



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
510 Desmond Dr. SE, Suite 102
Lacey, Washington 98503

DEC 11 2018

In Reply Refer To:

01EWF00-2015-F-0251-R001

X-Ref: 13410-2009-F-0082
13410-2009-F-0104

L.M. Foster
Director, Fleet Environmental Readiness Division
Department of the Navy
U.S. Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

Dear Mr. Foster:

This letter transmits the U. S. Fish and Wildlife Service's (Service) reinitiated Biological Opinion (Opinion) on the U.S. Navy's (Navy) proposed Northwest Training and Testing program that occurs in the offshore waters of northern California, Oregon, and Washington, the inland waters of Puget Sound, and portions of the Olympic Peninsula, and its effects on the bull trout (*Salvelinus confluentus*), designated bull trout critical habitat, the marbled murrelet (*Brachyramphus marmoratus*), and the short-tailed albatross (*Phoebastria albatrus*). The Opinion also addresses the U.S. Forest Service's Special Use Permit for the Navy's Pacific Northwest Electronic Warfare Range activities within the Olympic National Forest. Formal consultation on the proposed actions was conducted in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA).

On January 20, 2015, the Service received your request for formal consultation on the effects to the bull trout and the marbled murrelet and for informal consultation on the effects to the northern spotted owl and the short-tailed albatross. The Service initiated formal consultation on June 4, 2015. On October 30, 2015, the Service informed John Mosher of your office, via email, that we did not concur with your "may affect, not likely to adversely affect" determination for the northern spotted owl (*Strix occidentalis caurina*) and the short-tailed albatross. The Navy then requested formal consultation on those species on November 3, 2015. In our final analysis of the effects to the northern spotted owl, we concurred with the Navy's original "not likely to adversely affect" determination for this species.

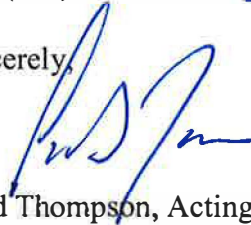
On July 24, 2017, the Service received your proposal to conduct certain training farther offshore as a conservation measure to replace Terms and Conditions from the original Opinion (01EWF00-2015-F-0251). On December 10, 2017, the Service received your request to reinitiate consultation to incorporate the proposed conservation measures in lieu of Reasonable and Prudent Measures 2 and 3 from the original Opinion.

The enclosed Opinion is based on information provided in a biological evaluation, the Draft, Final and Supplemental Environmental Impact Statements, the Final Environmental Assessment for the Pacific Northwest Electronic Warfare Range, as well as through information shared through numerous meetings, telephone conversations, letters, and emails, and through other sources cited in the Opinion. A complete record of this consultation is on file at the Service's Washington Fish and Wildlife Office in Lacey, Washington.

If you have any questions regarding the enclosed Opinion, our response to your concurrence request(s), or our shared responsibilities under the ESA, please contact Emily Teachout at (360) 753-9583 or emily_teachout@fws.gov, or Lee Corum at (360) 753-5835 or lee_corum@fws.gov.

Sincerely,

for



Brad Thompson, Acting State Supervisor
Washington Fish and Wildlife Office

Enclosure

cc:

- NB Kitsap-Bangor, Silverdale, WA (C. Kunz)
- NB Kitsap-Bangor, Silverdale, WA (A. Balla-Holden)
- NAS Whidbey Island, Oak Harbor, WA (J. Mosher)
- EERD Navy Pentagon, Washington D.C. (M. K. Ebert)

Endangered Species Act - Section 7 Consultation

BIOLOGICAL OPINION

U.S. Fish and Wildlife Service Reference:
01EWF00-2015-F-0251-R001

Navy's Northwest Training and Testing Activities

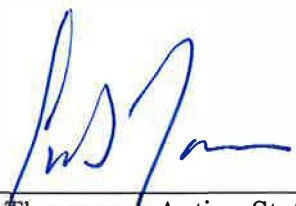
Offshore Waters of Northern California, Oregon, and Washington,
the Inland Waters of Puget Sound,
and Portions of the Olympic Peninsula

Federal Action Agency:

Department of the Navy

Consultation Conducted By:

U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
Lacey, Washington



for

Brad Thompson, Acting State Supervisor
Washington Fish and Wildlife Office

11 DECEMBER 2018
Date

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CI	Confidence Level
DEIS	Draft Environmental Impact Statement
DICASS	Directional command activated sonobuoy system
ESA	Endangered Species Act of 1973, as amended (16 U.S.C. 1531 <i>et seq.</i>)
FEIS	Final Environmental Impact Statement
FMO	foraging, migration, and overwinter
IEER	Improved extended echo ranging
km ²	square kilometers
MF	Mid-frequency
n/a	Not applicable (Navy did not provide distances)
Navy	U.S. Department of the Navy
nm ²	nautical mile squared
NWFP	Northwest Forest Plan
NWTT	Northwest Training and Testing
OCNMS	Olympic Coast National Marine Sanctuary
Opinion	Biological Opinion
PCBs	polychlorinated biphenyls
RPM	Reasonable and Prudent Measure
Service	U.S. Fish and Wildlife Service
SPL	sound pressure levels
spotted owl	northern spotted owl
SUS	Sound Underwater Signal

1 INTRODUCTION

This document represents the U. S. Fish and Wildlife Service’s (Service) Biological Opinion (Opinion) based on our review of the proposed U.S. Department of the Navy’s (Navy) Northwest Training and Testing (NWTT) activities located in the offshore areas of northern California, Oregon, and Washington, the inland waters of Puget Sound, portions of the Olympic Peninsula, as well as part of Western Behm Canal in southeast Alaska. The Opinion also includes the analysis for the U.S. Forest Service’s Special Use Permit for the Navy’s Pacific Northwest Electronic Warfare Range activities within the Olympic National Forest. We evaluated the effects of the proposed action on the bull trout (*Salvelinus confluentus*), designated bull trout critical habitat, the marbled murrelet (*Brachyramphus marmoratus*), the northern spotted owl (spotted owl) (*Strix occidentalis caurina*) and the short-tailed albatross (*Phoebastria albatrus*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA).

On January 20, 2015, the Service received the Navy’s request for formal consultation on effects to the bull trout and the marbled murrelet and for informal consultation on effects to the spotted owl and the short-tailed albatross. The Service initiated consultation on June 4, 2015. On October 30, 2015, the Service informed the Navy, via email, that we did not concur with your “may affect, not likely to adversely affect” determination for the spotted owl and the short-tailed albatross. The Navy then requested formal consultation on the spotted owl and the short-tailed albatross on November 3, 2015. In our final analysis of the effects to the spotted owl, we concurred with the Navy’s original “not likely to adversely affect” determination for this species.

This Opinion is a reinitiation of a 2016 Opinion (USFWS 2016), which was based on information from: the January 2015 Biological Evaluation, the January 2014 Draft Environmental Impact Statement (DEIS), the December 2014 Supplement to the DEIS, the October 2015, Final Environmental Impact Statement (FEIS), the September 2014 Final Environmental Assessment for the Pacific Northwest Electronic Warfare Range, numerous meetings, telephone conversations and emails, as well as from other sources of information as detailed below. A complete record of this consultation is on file at the Service’s Washington Fish and Wildlife Office in Lacey, Washington.

2 CONSULTATION HISTORY

- The Service issued a Biological Opinion on the U.S. Navy’s proposed NWTT program on July 21, 2016.
- On July 24, 2017, the Service received a letter from the Navy requesting that Service amend the Opinion to replace reasonable and prudent measures 2 and 3 with geographic restrictions on where the Navy would perform certain activities within their training and testing activities.
- On October 3, 2017, the Service replied to the Navy’s July 18, 2017 letter and suggested that the Navy request reinitiation of formal consultation to allow the Service to incorporate and evaluate the proposed changes to the action.

- On December 10, 2017, the Service received a letter from the Navy requesting reinitiation of formal consultation citing the proposed changes to the action.

3 CONCURRENCES

Changes to the proposed action do not affect the concurrences provided in the original Biological Opinion. See the 2016 Opinion (USFWS 2016, pp. 3-19) for concurrences for western snowy plover, streaked horned lark, northern spotted owl, and designated bull trout critical habitat.

4 BIOLOGICAL OPINION

5 DESCRIPTION OF THE PROPOSED ACTION

A federal action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas (50 CFR 402.02). The proposed action involves two inter-related federal actions; the Navy's training and testing activities in the Pacific Northwest and the issuance of the Forest Service's Special Use Permit for Electronic Warfare Range activities on the Olympic National Forest. The following information sources were relied upon to characterize the description of the proposed action: January 2014, DEIS; December 2014, Supplement to the DEIS; January 2015 Biological Evaluation; October 2015, FEIS, September 2014, the Final Environmental Assessment for the Pacific Northwest Electronic Warfare Range, and a letter from the Navy to the Service's State Supervisor Eric Rickerson dated July 18, 2017 (Foster, L.M., in litt. 2017). Additional clarification to the proposed action was provided in numerous emails, phone calls, and meetings as described above in the Consultation History.

5.1 Navy's Northwest Training and Testing Activities

The Navy's proposed action is identical to the action described in the 2016 Opinion (USFWS 2016, pp. 20-47) except for the addition of the conservation measures that the following activities will only be conducted beyond 50 nautical miles from shore during the winter (October – March):

- All gunnery exercise events using explosive bin E1 medium-caliber projectiles
- All gunnery exercise events using explosive bin E3/E5 large-caliber projectiles
- All maritime patrol aircraft testing events using explosive bin E3 SUS sonobuoys
- All maritime patrol aircraft testing events using explosive bin E4 IEER sonobuoys

6 ACTION AREA

The proposed changes to the action occur within the action area of the 2016 Opinion and will not expand the area that will be affected directly or indirectly by the federal action. Therefore, action area remains based on the geographic extent of underwater and in-air sound and the distance that floating debris (specifically plastics) will travel. See the 2016 Opinion (USFWS 2016, pp. 48-53) for a more detailed description.

7 ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATIONS

7.1 Jeopardy Determination

The following analysis relies on the following four components: 1) the *Status of the Species*, which evaluates the rangewide condition of the listed species addressed, the factors responsible for that condition, and the species' survival and recovery needs; 2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; 3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and 4) *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of listed species in the wild.

The jeopardy analysis in this Opinion emphasizes the rangewide survival and recovery needs of the listed species and the role of the action area in providing for those needs. It is within this context that we evaluate the significance of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

For species with final Recovery Plans, the Service's consultation handbook (USFWS and NMFS 1998) provides the following additional guidance: "When an action appreciably impairs or precludes the capacity of a recovery unit from providing both the survival and recovery function assigned to it, that action may represent jeopardy to the species." If a Recovery Plan establishes Recovery Units, our analysis considers the relationship of the Recovery Unit to both the survival and recovery of the listed species as a whole.

8 STATUS OF THE SPECIES - RANGEWIDE

8.1 Bull Trout

The bull trout was listed as a threatened species in the coterminous United States in 1999. Throughout its range, the bull trout is threatened by the combined effects of habitat degradation, fragmentation, and alteration (associated with dewatering, road construction and maintenance, mining, grazing, the blockage of migratory corridors by dams or other diversion structures, and poor water quality), incidental angler harvest, entrainment, and introduced non-native species (64 FR 58910 [Nov. 1, 1999]). Since the listing of bull trout, there has been very little change in the general distribution of bull trout in the coterminous United States, and we are not aware that any known, occupied bull trout core areas have been extirpated (USFWS 2015c, p. iii).

The 2015 recovery plan for bull trout identifies six recovery units of bull trout within the listed range of the species (USFWS 2015c, p. 34). Each of the six recovery units are further organized into multiple bull trout core areas, which are mapped as non-overlapping watershed-based polygons, and each core area includes one or more local populations. Within the coterminous United States we currently recognize 109 currently occupied bull trout core areas, which comprise 600 or more local populations (USFWS 2015c, p. 34). Core areas are functionally similar to bull trout metapopulations, in that bull trout within a core area are much more likely to interact, both spatially and temporally, than are bull trout from separate core areas.

The Service has also identified a number of marine or mainstem riverine habitat areas outside of bull trout core areas that provide foraging, migration, and overwinter (FMO) habitat that may be shared by bull trout originating from multiple core areas. These shared FMO areas support the viability of bull trout populations by contributing to successful overwintering survival and dispersal among core areas (USFWS 2015c, p. 35).

For a detailed account of bull trout biology, life history, threats, demography, and conservation needs, refer to Appendix C: Status of the Species: Bull Trout in the 2016 Opinion (USFWS 2016).

8.2 Marbled Murrelet

Marbled murrelet populations have declined at an average rate of 1.2 percent per year since 2001. The most recent annual population estimate for the entire Northwest Forest Plan (NWFP) area ranged from about 16,600 to 22,800 marbled murrelets during the 14-year period, with a 2013 estimate of 19,700 marbled murrelets (95 percent confidence interval [CI]: 15,400 to 23,900 birds) (Falxa and Raphael 2015, p.7). While the overall trend estimate was negative (-1.2 percent per year), this trend was not conclusive because the confidence intervals for the estimated trend overlap zero (95 percent CI:-2.9 to 0.5 percent), indicating the marbled murrelet population may be declining, stable, or increasing at the range-wide scale (Falxa and Raphael 2015, pp. 7-8). Annual reports with population estimates have been released since the 2015 report by Falxa and Raphael (2015); however, these reports did not also provide trend information. Therefore, some of the data cited in this Opinion was used to predict current abundance of marbled murrelets based on the most recent population abundance estimates, but the trend information from previous reports (Falxa and Raphael 2015) was used to predict future

population estimates over the duration of this Opinion (20 years). Due to funding restrictions, the NWFP Effectiveness Monitoring will only collect a complete sampling data set every other year, meaning rangewide population and trend information will only be available every other year.

Marbled murrelet population size and marine distribution during the summer breeding season is strongly correlated with the amount and pattern (large contiguous patches) of suitable nesting habitat in adjacent terrestrial landscapes (Falxa and Raphael 2015, p. 156). Monitoring of marbled murrelet nesting habitat within the NWFP area indicates nesting habitat has declined from an estimated 2.53 million acres in 1993 to an estimated 2.23 million acres in 2012, a total decline of about 12.1 percent (Falxa and Raphael 2015, p. 89). The largest and most stable marbled murrelet subpopulations now occur off the coast of Oregon and northern California, while subpopulations in Washington have experienced the greatest rates of decline (-5.1 percent per year; 95 percent CI: -7.7 to -2.5 percent) (Falxa and Raphael 2015, p. 8-11). Rates of nesting habitat loss have also been highest in Washington, primarily due to timber harvest on non-Federal lands (Falxa and Raphael 2015, p. 124), which suggests that the loss of nesting habitat continues to be an important limiting factor for the recovery of marbled murrelets.

Factors affecting marbled murrelet fitness and survival in the marine environment include: reductions in the quality and abundance of marbled murrelet forage fish species through overfishing and marine habitat degradation; marbled murrelet by-catch in gillnet fisheries; marbled murrelet entanglement in derelict fishing gear; oil spills; and high levels of underwater sound pressure generated by pile-driving and underwater detonations (USFWS 2009a, pp. 27-67). While all of these factors are recognized as stressors to marbled murrelets in the marine environment, the extent that these stressors affect marbled murrelet populations is unknown (USFWS 2012b). As with nesting habitat loss, marine habitat degradation is most prevalent in the Puget Sound area where anthropogenic activities (e.g., shipping lanes, boat traffic, shoreline development) are an important factor influencing the marine distribution and abundance of marbled murrelets in Conservation Zone 1 (Falxa and Raphael 2015, p. 163).

For a detailed account of marbled murrelet biology, life history, threats, demography, and conservation needs, refer to Appendix D: Status of the Species: Marbled Murrelet in the 2016 Opinion (USFWS 2016).

8.3 Short-tailed Albatross

The range-wide population of the short-tailed albatross has been growing steadily. Based on surveys at the breeding colonies on Torishima, the three-year running average of the population growth rate between 2000 and 2013 ranges from 5.2 to 9.4 percent (USFWS 2014, p. 9). To date, conservation efforts have largely focused on addressing the threats of habitat alteration and loss due to catastrophic events and commercial fishing. Less effort has been invested to alleviate threats to short-tailed albatross from climate change, ocean regime shift, and contaminants including plastics.

Over three-quarters of the breeding population of short-tailed albatross nest on Torishima (USFWS 2014, p. 3). There have been volcanic eruptions on Torishima that have killed large numbers of birds and destroyed nesting habitat (Austin Jr 1949, p. 288). It is estimated that a volcanic eruption on Torishima in the near future could kill as much as 54 percent of the world's population of short-tailed albatross (USFWS 2008b, p. 17). Conservation strategies for short-tailed albatross emphasize the importance of establishing breeding colonies on other islands to hedge against losing a large proportion of short-tailed albatross from a single catastrophic event (USFWS 2008b). By-catch of short-tailed albatross by commercial fisheries continues to be a major conservation concern; efforts to address the threat are primarily focused on raising awareness and use of seabird deterrents in the industry (USFWS 2014, p. 15).

The training and testing area along the west coast of the United States is used by juvenile and sub-adult short-tailed albatross. As birds age they appear to spend more time in other parts of the species range, especially in the marine waters of Alaska and the Aleutian Islands. The action area does not include any current breeding habitat for short-tailed albatross.

For a detailed account of short-tailed albatross biology, life history, threats, demography, and conservation needs, refer to Appendix E: Status of the Species: Short-tailed Albatross in the 2016 Opinion (USFWS 2016).

9 ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the Action Area that have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

9.1 Status of Bull Trout in the Action Area

We have not gained additional information on the status of bull trout in the action area since the 2016 Opinion; see the 2016 Opinion (USFWS 2016, pp. 57-65) for a detailed description.

9.2 Status of the Marbled Murrelet in the Action Area

Ongoing surveys have provided new data on the status of marbled murrelet in the action area since the 2016 Opinion (see Tables 1 through 5). See the 2016 Opinion (USFWS 2016, pp. 65-84) for a detailed description of the status of marbled murrelets in the action area.

Table 1. Marbled murrelet population estimates and densities in Conservation Zone 1 from 2001 to 2017

Year	Conservation Zone 1 - Stratum							
	All		1		2		3	
	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate
2001	2.55	8,936	4.51	3,809	1.76	2,111	2.07	3,016
2002	2.79	9,758	7.21	6,092	1.88	2,248	0.97	1,419
2003	2.43	8,495	6.64	5,617	1.44	1,721	0.79	1,156
2004	1.56	5,465	3.83	3,241	1.51	1,807	0.29	417
2005	2.28	7,956	2.50	2,114	2.43	2,895	2.02	2,947
2006	1.69	5,899	2.76	2,333	1.42	1,693	1.28	1,873
2007	2.00	6,985	3.45	2,912	1.22	1,453	1.80	2,620
2008	1.34	4,699	3.57	3,019	0.90	1,073	0.42	607
2009	1.61	5,623	3.81	3,221	0.69	822	1.08	1,580
2010	1.26	4,393	2.00	1,694	1.78	2,128	0.39	571
2011	2.06	7,187	5.58	4,717	1.24	1,484	0.68	986
2012	2.41	8,442	7.17	6,056	1.51	1,799	0.40	587
2013	1.26	4,395	2.38	2,010	0.66	784	1.10	1,600
2014	0.81	2,822	1.26	1,063	1.27	1,521	0.16	238
2015	1.23	4,290	2.22	1,875	1.95	2,321	0.06	94
2016	1.32	4,614	2.69	2,276	1.66	1,975	0.25	362
2017	No data	No data	No data	No data	No data	No data	No data	No data

Sources: (Lance and Pearson 2016, p. 4; Pearson et al. 2018, pp. 10-14)

Table 2. Marbled murrelet population estimates and densities in Conservation Zone 2 from 2001 to 2017

Year	Conservation Zone 2 – Stratum					
	All		1		2	
	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate
2001	0.90	1,518	1.43	1,040	0.50	478
2002	1.23	2,031	2.45	1,774	0.28	258
2003	2.41	3,972	2.64	1,912	2-23	2,061
2004	1.82	3,009	3.37	2,444	0.61	565
2005	1.56	2,576	2.79	2,018	0.60	558
2006	1.46	2,381	2.26	1,638	0.80	743
2007	1.54	2,535	2.85	2,065	0.51	470
2008	1.17	1,929	2.58	1,872	0.06	57
2009	0.77	1,263	1.61	1,166	0.11	97
2010	0.78	1,286	1.34	968	0.34	318
2011	0.72	1,189	1.31	952	0.26	237
2012	0.72	1,186	1.18	853	0.36	333
2013	0.77	1,271	1.61	1,163	0.12	108
2014	1.32	2,176	2.88	2,086	0.10	90
2015	1.94	3,204	2.85	2,064	1.23	1,140
2016	No data	No data	No data	No data	No data	No data
2017	1.07	1,758	2.13	1,541	0.24	218

(Pearson et al. 2018, pp. 10-14)

Table 3. Marbled murrelet population estimates and densities in Conservation Zone 3 from 2001 to 2017

Year	Conservation Zone 3 - Stratum					
	All		1		2	
	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate
2001	4.64	7,396	1.72	1,140	6.70	6,257
2002	3.58	5,716	0.70	460	5.62	5,256
2003	3.69	5,881	1.19	788	5.45	5,093
2004	5.05	8,058	1.72	1,137	7.41	6,921
2005	3.67	5,854	0.81	534	5.69	5,320
2006	3.73	5,953	1.03	684	5.64	5,269
2007	2.52	4,018	0.53	348	3.93	3,670
2008	3.86	6,153	0.34	223	6.35	5,930
2009	3.70	5,896	0.65	430	5.85	5,467
2010	4.50	7,184	1.07	708	6.93	6,476
2011	4.66	7,436	0.98	648	7.26	6,788
2012	3.99	6,359	0.90	591	6.17	5,768
2013	4.94	7,880	0.99	655	7.73	7,225
2014	5.54	8,841	1.48	976	8.42	7,864
2015	No data	No data	No data	No data	No data	No data
2016	4.27	6,813	0.86	570	6.68	6,244
2017	No data	No data	No data	No data	No data	No data

(Pearson et al. 2018, pp. 10-14)

Table 4. Marbled murrelet population estimates and densities in Conservation Zone 4 from 2001 to 2017

Year	Conservation Zone 4 - Stratum					
	All		1		2	
	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate
2001	3.28	3,807	4.57	3,351	1.07	456
2002	4.11	4,766	5.19	3,805	2.26	961
2003	3.81	4,412	4.96	3,640	1.82	773
2004	4.27	4,952	5.33	3,911	2.45	1,041
2005	3.17	3,673	4.49	3,292	0.90	381
2006	3.41	3,953	4.82	3,538	0.98	416
2007	3.23	3,749	4.73	3,470	0.66	279
2008	4.56	5,285	6.39	4,685	1.41	600
2009	3.79	4,388	5.30	3,892	1.17	497
2010	3.16	3,665	3.77	2,769	2.11	896
2011	5.20	6,023	6.72	4,933	2.56	1,090
2012	4.28	4,960	6.05	4,439	1.23	521
2013	5.22	6,046	7.38	5,418	1.48	629
2014	No data	No data	No data	No data	No data	No data
2015	7.54	8,743	9.90	7,262	3.48	1,481
2016	No data	No data	No data	No data	No data	No data
2017	7.38	8,546	9.19	6,740	4.25	1,807

(Pearson et al. 2018, pp. 10-14)

Table 5. Marbled murrelet population estimates and densities in Conservation Zone 5 from 2001 to 2017

Year	Conservation Zone 5 - Stratum					
	All		1		2	
	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate	Density (birds/km ²)	Population Estimate
2001	0.12	106	0.20	87	0.04	19
2002	0.28	249	0.51	225	0.05	24
2003	0.06	48	0.11	48	0.00	--
2004	0.10	88	0.09	40	0.11	47
2005	0.17	249	0.14	62	0.20	87
2006	Interpolated	89	Interpolated	69	Interpolated	65
2007	0.03	30	0.07	30	0.00	--
2008	0.08	67	0.07	29	0.09	38
2009	Interpolated	90	Interpolated	55	Interpolated	36
2010	Interpolated	114	Interpolated	81	Interpolated	33
2011	0.16	137	0.24	107	0.07	30
2012	Interpolated	104	Interpolated	89	Interpolated	15
2013	0.08	71	0.16	71	0.00	--
2014	No data	No data	No data	No data	No data	No data
2015	No data	No data	No data	No data	No data	No data
2016	No data	No data	No data	No data	No data	No data
2017	0.99	872	0.77	339	1.21	533

(Pearson et al. 2018, pp. 10-14)

9.3 Status of the Short-tailed Albatross in the Action Area

We have not gained additional information on the status of short-tailed albatross in the action area since the 2016 Opinion; see the 2016 Opinion (USFWS 2016, pp. 85-90) for a detailed description.

9.4 Climate Change

We have not gained information that changes our discussion of climate change in the environmental baseline since the 2016 Opinion. For a detailed description of climate change as part of the environmental baseline for the proposed action, see the 2016 Opinion (USFWS 2016, pp. 90-94).

9.5 Previously Consulted-on Effects

Since the 2016 Opinion, the Service has consulted on many federal projects within the action area. Those projects include shoreline construction, timber sales, and infrastructure construction. Other notable consultations since the 2016 Opinion include an Opinion on Treaty and non-Treaty salmon fishing in Puget Sound from 2017 through 2036 which analyzed the entanglement effects of active and derelict fishing gear to marbled murrelets and an Opinion on EA-18G “Growler”

flight operations at Naval Air Station Whidbey Island which analyzed the effects of 30 years of overflight disturbance to marbled murrelets. Over the twenty years of the fisheries Opinion and across all types of salmon fisheries, the Service expects 273 marbled murrelets to be captured and for those captures to result in the death of 137 adult, sub-adult, and unfledged marbled murrelets. Over the thirty years of Growler flight operations in Puget Sound, the Service expects harassment of marbled murrelets from exposure to 1,981,560 overflight incidents. As a result of that harassment the Service expects some adult and subadult marbled murrelets to be more susceptible to injury and mortality and an increase in the likelihood that chicks will die. For further discussion of previously consulted-upon effects, see the 2016 Opinion (USFWS 2016, pp. 94-96).

10 EFFECTS OF THE ACTION

10.1 Introduction

The effects of the action¹ refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

We expect the effects of the action with the proposed changes to be largely the same as the effects described in the 2016 Opinion (USFWS 2016, pp. 97-247) with only a few changes. Restricting gunnery exercise trainings and maritime patrol testing events to farther than 50 nm from shore during the winter will eliminate marbled murrelet exposure to stressors associated with those activities. We are not reasonably certain that marbled murrelets are present farther than 50 nm from shore in the winter. We therefore are not reasonably certain that marbled murrelets will be exposed to stressors that occur farther than 50 nm from shore.

10.2 Summary of Effects to Bull Trout, Marbled Murrelets, and Short-tailed Albatross

The 2016 Opinion has a summary of the expected effects to bull trout, marbled murrelets, and short-tailed albatross (USFWS 2016, pp. 245-247). The following table (Table 6) summarizes the changes between the 2016 Opinion and the expected effects of the current proposed action.

¹ In accordance with Service national policy (USFWS and NMFS 1998, p. 1-6) and congressional intent [H.R. Conf. Rep. No. 697, 96th Congress, 2nd Session 12 (1979)], the following analysis relies on best available information and provides the benefit of the doubt to the listed species in light of uncertainty or data gaps (see also p. 19952, middle column, of the preamble to the implementing regulations for section 7 of the ESA at 50 CFR 402; 51 FR 19926).

Table 6. Summary of changes to reasonably certain adverse effects between the 2016 Opinion and the current proposed action

<i>Explosions (In-air, including all stressors from explosive projectiles)</i>					
Offshore	Activity / Exercise	2016 Opinion		Current Proposed Action	
		Marbled Murrelet Groups	km ² / nm ²	Marbled Murrelet Groups	km ² / nm ²
E1	Med-caliber explosive projectiles from Surface-to-Air and Surface-to-Surface Gunnery Exercises	18.8	1,988 / 580	0	n/a
E5 / E3	Lg-caliber explosive projectiles from Surface-to-Air and Surface-to-Surface Gunnery Exercises	4.8	508 / 148	0	n/a
<i>Explosions (Underwater)</i>					
E3	Explosive sonobuoy for Maritime Patrol Aircraft (Sound Underwater Signal)	1.08	115 / 33.5	0	n/a
E4	Explosive Sonobuoy for Maritime Patrol Aircraft (Improved Extended Echo Ranging)	2.77	293 / 85.5	0	n/a
Totals		27.5	2,904 / 847	0	n/a

11 CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Within Puget Sound, all State, tribal, local, and private actions are required to obtain a U.S. Army Corps of Engineers permit for work conducted in, over, or under navigable waters under the authority of Section 10 of the Rivers and Harbors Act and/or for the discharge of dredged or fill material under Section 404 of the Clean Water Act. Therefore new actions will require section 7 consultation with the Service.

However, bull trout and marbled murrelets will continue to be affected by ongoing activities within Puget Sound and along rivers and streams draining into Puget Sound. Threats to Puget Sound habitat quality include population growth, shoreline development and armoring, urbanization that increases the amount of impervious surfaces, pressures on water supplies, filling of wetlands, and water and air pollution (Washington Department of Ecology 2015). Within the next 5 years, the population in the Puget Sound region is estimated to grow by 700,000 people.

Population increases results in higher levels of toxic chemicals entering Puget Sound from surface runoff, groundwater discharges, and municipal and wastewater outfalls. These contaminants include oil, grease, PCBs, and heavy metals. Many areas surrounding Puget Sound are highly urbanized with development spreading to the surrounding areas and converting agriculture and forested lands to impervious surfaces. Degraded water quality results in metabolic stress; avoidance responses which prevent or discourages free movement, reduced locomotor performance, and impaired olfactory responsiveness which may compromise growth, long-term survival, and reproductive potential.

Within the Olympic Military Operations Area, non-federal lands are managed primarily for timber production. Some non-federal lands have no restrictions on harvest of suitable marbled murrelet habitat. Therefore, a landowner could harvest timber (habitat) without a pre-harvest survey, potentially resulting in the loss of suitable habitat for marbled murrelets.

Marbled murrelets and short-tailed albatross in the Offshore Area are threatened by continued overfishing, pollution, shipping, and oil and gas development (World Wildlife Federation 2015). Many of these actions are currently present, but are expected to increase in the future. Approximately 90 percent of the world's fisheries are already overfished threatening the ocean life and habitat. The shipping industry is increasing the size of ships carrying containers and cargo goods increase oil spills, dumping of rubbish ballast water, and oily waste. Oil and gas exploration poses a major threat to sensitive marine habitats and species. The Offshore Area and the oceans are dumping grounds for all the sewage, garbage, pesticides, plastics, and other pollutants that threaten short-tailed albatross and marbled murrelets.

For short-tailed albatross, contaminants and floating plastics and debris will continue to pose a threat to their recovery as both affect survival through reduced growth, decreased reproduction, and egg and chick survival, thereby limiting their population growth. Bull trout and marbled murrelets will continue to have direct and indirect effects to the species and their designated critical habitat from human population growth and its associated urbanization and development through habitat degradation, fragmentation, degraded water quality, and impacts to marine forage fish. These effects, especially in the Puget Sound area, will likely adversely influence reproduction and abundance of marbled murrelets, and the distribution and abundance of bull trout.

12 INTEGRATION AND SYNTHESIS

The Integration and Synthesis section is the final step in assessing the risk posed to listed resources as a result of implementing the proposed action. In this section, we consider the significance of the effects of the proposed action, taken together with cumulative effects, relative to the status and conservation needs of listed resources and the conservation role of the action area. This analysis informs our biological opinion as to whether the proposed action is likely to appreciably reduce the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution.

12.1 Bull Trout

The environmental baseline, status of the species, effects of the action, and cumulative effects relating to bull trout have not changed since the 2016 Opinion. See the 2016 Opinion for a more detailed integration and synthesis (USFWS 2016, pp. 249-251). As in the 2016, we do not anticipate the changed proposed action will appreciably reduce the likelihood of persistence of bull trout at the core area or recovery unit scale.

12.2 Marbled Murrelet

The changes proposed to the Navy's Training and Testing program will decrease the expected exposure of marbled murrelets to stressors associated with the action. Since the exposure to stressors will decrease and the status of marbled murrelets rangewide or in the action area has not changed substantially since the 2016 Opinion, we do not anticipate the changed proposed action will appreciably reduce the likelihood of persistence of marbled murrelets at the rangewide or recovery unit scales. See the 2016 Opinion for a more detailed integration and synthesis (USFWS 2016, pp. 251-265). See the 2016 Opinion for a more detailed integration and synthesis (USFWS 2016, pp. 265-266).

12.3 Short-tailed Albatross

The environmental baseline, status of the species, effects of the action, and cumulative effects relating to short-tailed albatross have not changed since the 2016 Opinion. See the 2016 Opinion for a more detailed integration and synthesis (USFWS 2016, pp. 265-266). As in the 2016, we do not anticipate the changed proposed action will noticeably alter the current population size or the increasing population trend and will therefore not appreciably reduce the likelihood of persistence or recovery of short-tailed albatross.

13 CONCLUSION

13.1 Bull Trout

After reviewing the current status of the bull trout, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's Opinion that implementation of the Navy's NWTT Activities, as proposed, is not likely to jeopardize the continued existence of the bull trout. Critical habitat for bull trout is designated in the action

area and the Service concurs with the Navy's determination that the proposed action is not likely to adversely affect designated critical habitat for the bull trout. Therefore, the proposed action is not likely to destroy or adversely modify critical habitat for the bull trout.

13.2 Marbled Murrelet

After reviewing the current status of the marbled murrelet, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's Opinion that implementation of the Navy's NWT Activities, as proposed, is not likely to jeopardize the continued existence of the marbled murrelet. While critical habitat for the marbled murrelet has been designated in the action area, no effects to the critical habitat are anticipated. Therefore, the proposed action is not likely to destroy or adversely modify designated critical habitat for the marbled murrelet.

13.3 Short-tailed Albatross

After reviewing the current status of the short-tailed albatross, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's Opinion that implementation of the Navy's NWT Activities, as proposed, is not likely to jeopardize the continued existence of the short-tailed albatross. The Service has not designated critical habitat for the short-tailed albatross.

14 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined under section 3(19) of the ESA to mean "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is further defined by the Service as an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Harass is defined by the ESA as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be a prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Navy for the exemption in section 7(o)(2) to apply. The Navy has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Navy 1) fails to assume and implement the terms and conditions or 2) fails to adhere to the terms and conditions of the incidental take

statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Navy must report the progress of the action and its impact on the species to the Service as specified in this Incidental Take Statement pursuant to the requirements of 50 CFR 402.14(i)(3).

15 FORM AND AMOUNT OR EXTENT OF TAKE

15.1 Bull Trout

Changes to the proposed action will not alter the form or amount of incidental take of bull trout. See the 2016 Opinion for a description of the anticipated take of bull trout (USFWS 2016, pp. 267-268).

15.2 Marbled Murrelet

Based on the *Effects of the Action* analysis above and in the 2016 Opinion (USFWS 2016, pp. 97-247), incidental take of the marbled murrelet is reasonably certain to occur in the form of harm and harass. Pursuant to the authority of section 402.14(i)(1)(i) of the implementing regulations for section 7 of the ESA, a surrogate can be used to express the amount or extent of anticipated take if the following criteria are met: the causal link between the surrogate and take is described; an explanation is provided as to why it is not practical to express the amount or extent of take or to monitor take-related impacts in terms of individuals of the listed species; and a clear standard is set for determining when the level of anticipated take has been exceeded.

As described in the effects analysis, we anticipate that the action will result in the take of 57 marbled murrelets. However, in this case, a coextensive surrogate based on specific project components is necessary to express the extent of take because it is not practical to monitor take impacts in terms of individual marbled murrelets due to the extremely low likelihood of finding dead or injured individuals in the aquatic environment. The coextensive surrogate is the direct source of the stressors causing the taking, and a clear standard for take exceedance can be established under the monitoring requirements (below) using this surrogate. On that basis, the extent of take of the marbled murrelet covered under this Incidental Take Statement is described below by stressor category using a coextensive surrogate.

15.2.1 MF8 Sonar

- The extent of take (in the form of harm) of the marbled murrelet is 40 hours per year of MF8 sonar emissions (half in the summer, half in the winter, on average over a 5-year period) within the Inland Waters Subunit over 20 years.

15.2.2 E3 Detonations

- The extent of take (in the form of harm) of the marbled murrelet is 6 E3 detonations (3 at each site) per year (half of each explosive class in the summer, half in the winter, on average over a 5-year period) at both the Hood Canal and the Crescent Harbor Explosive Ordnance Disposal sites over 20 years.

15.2.3 Helicopter Rotor Wash

- The extent of take (in the form of harass) of the marbled murrelet is 110 events per year associated with training activities conducted in Crescent Harbor and at Navy 7 training areas over 20 years.

15.2.4 Small-caliber Non-Explosive Projectiles – Physical Strikes

- The extent of take (in the form of harm) of the marbled murrelet is 1,697 instances (8,485 small-caliber non-explosive projectiles) per year (on average over a 5-year period) within 50 nm from shore in the Offshore Area Subunit during the winter over 20 years.

15.2.5 Medium-caliber Non-Explosive Projectiles – Physical Strikes and Projectile Shock Waves

- The extent of take (in the form of harm) of the marbled murrelet is 600 instances (3,000 medium-caliber non-explosive projectiles) per year (on average over a 5-year period) within 50 nm from shore the Offshore Area Subunit during the winter over 20 years.

15.2.6 Large-caliber Non-Explosive Projectiles – Physical Strikes, Projectile Shock Waves, and Muzzle Blasts

- The extent of take (in the form of harm) of the marbled murrelet is 41 instances (205 large-caliber non-explosive projectiles) per year (on average over a 5-year period) within 50 nm from shore in the Offshore Area Subunit during the winter over 20 years.

15.3 **Short-tailed Albatross**

Changes to the proposed action will not alter the form or amount of incidental take of short-tailed albatross. See the 2016 Opinion for a description of the anticipated take of short-tailed albatross (USFWS 2016, pp. 270-271).

16 **EFFECT OF THE TAKE**

16.1 **Bull Trout**

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the bull trout.

16.2 **Marbled Murrelet**

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the marbled murrelet.

16.3 Short-tailed Albatross

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the short-tailed albatross.

17 REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize the impacts of the taking on the bull trout, marbled murrelet, and the short-tailed albatross.

1. Monitor implementation of the proposed action and report the results of that monitoring program to insure that the level of take exemption provided under this Incidental Take Statement is not exceeded.

18 TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Navy must comply with the following terms and conditions, which implement the RPMs described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. To implement RPM 1, the Navy shall submit a monitoring report by February 15 of each year providing monitoring information on Navy training and testing activities implemented in the previous year. The monitoring report shall include at a minimum, the following information for each listed species by training and testing stressor identified above under the *Form and Amount or Extent of Take* section:
 - a. Stressor/activity name
 - b. Date and location where the stressor/activity occurred
 - c. Number and size of projectiles used, number and size of detonations, hours of MF8 sonar emissions, and explosive sonobuoy counts.

19 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides the following recommendations:

1. To assist the Service in analyzing the effects of the Navy's activities on listed species, we request that the following information be provided along with the above annual monitoring report. The Service is available to discuss best information to monitor.
 - a. For each activity conducted:
 - i. Activity name as described in the proposed action
 - ii. Number of events conducted throughout the year
 - iii. Location of each event – as specific as possible (i.e. distance offshore)
 - iv. Date event occurred – including beginning and end dates
 - v. Time event occurred, providing as much information as possible on when specific portions of the event occurred
 - vi. Number of ordnances used per event
 - vii. Total hours of sonar used per event
 - b. For projectiles and missiles:
 - i. Type and number of projectiles and missiles used per event
 - ii. Firing rate – for a given event (i.e., 5 bursts per shot, number of shots per minute, etc.)
 - iii. How many projectiles or missiles are fired along the same trajectory (i.e., is both the firing location and target stationary so all projectiles and missiles are fired along the same trajectory, or is the firing location moving and the target stationary, or both are moving, etc.)
 - iv. Distance projectiles and missiles traveled, distance to target
 - v. Accuracy of projectiles or missiles hitting the target
 - c. For sonar:
 - i. Type of sonar used
 - ii. Duration sonar was used
 - iii. Average time sonar was used per hour
2. The information used to determine effects of acoustics (explosives, sonar, projectile shock wave, etc.) is dated. The Service requests that the Navy monitor acoustic levels of different activities to provide updated information for technology used by the Navy. The Service requests that the Navy coordinate with the Service to develop an acoustic monitoring plan to determine sound pressure levels (SPL), impulse levels, and other acoustic metrics for the following activities:
 - a. Underwater explosives

- b. In-air explosives
 - c. Sonar SPL outputs
 - d. Bow shock or projectile shockwaves
3. Minimize the harm-related, death and injury impacts of the Navy's taking on the marbled murrelet in Conservation Zone 1 through removal of derelict fishing gear in Puget Sound and/or the Straits of Juan de Fuca that may kill or injure entangled marbled murrelets.
 4. Minimize the harm-related, death and injury impacts of the Navy's taking on the short-tailed albatross in the Offshore Area by instituting a program of marine debris removal.
 5. Improve upon existing debris retrieval and removal processes. Debris related to detonations, weapons firing and other training activity should be retrieved whenever possible. Disposal should be done at a secure upland location to ensure that it does not re-enter the marine environment.
 6. Reduce marine forage base threats to the marbled murrelet by avoiding impacts to marine shoreline, eelgrass, and other habitats where marine forage fish spawn. Offset existing and future impacts to these habitats by completing effective shoreline and marine habitat restoration projects and by conserving marine shoreline habitat areas within the range of the marbled murrelet.
 7. Develop and/or fund research programs that improve understanding of the hearing capabilities of seabirds as well as how seabirds are affected by elevated sound levels and shock waves.
 8. Develop and/or fund research programs that improve understanding of the abundance, distribution, and status of marine forage fish that comprise the prey base of the marbled murrelet.
 9. To the maximum extent possible, conduct training and testing activities that produce the following stressors beyond 50 nm from shore in the Offshore Area, to avoid, reduce, or minimize the take of marbled murrelets: E3 and E4 detonations; E1 medium-caliber projectiles; E3/E6 large-caliber projectiles; and small-caliber, medium-caliber, and large-caliber non-explosive projectiles.
 10. The Navy should coordinate with the Service to develop a plan, within one year from the date of this Opinion, that relies on adaptive management to refine our understanding of the take impacts on the bull trout, marbled murrelet, and short-tailed albatross caused by the proposed action. Such information may trigger adjustments to the Incidental Take Statement or reinitiation of consultation, as appropriate, and facilitate the identification of additional ways to further minimize the impacts of take on these species caused by the proposed action.

20 REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the (request/reinitiation request). As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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