



Bringing back the birds

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Field Supervisor
Attention: 5-Year Review
U.S. Fish and Wildlife Service
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Thank you for this opportunity to provide comment on the five-year status review of the federally threatened Marbled Murrelet. Due to continued habitat loss, an erosion of regulatory mechanisms ensuring habitat conservation and restoration on federal lands, a lack of adequate regulatory mechanisms conserving habitat on state or private lands, and the potential for significant habitat loss and degradation caused by projected climate change, American Bird Conservancy urges that the Marbled Murrelet be designated as Endangered.

Current habitat protections and efforts to restore old-growth forest habitat need to be augmented due to the small number of this distinct population segment, significant population decline in Washington State and past projections of likely extinction in California and Oregon within 100 years. Doing so would aid in the recovery of the Murrelet, listed salmon stocks, and the threatened Northern Spotted Owl, and also benefit clean air, clean water, wild salmon runs, carbon sequestration and other ecosystem services uniquely provided by these irreplaceable late-successional forests.

Very briefly, I've identified new information below that we urge the Service to consider. This is followed by more detailed on information on these key issues.

- (A) Species biology, including but not limited to population trends, distribution, abundance, demographics, and genetics;

Population decline in WA State.

- (B) Habitat conditions, including but not limited to amount, distribution, and suitability;

Loss of habitat in WA due to urbanization, logging on state and private lands.
Loss of habitat in Oregon due to logging on private, state and federal lands.

- (C) Conservation measures that have been implemented that benefit the species;

NWFP 20-Year Monitoring Reports indicates murrelet habitat loss on federal lands has been largely arrested, but there will be a long period until more habitat is available, and the scientists recommendation of no more murrelet habitat loss.

(D) Threat status and trends in relation to the five listing factors (as defined in section 4(a)(1) of the Act);

Lack of adequate regulatory mechanisms, recent rules weakening murrelet protection, and trend is for worse to come.

Climate change impact on habitat, including increased blowdown, and uncertainty of foraging fish abundance.

Increased predation due to human activities including recreation, and thinning.

Population Trends

Washington Department of Fish and Wildlife conducted a status review of the Marbled Murrelet and what follows are its conclusion and recommendation to uplist its status to endangered:

Marbled Murrelets have undergone population declines nearly range-wide within the last few decades (Piatt et al. 2007, Environment Canada 2014, Falxa and Raphael 2016). Murrelets in Washington have declined 4.4% per year between 2001 and 2015. When the Marbled Murrelet was federally listed in 1992, the primary factor contributing to its threatened status under the Endangered Species Act was the loss of forest nesting habitat. Moreover, there has been an apparent centennial decline in availability of forage fish prey resources, which in combination with habitat loss, appears to have compromised nest success and survival of young.

Despite progress in implementing federal forest management plans, habitat conservation plans and state Forest Practices Rules, habitat loss has continued and the Washington Marbled Murrelet population has experienced a decline of approximately 44% over 15 years. The murrelet's low reproductive rate requires high survivorship for the population to grow.

The magnitude of the population decline indicates that the status of the Marbled Murrelet in Washington has become more imperiled since state listing in 1993. Without solutions that can effectively address the major threats in the short-term, it is likely the situation for Marbled Murrelets will only worsen and the species could be lost from some landscapes in the decades ahead.

American Bird Conservancy agreed with this assessment, and urged in our comment that the Marbled Murrelet be uplisted to endangered status in Washington.

A 2012 peer-reviewed study by the U.S. Fish and Wildlife Service (FWS) and U.S.D.A. Forest Service (USFS) found that distinct population segment of the Marbled Murrelet had declined by 29% over the last decade.ⁱ This trend is consistent with the government's [2009 five-year status review](#) of the species that concluded the population could be extinct outside of the Puget Sound area within 100 years.

Northwest Forest Plan is Conserving Marbled Murrelet Habitat

The Marbled Murrelet is an amazing seabird that in the Pacific Northwest nests in mature and old-growth trees. Due to extensive habitat loss caused by widespread logging near the coast of central to northern California, Oregon, and Washington State, a distinct population segment of the Marbled Murrelet is federally listed as threatened under the Endangered Species Act.

A region-wide court injunction against logging on federal lands and political gridlock prompted intervention in the ancient forest debate by incoming President Bill Clinton. A forest summit was held in Portland, Oregon in 1993, and agencies were directed to develop the Northwest Forest Plan. This was a first of its kind, multispecies and ecosystem conservation plan intended to protect late-successional forests and riparian areas, as well as the Northern Spotted Owl, Marbled Murrelet, Pacific Salmon stocks, and 600 other old-growth-dependent species. The Plan went into effect in 1994 and it remains today the best available conservation framework of its kind.

The Northwest Forest Plan is first and foremost, a multispecies management plan for listed species including the Northern Spotted Owl, Marbled Murrelet and salmon stocks that provides the land management agencies with an “adequate regulatory mechanism” to comply with the Endangered Species Act, the National Forest Management Act, the Clean Water Act, and the National Environmental Policy Act. The Northwest Forest Plan promotes an ecosystem management approach with the specific goal of protecting those listed species and perpetuating and expanding the size of the region’s late-successional forest ecosystem.

Studies show that the Northwest Forest Plan is working as intended to retain mature and old forests, and that the highly fragmented forest ecosystem is growing back into the large blocks of mature forest habitat needed to maintain water quality and recover threatened species such as the Northern Spotted Owl, Marbled Murrelet and Pacific salmon stocks. It is important to note that the Northwest Forest Plan is a 100-year plan, now in its 21st year, and significant habitat gains for Northern Spotted Owl and to a much lesser degree Marbled Murrelets are not anticipated until mid-century.

According to the Pacific Seabird Group:

“significant thinning and logging is taking place within LSRs, which is further fragmenting the landscape and extending the time when large contiguous blocks of late seral habitat will exist on the landscape. In fact, under the NWFP, HCPs, and other habitat management plans, new murrelet habitat will not be suitable for at least 50 to 200 years. The inability to create new murrelet habitat in the short term combined with the continued harvesting of occupied and unoccupied habitat on state, federal and private lands ensures a downward trend in suitable habitat and murrelet populations into the future.

The continued loss of murrelet nesting habitat threatens their survival by: (1) reducing the amount of nesting habitat which in turn decreases the proportion of the population that is able to find quality nest sites; (2) fragmenting occupied sites and subjecting them to harmful edge effects, especially predation, that reduce nest success rate; and (3) reducing the availability of quality nesting habitat forcing murrelets to nest in lower-quality habitat, which diminishes nest success (USFWS 1997, 2012).”

Overall, under the Northwest Plan, 97% of the Murrelet habitat on federal lands has been conserved. However, it is important to remember that the Northwest Forest Plan alone does not provide enough to provide habitat protection for Murrelet recovery. As the 1996 rule notes, the FEMAT viability assessment concluded: “We believe there is only about a 60 percent likelihood that the Marbled Murrelet population on federal lands would be stable and well distributed after 100 years, regardless of which option is selected.” (p. 26262)

In the 2009 5-year status review, FWS stated that although the Northwest Forest Plan protects some murrelets, without critical habitat, “conservation benefits would not likely extend to all areas currently protected for the murrelet.”

20-Year Monitoring Report Recommends No More Habitat Loss and Reduce Fragmentation to Conserve Marbled Murrelets

As part of the Northwest Forest Plan, [a monitoring report](#) on the plan’s effectiveness in conserving the Marbled Murrelet was release in 2015. The report also made management recommendations to conserve remaining habitat that are not being followed by federal agencies including the U.S. Fish and Wildlife Service and Bureau of Land Management. The report notes that the Northwest Forest Plan has been largely successful at conserving 97% of the high quality habitat on federal lands.

While the Northwest Forest Plan has been effective at restoring murrelet habitat, this is a very slow process given the condition of the landscape. Here are some details from the monitoring report:

...it can take more than 100 years for Class 2 habitat to become Class 3 and more than 200 years to become Class 4. The development of stands with old-growth characteristics necessary for murrelets is expected to take at least 100 to 200 years from the time of regeneration (USFWS 1997). For the many younger stands in the murrelet range that were clear-cut harvested in the past century, the benefits of habitat development are far into the future. However, if management for late-successional and old-growth forests continues, projections show substantial increases of forest exceeding 150 years in age by 2050 on western federal lands (Mills and Zhou 2003). Shorter term gains in habitat quality may occur as older forest fills in around existing suitable habitat and reduces edge and fragmentation effects in existing habitat, prior to the older forest developing the large limbs, nest platforms, and other characteristics of murrelet nesting habitat.

Over the long run, it is not unreasonable to expect to see some net increase in total amount of higher suitability habitat; however in the short term, conservation of the higher suitability habitat (Classes 3 and 4) is essential. If losses of suitable habitat are reduced, old forest suitable for nesting is allowed to develop, and fragmentation of older forest is reduced throughout the reserved federal lands, then meeting murrelet population objectives will be more certain. Given 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 habitat suitability. **This underscores the 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).**

In addition to arresting loss of suitable habitat, the study also concluded that forest fragmentation is a severe threat that needs to be ameliorated.

In this chapter, we found that nesting habitat cohesion, which is the inverse of habitat fragmentation, is a strong predictor of murrelet abundance and trends. This result is not surprising because murrelets prefer larger patches, which also tend to have fewer nest predators (Malt and Lank 2007, Raphael et al. 2002). (p. 114)

Increased edge resulting from forest fragmentation appears to have negative effects on murrelets. Malt and Lank (2007) found that murrelet nest sites at timber harvest edges

had lower moss abundance than interior and natural-edge nest sites (stream corridors and avalanche chutes) owing to stronger winds, higher temperature variability, and lower moisture retention.

Another negative impact to murrelets associated with edges, especially those that occur between clearcuts or large openings and forests, is increased nest depredation rates (Marzluff and Neatherlin 2006, Marzluff et al. 2004, Masselink 2001). This is especially true when edges are near human development such as campgrounds (Marzluff and Neatherlin 2006) or include berry-producing plants such as elderberry (*Sambucus* sp.) (Masselink 2001).

Late-successional Forest Restoration and the Northwest Forest Plan

The 20-year monitoring reports of the Northwest Forest Plan indicate that the late-successional forests are re-growing as anticipated, and that the reserve system is reestablishing large blocks of suitable habitat. This 100-year restoration plan now in year 21 can be expected to provide a significant increase in Northern Spotted Owl habitat in another 30 years, and a modest increase of Marbled Murrelet habitat in another 80 years. Water quality is improving across the region due to regrowth and watershed restoration activities, and the region's forests have gone from being a source of carbon emissions to a nationally significant carbon sink. Rationale for changing the Northwest Forest Plan is predicated on the need for additional timber harvest from federal lands. Analysis indicates that this would delay forest recovery, degrade water quality, and place additional risk on listed species. Given the evidence the Plan is working, any proposed changes should have a high degree of scientific consensus and certainty of success.

ABC recommendation: Stay the course with the Northwest Forest Plan, complete the science synthesis, and then conduct bioregional assessments addressing regional and endangered species issues.

ESA-listed Species Management vs. Ecosystem Management

The 2012 Northern Spotted Owl critical habitat rule weakened protections for the Northern Spotted Owl and Marbled Murrelet by favoring a generic ecosystem management approach that fails to recognize or address the severe shortage of late-successional habitat in the region. The original concept of ecosystem management under the Northwest Forest Plan was to restore the forest to more historic conditions and recover the missing large patches of old-growth. This was revised in the 2012 rule so that that managers could manage for all age classes of forest more equally, even if this sets back restoration of historic norms or causes short-term harm to listed species.

This policy ignores the historic role the federal government played in the reduction of late-successional forests and decline of Northern Spotted Owl and Marbled Murrelet. According to federal judges, federal agencies deliberately failed to abide by laws protecting wildlife, and did not moderate old-growth logging when its' unsustainable nature and the loss of species became apparent by 1983.

In addition, the Critical Habitat rule reduced species specific protections by changing the definition and analysis of adverse modification that potentially allows logging of mature forests that the Northwest Forest Plan intended to be protected. Protections for the Marbled Murrelet were also reduced by the owl critical habitat rule, and the 2016 Marbled Murrelet critical habitat rule allows for increased fragmentation of murrelet habitat, increasing the risk of predation which

researchers conclude is a key limiting factor to murrelet recovery.

The best available science and the continuing decline of Northern Spotted Owl populations indicate that the agency should protect all suitable owl habitat, not just high-quality owl habitat. The definition of high quality owl habitat needs to be made more inclusive to ensure sufficient habitat will be conserved to allow for recovery.

In its review of the draft Northern Spotted Owl recovery plan The Wildlife Society raised concern about the Service's narrow definition of high quality owl habitat. The Society notes that the proposed definition is only a subset of suitable habitat. Their analysis then states:

“...by limiting the definition of high quality habitat to a fairly narrow range of habitat conditions, management agencies will be able to justify thinning or commercial harvest in a broad range of naturally regenerated stands. Most of these naturally regenerating stands originated from fire and usually are suitable spotted owl habitat; therefore, they are not likely to be greatly “improved” by management. In western Oregon and Washington such stands are typically comprised of large trees that are 80-160 years old, and include scattered (i.e., residual) old-growth trees that survived wildfires. These stands may not meet the strict definition of high quality habitat, but they are often the best remaining habitat in the heavily harvested or burned landscapes that are managed by the Bureau of Land Management and Forest Service. They often occur in small patches, isolated among large areas of young forest within these disturbed landscapes, and they often serve as nest sites for spotted owls as well as refugia for species such as flying squirrels and tree voles, which are important prey of northern spotted owls. Because of the high timber volume in these stands there is intense pressure to log them. Commercial thinning is often recommended as a prescription to reduce risk of fire or improve forest conditions for owls in these stands, despite the fact that it is usually unclear if thinning will either improve these forests as habitat for owls or accelerate their transition from suitable to high quality habitat.”

This uncertainty was one of the reasons that the Northwest Forest Plan included recommendations to restrict thinning in naturally regenerated stands over 80 years old in western Oregon and Washington. Another concern is the continued use of the rule's adverse modification standard to justify owl take and the elimination of mature forests eight years and older that are used by Northern Spotted Owls and prey. Please note the court ruling on the White Castle Secretarial Pilot Project that proposed to log in mature forests utilized by owls. The ruling found this was a controversial practice likely to impact owls and therefore in need of a complete environmental analysis.

Spotted Owl Critical Habitat Rule and Presidential Memorandum

The 2012 Northern Spotted Owl Critical Habitat Rule and accompanying Presidential Memorandum continue to raise concern because of active management in owl critical habitat that is not supported by the best available science. Three major scientific societies advised the Obama administration to conduct more research on the effects of active management on owl populations before treatments are applied more broadly. We agreed with the scientists' call for caution.

These provisions to protect only high quality owl habitat, creation of early-seral habitats, and a weaker adverse modification standard intend to increase timber harvest in the region by lengthening of the time it will take to restore late-successional conditions. This language, which

was used to support the BLM's Western Oregon Plan Revision, has the potential to allow excessive logging to the detriment of Northern Spotted Owl and Marbled Murrelet populations and may foreclose owl recovery by not providing adequate late-successional forest necessary to ensure high quality owl habitat in the future.

The Critical Habitat rule relied heavily on the Final Northern Spotted Owl Recovery Plan and cites it as if it were a peer reviewed document. However, the Final Owl Recovery Plan was never peer reviewed. In addition, peer reviewers identified many faults in the Draft Recovery Plan, particularly concerning active management and the need for maintaining owl reserves that were never corrected in the Final. For example, the summary of The Wildlife Society (TWS) review states:

"Other aspects of the 2010 DRRP are flawed and many are not based on best available science. The lack of a permanent proposal for a reserve system is a major problem that prevents full review of the 2010 DRRP. We believe this will necessitate further peer review prior to finalization of a recovery plan. The Service's strategy for no reserves in dry forests in the eastern Cascades is exacerbated by the proposals for aggressive management of these dry forests because the treatments will reduce the amount of closed canopy forests in the landscape and reduce the amount and suitability of habitat for the subspecies. These proposals are not based on a complete review of the available science and they rely on unpublished reports. In addition, there has been no formal accounting of how closed canopy forests can be maintained with the widespread treatments that are being proposed. Management actions, which are not based on good science, in dry forests with no reserves will likely lead to failure to achieve recovery criteria."

The TWS review also noted that in at least a dozen instances, important studies with bearing on these issues, and that often contradicted the intended management direction were excluded from the analysis. It can be concluded that the agency had cherry-picked studies supporting one view while actively ignoring opposing studies. The Society concluded in its typically diplomatic fashion that:

"In summary, we commend the Service for their intent to use the best available science in developing the 2010 DRRP for the Spotted Owl; however, we found strong evidence that this was not the case throughout much of the Plan. The Service should make a comprehensive effort to base their recommendations and guidelines on the best available science so that they are in compliance with Secretarial Order #3305 issued by Interior Secretary Salazar on September 29, 2010 and the Presidential Memorandum of Scientific Integrity."

Unfortunately, no such effort was made to correct the scientific deficiencies identified in the TWS review. While some of the omitted studies were cited in the final recovery plan, the same unsubstantiated conclusions in support of logging in owl habitat and eliminating owl reserves on the Eastside were reached.

Another team of five scientists (Hansen, Bond, Odion, DellaSala, Baker) that reviewed the draft concluded, "...there are considerable deficiencies in the 2010 draft recovery plan where the Fish and Wildlife Service did not make use of best science, untested assumptions regarding risks of active management vs. fire, and unpublished literature in assessing forest recruitment vs. late-successional "losses" post-fire."

The group of scientists urged the Service to recommend retention of all existing late-successional reserves, additional new reserves to create greater connectedness across the landscape, and greater protections from logging, especially post-disturbance logging within late-successional reserves.

The 1993 Report of the Scientific Analysis Team (SAT) ironically, already thoroughly reviewed the risks associated with logging in suitable owl habitat, and concluded “intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl (SAT p. 145).”

The issue of short-term losses versus long-term habitat gains was also analyzed and the scientists concluded “*that the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains.*”

The Scientific Analysis Team report said:

“Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of wind throw of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated.” [SAT p 147-148]

“The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. ... Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee’s Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not ‘scientifically credible’ (USDA 1991:45).” [SAT p 151].

“The transition period (1-50 years) between implementation of the Interagency Scientific Committee’s Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. ... Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course

prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [SAT p 151-152].

According to forest policy expert Doug Heiken of Oregon Wild, "The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat. The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences. There is no new science to change that conclusion."

ABC urges the Service to not allow for adverse modification of Northern Spotted Owl Habitat by active management or ecoforestry in stands greater than 80 years.

ABC Recommendation: Maintain and augment species specific protections for the Northern Spotted Owl and Marbled Murrelet. The concept of ecosystem management should not be used to reduce protection for mature forest, or to justify use of clearcutting. Federal agencies have a responsibility to restore the old-growth ecosystem and recover Northern Spotted Owl and Marbled Murrelet populations pushed towards extinction by unsustainable logging on federal lands.

Proposal to Eliminate Murrelet Critical Habitat for Six Years

In 2012, the U.S. Fish and Wildlife Service proposed to eliminate all designated Marbled Murrelet Critical Habitat until 2018 as part of a settlement agreement with the timber industry. Fortunately, the federal judge who reviewed this settlement rejected that outlandish giveaway and the murrelet's critical habitat remained in effect as a new critical habitat rule was developed.

Final Critical Habitat Rule a Missed Opportunity

The U.S. Fish and Wildlife Service subsequently issued a [final Marbled Murrelet critical habitat rule](#) designating 3.7 million acres. However, the rule ignored conservation [comments urging the Service](#) to provide either additional habitat protection or protective measures to reverse the current decline and the ongoing threats of habitat loss and fragmentation; threats that will exacerbated by the BLM Western Oregon Plan Revisions.

Numerous Threats Indicate Stronger Protections Needed Range-wide

ABC is concerned that clearcutting proposed in the BLM FEIS for Western Oregon will further fragment the landscape. The current buffers under the Northwest Forest Plan protect 503 acres of habitat based on a circular radius from the nest site. A 300-foot buffer provides for only 6.5 acres of protected habitat, a 98% reduction from the current standard. The BLM plan also cuts riparian reserves in half, and calls for extensive commercial logging in the reserves that is not focused on restoration of late-successional conditions, which raises doubt that the reserve network will function as intended.

Marbled Murrelets have been listed as a threatened species for nearly 30 years, yet the State of

Oregon has never developed a plan to recover them or protect the old-growth habitat they depend on. The State's reliance on the nesting habitat located on nearby federal forestlands is not sufficient as murrelet populations in the Pacific Northwest continue to decline, and a recent status review conducted by the U.S. Fish and Wildlife Service determined that conservation of nesting habitat on state and private lands is now critical to the species' survival.

American Bird Conservancy commented on the draft Environmental Impact Statement and amendment to the 1997 Washington State Habitat Conservation Plan and Long-Term Conservation Strategy for the Marbled Murrelet. ABC asked the Washington State Department of Natural Resources to analyze and adopt a conservation alternative that modifies Alternative F (Alt F) to include additional conservation measures necessary because of the murrelet's severe population decline and recent uplisting to Endangered status in Washington State.

The draft EIS's proposed alternatives E and F identify needed habitat conservation protection areas for the murrelet, and ABC urged that these areas be protected, and that additional steps be taken to conserve the Marbled Murrelet. Unfortunately, none of the existing alternatives provided an adequate level of protection indicating further analysis may be necessary to adopt the following needed conservation measures:

1. Allow for no harvest of existing and future Marbled Murrelet habitat within the next 50 years. Alt. F allows harvest in the first decade of 25,440 acres of existing murrelet habitat, including 3,023 acres of high quality habitat, but best science as reflected by the [Northwest Forest Plan's 20-Year Monitoring Report](#) recommends that all suitable nesting habitat be retained.
2. Add all Emphasis Areas and Special Habitat Areas from Alt. E to Alt. F to be managed as Marbled Murrelet Management Areas. This will increase the overall amount of both conserved habitat acres, and interior forest.
3. Provide for 150 meter Buffers around all occupied sites and old forest as mapped by the 2008 science team. Buffers less than that are too narrow to protect murrelet nests from predators, suboptimal microclimate, and/or windthrow.
4. Salvage and recovery following natural disturbance events and windthrow should be prohibited in MMAs and Special Habitat Areas.
5. Blasting within .5 miles of occupied sites, MMAs, and Special Habitat Areas should be prohibited during the nesting season.

Given its current rapid 4.4 percent annual population decline in Washington State, only Alt F provides a reasonable level of protection for the Marbled Murrelet. Table 4.6.5 indicates that only Alt F is likely to show an increase in population after 50 years; all of the other alternatives show a decline. And if Alt F is modified to forgo the large amount of habitat loss and population loss anticipated in the first decade, the murrelet's projected population would be that much higher, perhaps as high as 684 females by 2050 based on a similar rate of increase.

The EIS states on page 4-49 that Alt F will result in the earliest reversal of population decline and greatest population increase. It further states on page 4-51 that Alt F results in a projected net habitat increase after the first decade, the most gain over time in interior habitat, the highest modeled population gains, and the lowest risk of quasi-extinction. Alt F also provides the most overall future habitat development in important areas (page 4-58).

Given that the murrelet was just uplisted to endangered status in Washington State, the strongest conservation measures possible need to be adopted for Washington State Lands. A modified Alt F, with the proposed changes listed above will provide the murrelet the best opportunity for recovery on Washington State lands, and ABC urged that it be analyzed and adopted. The outcome of this planning effort and how protective it will be of the murrelet is not yet known.

Predation Risk Indicates Large Buffers Needed from Campgrounds & Disturbed Areas

[A study published in *Condor*](#) has found that Marbled Murrelets nesting within campgrounds are at greater risk of predation, due to an increased concentration of predators such as Steller's Jay that benefit from the bounty of food left by humans. This harmful effect of increased nest and chick predation could extend outward from the campground for up to one kilometer (.62 miles).

The study notes that:

Because many RNSP campgrounds occur within nesting habitat for the federally threatened Marbled Murrelet (*Brachyramphus marmoratus*) (Bensen 2012), there is significant concern that increased abundance of Steller's Jays could increase predation risk for Marbled Murrelet eggs and nestlings, perhaps compromising these areas as productive nesting habitat. Currently, the greatest threat to the viability of Marbled Murrelet populations in California is low productivity; direct observations at active nests in RNSP suggest that low reproductive success can be largely attributed to nest predation by corvids (H'ebert and Golightly 2006, H'ebert and Golightly 2007, Golightly and Schneider 2011). In California, Steller's Jays have been implicated in 36% and Common Ravens in 46% of observed predation events on Marbled Murrelet nests (Singer et al. 1991, Peery et al. 2004, H'ebert and Golightly 2007, Golightly and Schneider 2009). Management strategies directed at reducing corvid nest predation may be an effective means to recover Marbled Murrelet populations in California (Peery and Henry 2010).

Climate Change and Northwest Forests

A recent climate studyⁱⁱ projects significant warming in the Pacific Northwest by 2080 (+4.7 degrees Celsius) which is likely to affect the distribution of conifer species utilized by the murrelet. A substantial loss of habitat is anticipated. This negative long-term habitat projection indicates maximum caution is needed to conserve the murrelet and to prevent the further loss of habitat.

ⁱ Recent Population Decline of the Marbled Murrelet in the Pacific Northwest. Authors: Sherri L. Miller, Martin G. Raphael et al. *The Condor*, Vol. 114 (November 2012), pp. 771-781. Cooper Ornithological Society. (http://www.fs.fed.us/psw/publications/miller/psw_2012_miller001.pdf)

ⁱⁱ DellaSalla et al, 2015, Climate Change May Trigger Broad Shifts in North America's Pacific Coastal Rainforests.