Nur 1997, Bradley et al. 2002, Cam et al. 2003, Peery et al. 2004). Furthermore, evidence suggests the weakening of the marbled murrelet population genetic structure could compromise the long-term conservation of the species (Piatt et al. 2007).). Piatt et al. (2007) concluded:

> [M]urrelets appear to comprise three genetic units: (1) western and central Aleutian Islands; (2) eastern Aleutian Islands to northern California; and (3) central California. . . . Loss of any of these populations would result in loss of a portion of the species' genetic resources and/or local adaptations, and may compromise its long-term viability.

(Piatt et al. 2007, p. 43). Since the currently listed population encompasses all of one genetic unit as mentioned above and a portion of another, loss of the population could compromise the long-term viability of the species as a whole.

Piatt et al. (2007) confirm that the genetic diversity of the species is critically dependent on the viability of the Washington, Oregon, and California DPS. Using allelic richness as a measure of the robustness and diversity of murrelet population genetic structure, Peery et al. (2009) concluded that allelic richness has declined from historic levels in the northern California to southeast Alaska populations. This suggests that the murrelet gene pool is shrinking and may face a genetic bottleneck in the future unless declines in breeding success are abated.

The static or declining population trends coupled with extremely low numbers of juveniles and a shrinking gene pool suggest that the natural reproductive potential of the species is in danger of failure. The USFWS (2010) concluded:

> Based on the evaluation of the threats and the murrelet's population status and trends, we have determined that the murrelet is likely to become endangered in the foreseeable future unless the current population decline is arrested. Nothing in our assessment indicates that the currently observed population decline is transient. Rather, our threats assessment indicates that it is reasonable to expect that the species will continue to be exposed to a broad range of threats across its listed range.

The decline of the marbled murrelet population in Washington, Oregon, and California has not been sufficiently arrested since the USFWS analysis. Greater state level protections for the marbled murrelet are essential to its survival.

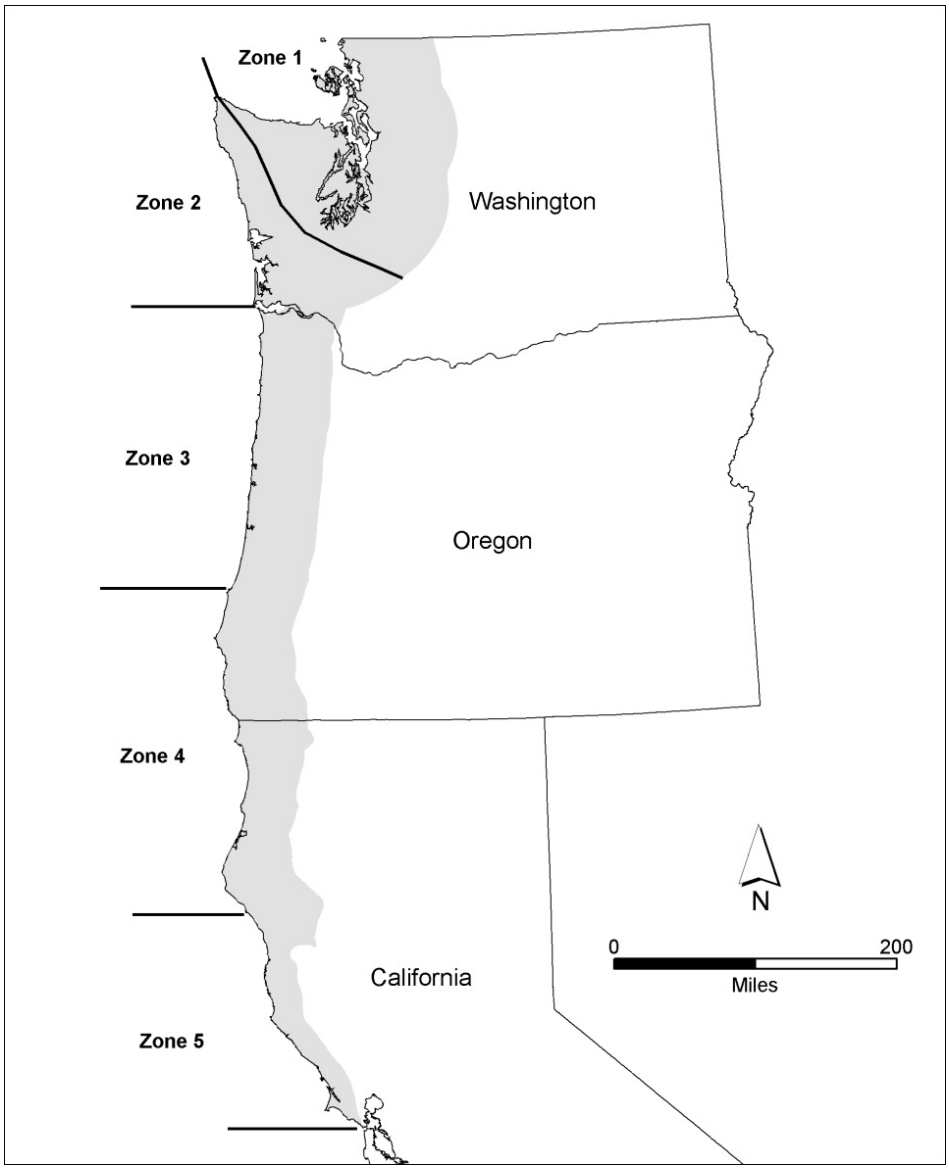

Figure 1. Marbled Murrelet Conservation Zones. Adapted from USFWS (1997), Falxa et al. (2014).

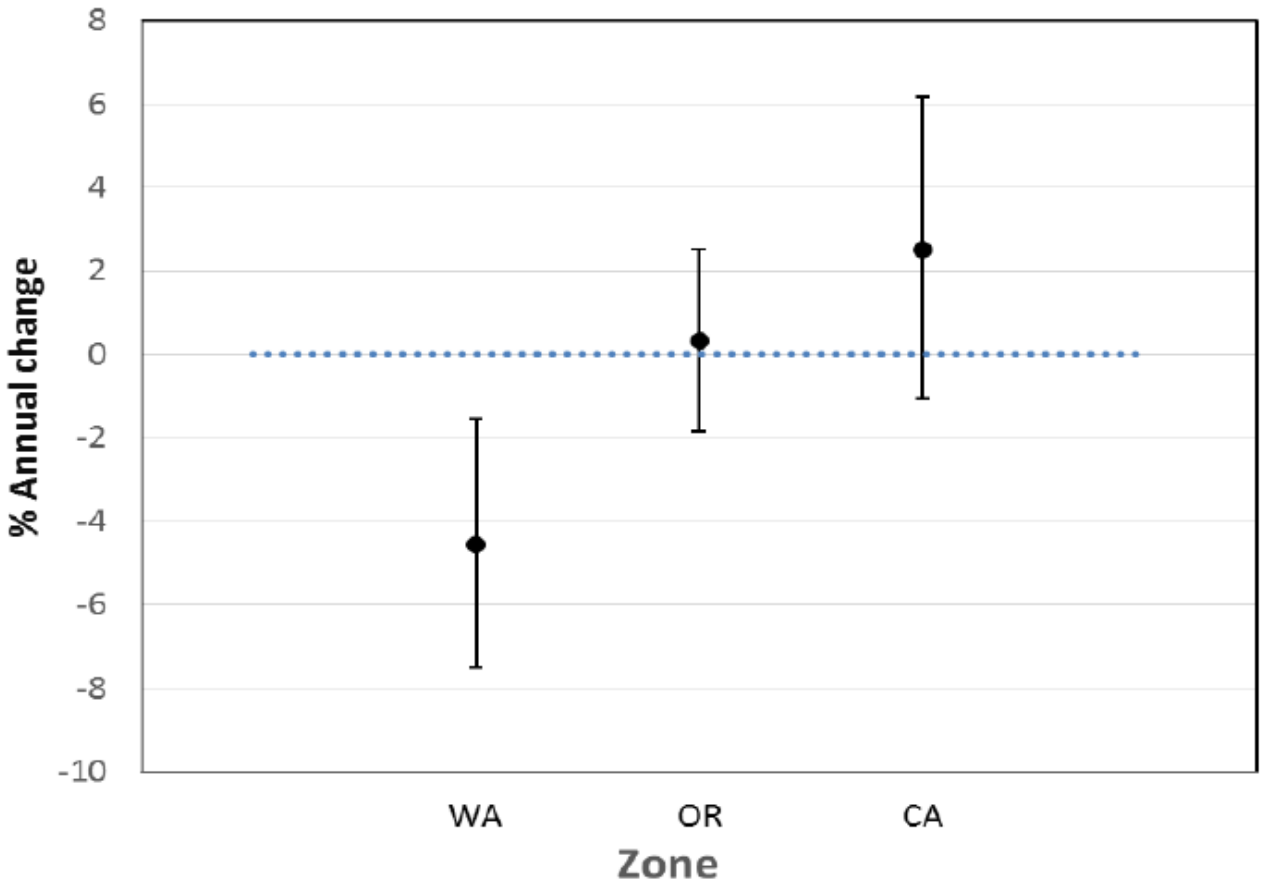

Figure 2. Average annual percentage change in marbled murrelet populations in Washington, Oregon, and California from 2000-2013. Adapted from Falxa et al. (2015).

Destruction and Degradation of Habitat in Oregon

Murrelets inhabit two distinct ecosystems. Much of the year is spent foraging at sea, with a terrestrial nesting period from spring until early fall. While rearing their young, adults fly from the nest to the ocean to fish. Marbled murrelets spend the remainder of the year foraging at sea, generally near their nesting habitat. Both the murrelet's terrestrial and marine habitats face substantial threats.

Terrestrial nesting habitat continues to decrease across the Washington, Oregon, and California DPS from timber harvest. The habitat that remains is increasingly fragmented by the edges created by logging. Habitat fragmentation results in increased nest predation rates.

Although less is known about the extent of marine habitat degradation, substantial threats to murrelet foraging habitat and prey species exist. These threats include human overfishing of murrelet prey species, changing oceanographic conditions due to climate change, oil spills, derelict fishing gear, anoxic events ("dead zones"), and biotoxins produced by algae and diatom blooms.

Terrestrial Habitat

The largest threat to the murrelet is the destruction or modification of nesting habitat. The widespread removal of murrelet nesting habitat by timber harvest was the primary reason for protecting murrelets under the federal ESA in 1992 (USFWS 1992) and the Oregon ESA in 1987. The murrelet is likely facing severe population reductions within the next 20 to 100 years due to extensive nesting habitat loss (USFWS & BLM 1994, Beissinger 2002, Raphael et al. 2015). Loss of nesting habitat is highly correlated with declining populations through most of the species' range (Burger 2002, Burger & Waterhouse 2009, Piatt et al. 2007, Raphael et al. 2015, Falxa & Raphael 2016). There is substantial continuing loss of murrelet nesting habitat in Oregon on federal, state, and private lands. Between 1992 and 2006 alone, murrelet nesting habitat is estimated to have

decreased by 10 percent across the range of the Washington, Oregon, and California DPS (USFWS 2004, Raphael et al. 2015).

Strittholt et al. (2006) estimated that the Central Pacific Coastal Forest ecoregion, which includes nearly all of the murrelet habitat from the Olympic Peninsula to the Oregon-California border, historically contained nearly 9 million acres of old-growth forest. In 2006, the estimated area of conifer forests greater than 150 years of age in the Central Pacific Coastal Forest ecoregion was 1.65 million acres (Strittholt et al. 2006). This represents an 82 percent decline in late-successional forests within the ecoregion since pre-colonial times. This estimate is very close to previous estimates of habitat loss over the last 150 years in the region (Teensma et al. 1991, Booth 1991, Ripple 1994, Peery 1995, USFWS 1997).

The Central Pacific Coastal Forest ecoregion, which includes all of the Oregon coast, is the most heavily impacted ecoregion outside of population centers such as the Willamette Valley and Puget Lowlands (Strittholt et al. 2006). This ecoregion contains only 18 percent of the estimated levels of historical old conifer forests, and the remaining older forests are within Oregon's coastal checkerboard of industrial forestlands which are highly fragmented (Strittholt et al. 2006). The Strittholt et al. (2006) analysis used Landsat images that are now more than 15 years old, and habitat loss has continued since their study (Raphael et al. 2015).

The majority of high quality suitable murrelet habitat in Zone 3 occurs along the central Oregon coast on USFS and BLM lands. Alternatively, northwest Oregon contains less suitable habitat that is generally lower in quality and found in small, scattered patches. Remaining suitable habitat is largely found on state lands and has been subject to a long history of timber harvest and wildfire. In western Oregon, private forest industry lands consist of younger age classes than federal and state lands; 90 percent of the stands on private lands are 60 years of age or younger (Adams et al. 2001). On non-federal lands in western Oregon, only about 5 percent of the stands have an

average stand diameter of 21 inches or greater. In the Oregon Coast Range, 64 percent of the land is privately owned, while 12 percent is State owned and 24 percent is managed by Federal agencies (Wimberly & Spies 2000).

Given that less than half of higher quality habitat in the NWFP area is under federal ownership, protections on private and state lands are critical to the species. Although most private timberlands support second- and third-growth forest stands that do not represent suitable murrelet habitat, some suitable habitat still remains on private lands. However, on private timberlands in Oregon, no surveys are required for marbled murrelets prior to timber harvest in suitable murrelet habitat. Thus, private forest lands not owned by timber companies are not likely to contribute murrelet habitat in the future if the regulatory framework remains the same (McShane et al. 2004).

State lands in the Oregon Coast Range are comprised mostly of the Elliott, Clatsop, and Tillamook State Forests. These forests have a history of fire and heavy logging, but the majority of the Clatsop and Tillamook forests are maturing into murrelet habitat, and there are many documented murrelet nest sites in these forests. The Elliott, which burned around 150 years ago, represents one of the largest contiguous blocks of suitable murrelet habitat along the Oregon coast, and is in the NWFP conservation zone with the largest at-sea population counts (Falxa et al. 2014).

The Oregon Department of Forestry was harvesting approximately 35 to 45 million board-feet of timber from the Elliott annually (ODF 2011), until a lawsuit in 2013 alleging ongoing take of marbled murrelets halted timber production in older stands. Since 2013, primarily only younger stands have been subject to logging in the Elliott. Approximately half of the Elliott State Forest's 90,000 acres remain prime murrelet habitat, with survey efforts continuing to be very successful.

Aside from timber harvest, natural sources of murrelet habitat loss include wildfire, insect outbreaks, and windthrow events (Lynch et al. 2009). Windthrow events may become more severe as fragmentation increases (McShane et al. 2004), especially with the extent of clearcutting and

heavy thinning across land ownerships. Wildfire events are projected to increase in severity and frequency due to climate change (Millar et al. 2006). Additionally, insect outbreaks may also increase in severity as climate change affects ecosystems (Millar et al. 2006).

Aside from loss of mature forest habitat, local and regional fragmentation of nesting habitat across the DPS is a key contributor to species decline. Numerous studies indicate the importance of large areas of contiguous mature and old-growth forest to murrelet terrestrial nesting habitat (Ripple et al. 2003, Raphael 2006, Meyer et al. 2002, Hébert & Golightly 2007). Ripple et al. (2003) found that murrelets in western Oregon do not nest near clearcuts but may nest adjacent to young or mature forests.

While little is known about predation on adult murrelets at sea, predation has consistently been the primary cause of murrelet nest failure (McShane et al. 2004). McShane et al. (2004) report that the majority (78%) of murrelet nest failures are due to predation. Murrelets that nest in close proximity to forest stand edges are more vulnerable to predation by corvids, primarily common ravens (*Corvus corax)* and Steller's jays (*Cyanocitta stelleri*) (Nelson & Hamer 1995, Raphael et al. 2002), because the predators have easier access to nests without the presence of protective mature forest canopy (Meyer et al. 2002). Compounding this edge effect, corvid populations have been shown to increase in clear cuts (Ripple et al. 2003). Corvid abundance is highly correlated with murrelet nest predation (Marzluff & Neatherlin 2006). Additionally, nest predation is likely higher than observed data suggest because often no evidence is left behind following nest predation by corvids, making nest predation sites entirely unobservable (Hébert & Golightly 2007). Human presence near murrelet nesting habitat further aggravates nest predation by attracting predators (Ripple et al. 2003, Hébert & Golightly 2007).

Ripple et al. (2003) suggested that murrelet choice of nesting sites might be the result of an anti-predator strategy to protect eggs and young. The authors also suggest eliminating clear cutting

within 1 km of a murrelet nest site to protect nests from predation. Currently there are no measures in place to address corvid predation of murrelet nests in Oregon.

The consequences of habitat fragmentation include: negative effects on murrelet population viability and size, local or regional extirpation or displacement, fewer nesting attempts, failure to breed, reduced fecundity, reduced nest abundance, lower nest success, increased predation rates and reduction in adult survival (Raphael et al. 2002). Generally, optimal murrelet habitat contains large core areas and low amounts of overall edge (Meyer & Miller 2002, Raphael et al. 2002). A study in British Columbia documented a decline in breeding success with increasing proximity to clear cuts (Zharikov et al. 2006). Malt & Lank (2007) have shown that rates of corvid predation increase with increasing murrelet nesting habitat edge.

Habitat fragmentation decreases the amount and heterogeneity of nesting habitat, decreases habitat patch size, decreases the amount and quality of core habitat, increases the amount of edge around nesting habitat and further isolates patches of nesting habitat (McShane et al. 2004). Hard edges along murrelet nesting habitat can cause an increase in frequency and severity of windthrow events, further reducing the amount of suitable nesting habitat (McShane et al. 2004). As mentioned earlier, Peery et al. (2009) found that habitat fragmentation due to extensive logging of old-growth forests in northern California changed murrelet population structures, leading to increased risk of local extirpation (Peery et al. 2009). In British Columbia, van Rooyenetal et al. (2011) found that hard edges compromised epiphyte micro-climates, thus reducing mossy landing platforms, while soft and natural edges did not. Further habitat fragmentation will continue to isolate populations and increase the chance of local extirpation of murrelet populations. The marbled murrelet recovery plan suggests one of the most important factors to ensure the survival of the species is to decrease habitat fragmentation across the landscape (USFWS 1997, Raphael et al. 2015, Falxa & Raphael 2016).

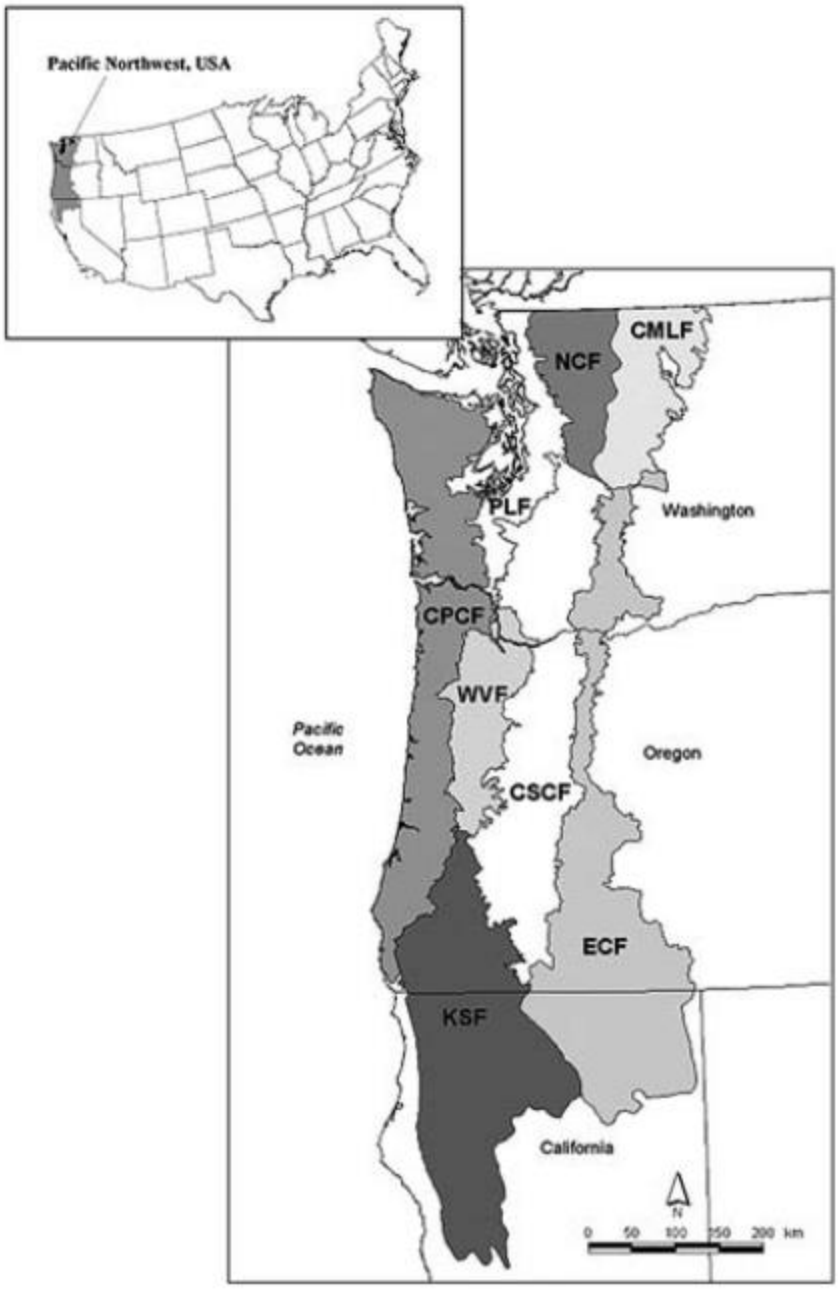

Figure 4. Ecoregions used in the Strittholt et al. analysis, including the Central Pacific Coastal Forest ecoregion (CPCF). Figure from Strittholt et al. (2006).

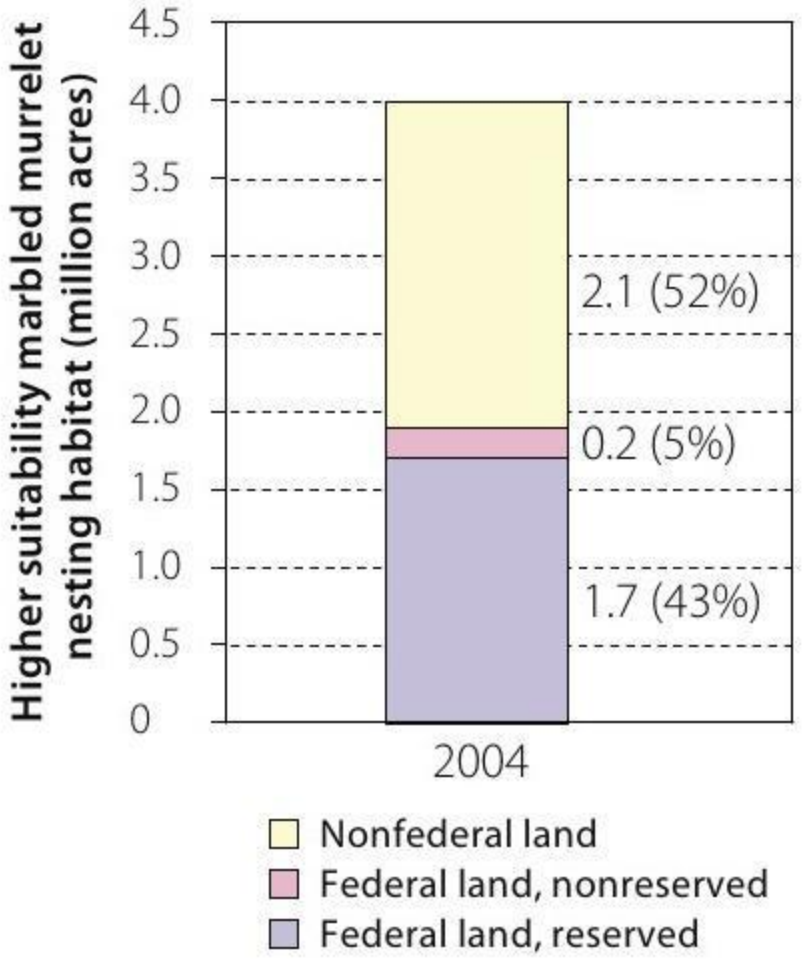

Figure 5. Higher suitability marbled murrelet habitat across the Northwest Forest Plan Area by ownership. Adapted from Rapp (2007).

Marine Habitat

Threats to murrelet marine habitat include changes in prey availability and quality, dead zones, algal blooms and the potential exacerbation of these conditions from climate change (USFWS 2010).

There is a documented decline in the trophic level of murrelet prey species in California (Becker & Beissinger 2006). A shift to lower trophic-level food sources negatively influences murrelet breeding because murrelets are less likely to initiate nesting when they cannot feed on quality middle and high trophic-level food during the breeding season (Becker & Beissinger 2006). Murrelet prey species distribution and abundance depends on oceanographic conditions which drive upwelling in the California current system (Smith 1983). Oceanographic conditions are affected by El Niño Southern Oscillation (ENSO) events which reduce upwelling and Pacific Decadal Oscillation (PDO) events which alternate between cool and warm water cycles by decade (Schwing et al. 2002).

Murrelets are negatively affected by warm cycles such as ENSO and PDO warm cycle events that reduce upwelling (Ainley et al. 1995, Burger 1995, Burger 2000), which are increasing in severity (Snyder et al. 2003). Peery et al. (2004) suggest reduced quotas for fisheries targeting murrelet prey species may be needed to increase murrelet productivity. While no data exist for Oregon, studies in Washington have shown that poor oceanographic conditions lead to much larger murrelet home range size (Lynch et al. 2009). When marine prey sources near nesting habitat are insufficient, murrelets must venture further from nests or forego breeding entirely (McShane et al. 2004).

While their direct effect on murrelets has not been studied, algal blooms and dead zones in Oregon's coastal waters are assumed to be harmful to murrelet foraging habitat (USFWS 2010, Becker & Beissinger 2006). Anoxic events may be negatively affecting murrelet food supply due to

associated fish and invertebrate mortality (Grantham et al. 2004, Chan et al. 2008). In Oregon, these events overlap in area with the highest murrelet densities on the Oregon coast (USFWS 2010).

Algal blooms and associated biotoxins are reportedly increasing (Lopez et al. 2008). In 1989, two marbled murrelets were found killed by paralytic shellfish poison (PSP), a biotoxin associated with algal blooms (McShane et al. 2004). Domoic acid, a biotoxin associated with diatom blooms, was responsible for the mortality of 2 out of 17 radio tagged murrelets in California (Peery et al. 2006). The extent to which algal blooms are occurring and affecting murrelet populations is not known but is assumed to negatively affect murrelet foraging habitat (USFWS 2010, Becker & Beissinger 2006).

In general, areas for which climate change projections have been prepared predict conditions that are unfavorable for murrelets (Lynch et al. 2009). Oceanographic climate-related factors affecting murrelets that are projected to change include: increased ocean acidification, increased sea surface temperatures, increased winds near coasts, changes in upwelling seasonality and magnitude, increased frequency and area of dead zones, increased stratification of upper ocean waters, more frequent ENSO warm events, sea level rise, timing shifts and changing flow levels of freshwater inflows, potential turbidity increases of nearshore waters due to shoreline erosion, increased intensity of winter storms and changing distribution of marine species as sea surface temperatures rise, among others (USFWS 2009). With the myriad potential negative effects of climate change to marbled murrelets, protecting nesting habitat is paramount to conserving the species in Oregon.

Inadequacy of Existing Regulatory Mechanisms

The marbled murrelet (*Brachyramphus marmoratus*) is a sea bird that has declined in population over the past century. Accordingly, the marbled murrelet was listed as a "threatened" species under the federal Endangered Species Act (ESA) in 1992, 16 USC §§1531 - 1544. 57 Fed.

Reg. 45328 (Oct 1, 1992); 50 CFR §17.11 (1993). Since that listing, marbled murrelets have been protected pursuant to the Northwest Forest Plan on federal lands in Oregon.

While the implementation of the Northwest Forest Plan (NWFP) in 1994 has somewhat reduced the annual rate of habitat loss on federal land, habitat loss is still occurring at a rate higher than predicted before the implementation of the plan (Raphael 2006, Raphael et al. 2015). Raphael et al. (2006) estimate that between 1994 and 2003, as many as 279,000 acres of suitable habitat were lost across the DPS. The US Forest Service estimated in 2007 that only 48 percent of higher quality murrelet nesting habitat in the Northwest Forest Plan area is under federal ownership (Rapp 2007). Further, between 2004 and 2009, the USFWS has authorized incidental take associated with the removal of 850 acres and the degradation of 715 acres of murrelet nesting habitat in Conservation Zone 3, and the removal of 4,472 acres of nesting habitat in Conservation Zone 4. The USFWS also authorized incidental take associated with the degradation of 22,723 acres of nesting habitat in Conservation Zone 4 (Lynch 2009). Additionally, both Region 6 of the Forest Service and Oregon's BLM Districts have initiated the process to revise their management plans, which could result in substantial reductions in protections for marbled murrelet habitat on federal lands.

The marbled murrelet is also protected by Section 9 of the Endangered Species Act which entails a prohibition on "take." 16 U.S.C. § 1531 et seq. "Take" has been defined to include the adverse modification of occupied habitat. Both citizens and the USFWS are permitted to sue violators for taking or killing marbled murrelets. However, this prohibition is practically inapplicable to private lands in Oregon because of the lack of survey requirements on private lands, the statutes' respective notice provisions,[1] and a general lack of enforcement by the USFWS.

[1] To bring a Section 9 citizen suit, a plaintiff must give the potential violator and the USFWS 60 days' notice of the alleged violations. Under state law, a timber producer must only provide the state with 15 days' notice prior to logging. Because citizen suits under the Act are only prospective, in that the only potential relief is injunctive, these suits are nearly impossible to successfully prosecute.

As an example of the lack of enforcement, as part of a due diligence study undertaken by the Department of State Lands in 2013 regarding the timber appraisal of three tracts of lands under consideration for disposal from the Elliott State Forest, the appraisers interviewed a number of private landowners potentially interested in buying the parcels. When asked how marbled murrelet occupancy would affect their interest in the parcels, several private timber operators believed a private timber company could harvest occupied murrelet habitat without regulatory action. When Kevin Maurice with the USFWS was asked by the contractor about these remarks, he indicated that the USFWS does not pursue violators of the federal ESA, even when violations are known (Whitler 2013).

The marbled murrelet is also afforded protections by state law, ORS 496.171 to 496.192, otherwise known as the Oregon Endangered Species Act. The Oregon Department of Fish and Wildlife (ODFW) administers the Oregon Endangered Species Act. Under the Oregon ESA, ODFW works with other state agencies and private landowners to develop regulations to help recover imperiled species. ORS 496.182. Further, the statute prohibits take of state-listed threatened and endangered (T&E) species on state-owned lands, and requires the promulgation of quantifiable and measurable guidelines to prevent the loss of individual members of the species. However, ODFW only develops such survival guidelines for T&E species listed after 1995. Because the marbled murrelet was listed prior to 1995, ODFW has not developed survival guidelines for the species. Additionally, private and commercial timber owners are exempt from the requirements imposed by the Oregon Endangered Species Act. ORS 496.192.

However, the Forest Practices Act (FPA) and associated administrative rules apply to state and private lands. The FPA is not intended to be a substitute for compliance under the federal or state ESAs. Instead, it is specifically stated in the FPA that compliance with forest practices rules does not substitute for or ensure compliance with the federal ESA. Under the FPA, landowners must

submit a written plan when harvesting near a "specific site involving threatened or endangered wildlife species" OAR 629-605-0170 (1)(b), (4)(b); OAR 629-605-0190. The Oregon Department of Fish and Wildlife has the responsibility to notify the landowner if a written plan is required (e.g., if the landowner is operating near a known threatened or endangered species site). It is the landowner's responsibility to develop the written plan and it must contain information on the techniques and methods that will be employed for resource protection. OAR 629-605-0170 (7) (d). The ODFW maintains a database of known threatened and endangered species sites that is compiled using available information. But because private landowners are not required to survey for threatened and endangered species nor are they required to notify ODFW of any threatened or endangered species sites on their lands, all of the marbled murrelet sites currently known to the Department are on public lands (state and federal ownerships). Murrelets are thus effectively without any protection on private lands where habitat remains.

The Oregon Department of Forestry (ODF) manages its forest lands "to secure the greatest permanent value of those lands to the state[.]" ORS 530.050. Pursuant to that directive, ODF may sell forest products and enter into timber sale contracts. ORS 530.050(2), (3). In addition, ODF may permit the use of its lands for other purposes so long as those uses are not detrimental to the best interests of the state—interests that include protecting fish and wildlife. ORS 530.050(4). ODF has adopted rules governing the management of state forest lands, *see* OAR chapter 629, division 35, and it defines the phrase "greatest permanent value" as used in ORS 530.050 to mean "healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits." OAR 629-035-0020(1). The State Forester is required to actively manage state forest lands to provide sustainable timber harvest and revenues in a way that "[p]rotects, maintains, and enhances native wildlife habitats[.]" OAR 629-035-0020(2), (2)(b).

Given that the USFWS has not published guidance on how to avoid take of marbled murrelets, and ODFW has not developed guidelines under the state ESA, the State Forests Division developed, and ODF has adopted, policies to protect listed species, including a set of policies specifically concerning marbled murrelets. Through its Marbled Murrelet Operational Policies, ODF seeks to "[m]inimize the disruption of [the marbled murrelet's] reproductive activities" and to "maintain habitat suitable for successful nesting" in marbled murrelet occupied sites. Marbled Murrelet Operational Policies 1.1.2.0.

In addition, ODF will use reasonable measures to "avoid direct take of marbled murrelets" and to "minimize the risk of any potential take incidental to [its] management practices." Marbled Murrelet Operational Policies 1.1.1.0. Pursuant to those policies, ODF surveys areas proposed for commercial logging and establishes Marbled Murrelet Management Areas (MMMAs) in locations that ODF determines are occupied by marbled murrelets.

Most of the existing murrelet nesting habitat existing on state lands can be found in the Elliott, Clatsop, and Tillamook State Forests. Other smaller plots of ODF lands in the coast range provide additional murrelet nesting habitat. While the Clatsop and Tillamook State Forests are managed by ODF and the Oregon Board of Forestry (BOF), the Elliott State Forest is managed under the authority of the Oregon Department of State Lands (DSL) and the State Land Board (SLB) with a mandate that any proceeds from the Elliott State Forest will benefit the State's Common School Fund. The DSL and SLB have agreed to allow ODF and BOF to plan and authorize logging activities and annual operating plans in the Elliott State Forest. New forest management plans have recently been completed and approved by the ODF and BOF for each of these State forests – one specific to the Elliott State Forest in 2011, and a Northwest Forest Management Plan for the Clatsop and Tillamook in 2010. Both management plans authorize increased timber harvest levels.

The State of Oregon developed and operated multi-species Habitat Conservation Plans (HCPs) between 1995 and 2001 for the Elliott State Forest and the lands managed under the Northwest Forest Management Plan, including the Tillamook and Clatsop State Forests. The HCPs set guidelines for the recovery of the murrelet and included a system for ODF to acquire Incidental Take Permits (ITP) for marbled murrelets or spotted owls associated with proposed timber projects. When the HCPs expired in 2001, the state began the process of renewing HCPs for the Elliott State Forest and lands under the Northwest Forest Management Plan, but both of those processes were abandoned before completion. Since the expiration of the HCPs, the state has operated under a "take avoidance policy," under which take of marbled murrelets is supposed to be avoided. However, the murrelet take-avoidance measures used by ODF have little oversight or regulation from state or federal wildlife agencies. Instead of preparing a comprehensive analysis of the effect on murrelets by timber projects by renewing HCPs, the state has instead developed a land classification of Marbled Murrelet Management Areas (MMMAs) which is applied to known occupied murrelet nesting habitat. These MMMAs afford only slight protection for murrelets as they often fail to include all local contiguous occupied habitat as recommended in the PSG survey protocol (Evans-Mack et al. 2003), and they are often too small to provide adequate nesting opportunities for healthy murrelet populations.

In 2013, these policies were challenged in a lawsuit brought by Cascadia Wildlands, Portland Audubon, and the Center for Biological Diversity, arguing essentially that the state's policies permitted "take" of marbled murrelets in violation of Section 9 of the federal ESA. After the Court halted over a dozen timber sales on the Elliott State Forest, the state agreed to halt all older timber harvest on the Elliott State Forest and to revise its murrelet policies to better protect occupied sites. However, there is no comprehensive murrelet conservation strategy for state lands, and no regulation by ODFW or the Oregon Board of Forestry for private lands, leaving a regulatory void in Oregon for

this imperiled species on more than 75 percent of coastal forests. The State of Oregon's management of murrelet habitat on ODF managed lands, especially the Elliott, Clatsop, and Tillamook State Forests, has led to declining populations of the threatened murrelet such that extinction is likely and reclassifying the species to endangered is necessary to ensure its survival.

UPLISTING REQUEST

Pursuant to OAR 635-100-0111, "[t]he commission shall reclassify a wildlife species from threatened status to endangered status if it determines that the species meets any of the factors set out in OAR 635-100-0105(6).[2] In addition, the commission shall also determine that the likelihood of survival of the species is in danger of extinction throughout any significant portion of its range within the state." As set forth herein, marbled murrelets are suffering a decline in breeding productivity (Peery 2007, Becker et al. 2007, Norris et al. 2007, Ronconi & Burger 2008, Crescent Coastal Research 2008), nest success (Beissinger & Nur 1997, Bradley et al. 2002, Cam et al. 2003, Peery et al. 2004), and genetic diversity (Peery et al. 2004). Numerous studies have shown significant localized population declines (Burger 2002, Burger & Waterhouse 2009, Piatt et al. 2007, Raphael et al. 2015, Peery et al. 2009, Nelson & Hamer 1995, Hamer & Meekins 1999, Manley 1999, Manley & Nelson 1999, Bradley 2002, Hébert & Golightly 2007, Nelson & Wilson 2002, Manley 2003, Peery et al. 2004). Current protections are insufficient to protect the species, as their persistence is uncertain if the current trend of habitat destruction continues. The recently published 20-year status report of the species found that:

> [g]iven declining murrelet population trends as well as habitat losses, in many areas, it is uncertain whether their populations will persist to benefit from potential future increases in

[2] OAR 635-100-0105(6) reads: "In addition to the criteria set forth in sections (3) and (4) of this rule, 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.

> habitat suitability. This underscores t*he need to arrest the loss of suitable habitat on all lands*, especially on nonfederal lands and in the relatively near term (3 to 5 decades).

(Falxa & Raphael 2016, emphasis added).

Due to these factors, marbled murrelets are likely facing a severe population reduction in the foreseeable future due to anthropogenic habitat destruction (USFWS & BLM 1994, Beissinger 2002, Raphael et al. 2015). The loss of nesting habitat is highly correlated with declining populations through most of the range of the species (Burger 2002, Burger & Waterhouse 2001, Piatt et al. 2007, Raphael et al. 2015). Between 1996 and 2006 alone, there was a 10 percent loss in marbled murrelet nesting habitat across the range of the Washington, Oregon, and California DPS (USFWS 2004, Raphael et al. 2015). While murrelet nesting habitat on federal forest lands has had increased protection since the implementation of the Northwest Forest Plan, only 48 percent of the remaining higher quality nesting habitat of the murrelet is on federal lands (Rapp 2007). Private forestlands make up 64 percent of coast range forests (Wimberly & Spies 2000) and have minimal oversight from federal or state wildlife agencies.

An uplisting of the marbled murrelet will compel the development of survival guidelines for the species and allow the Commission to:

> work with private landowners, affected cities, affected counties and affected local service districts, as defined in ORS 174.116 (Local government and local service district defined), 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 (Commission management authority for threatened or endangered species).

ORS 496.182(2)(b). The majority of private lands are second- and third-growth forests that do not provide suitable marbled murrelet habitat. Therefore, it may be feasible to specifically target remaining habitat on private lands and work with impacted land owners to mitigate impacts through collaborative efforts with the Commission and Department.

Further, given the abundance of habitat on state lands, primarily on the Elliott, Tillamook, and Clatsop State Forests, listing of the marbled murrelet as endangered will allow the Department

to engage with Oregon Department of Forestry and Board of Forestry on how these lands can contribute to the conservation and recovery of the marbled murrelet. Currently, all state policy is focused on take-avoidance of the murrelet, but an endangered listing would encourage proactive measures to facilitate recovery of the species to bring a species to the point at which the protections under both state ESA and federal ESA are not required.

Petitioners envision numerous steps and proactive measures that could be taken to facilitate the recovery of this species at the state level. The Department, in conjunction with the Oregon Department of Forestry could work with impacted private timberland owners to identify the remaining high quality habitat on private lands and to identify measures to survey for and protect the species therein, and measures of mitigation and compensation for the landowners.

The Department will also be able to work with the Board of Forestry in developing a firm conservation plan for the species that involves the great deal of suitable habitat, and habitat that is close to becoming suitable, on state forestlands. Proactive conservation would result in the development of a comprehensive plan for the species that could replace the reactive survey and take-avoidance strategy that has been problematic for the Oregon Department of Forestry. Such a plan could involve both a strategic system of reserves for the species and a focus on selective restorative forest improvement projects to help accelerate development of older forest characteristics necessary for the murrelet in forests nearing maturity that are abundant on the North Coast forests.

The purpose of this restoration thinning is to create new murrelet habitat without impacting existing habitat. Accordingly, such projects should only occur in young even-aged plantations using the existing road system, roads should be decommissioned after one entry, and no thinning should occur within an occupied site or its buffer. Occupied sites, as identified pursuant to the Pacific Sea Bird Group Protocol, need to be buffered from any logging, including thinning, by at least 200 meters to prevent edge effects, canopy openings, and entry of the stand by corvids.

Given the drastic indications of declining breeding success, marbled murrelet populations will continue to decline along the West Coast, and stricter regulatory measures will inevitably be necessary. But given the abundance of suitable habitat on state land in Oregon, and that the remaining bulk of the West Coast population is found off the Oregon Coast, the state has the opportunity to proactively head off further decline of the species and leverage our state resources to bring the species to the point where both state and federal protections are no longer needed. Petitioners will gladly assist the Department and Commission in these processes, and put the energies of Oregon's robust conservation community behind the state in crafting and implementing this plan.

Accordingly, pursuant to ORS 496.176, Petitioners formally request that the Oregon Fish and Wildlife Commission reclassify by rule the marbled murrelet (*Brachyramphus marmoratus*) from "threatened" to "endangered" under the Oregon Endangered Species Act. Petitioners look forward to the Commission's written response within 90 days of receipt of a petition concerning whether the petition presents substantial scientific information to warrant the action requested. Please contact Petitioners with any questions concerning this Petition. To contact Petitioners please address:

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