
Appendix E Estimated Marine Mammal and
Sea Turtle Impacts from Exposure to Acoustic
and Explosive Stressors Under Navy Training
and Testing Activities

**Supplemental Environmental Impact Statement/
Overseas Environmental Impact Statement
Northwest Training and Testing**

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Appendix E Estimated Marine Mammal and Sea Turtle Impacts from Exposure to Acoustic and Explosive Stressors Under Navy Training and Testing Activities

Navy training and testing activities would result in the incidental takes of marine mammals and sea turtles within the Study Area. The following appendix provides the estimated number of marine mammal and sea turtle impacts. Specifically, estimated impacts are derived from the quantitative analysis for activities under Alternatives 1 and 2 that involve the use of acoustic or explosive stressors. The quantitative analysis takes into account Navy activities, marine species density layers, acoustic modeling, and other environmental parameters. A detailed explanation of the quantitative analysis is provided in the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018). It is important to note that *impacts*, as discussed in this appendix, represent the estimated instances of take of marine mammals or sea turtles, not necessarily the number of individuals impacted (i.e., some marine mammals or sea turtles could be impacted several times, while others would not experience any impact). The take tables below represent the minimum and maximum impacts under Alternative 1, and the maximum impacts under Alternative 2 for any given year and across a consecutive seven-year period. Because the level of certain activities may vary annually as described in Chapter 2 (Description of Proposed Action and Alternatives), estimated impacts under Alternative 1 will also vary between nominal and maximum years. The variation in activity level under Alternative 2 is negligible therefore the difference in impacts are not presented. In addition, across training and testing activities, the seven-year total impacts in each table may be more or less than seven times the maximum impact in any year. Estimated impacts are provided over the duration of the Marine Mammal Protection Act (MMPA) Regulations and Letters of Authorization, which would be valid for a seven-year period.

E.1 Estimated Marine Mammal Impacts from Sonar and Other Transducers Under Navy Training Activities

Table E-1 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy training activities under Alternatives 1 and 2 over the course of a year.

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Order Cetacea										
Suborder Mysticeti (baleen whales)										
Family Balaenopteridae (rorquals)										
Blue whale*	Eastern North Pacific	2	0	0	2	0	0	2	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	41	13	0	41	13	0	42	13	0
Sei whale*	Eastern North Pacific	16	14	0	16	14	0	16	14	0
Minke whale	Alaska	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	51	58	0	52	58	0	54	58	0
Humpback* whale	Central North Pacific	3	2	0	3	2	0	3	2	0
	California, Oregon, & Washington	3	1	0	3	1	0	3	2	0
Family Eschrichtiidae (gray whale)										
Gray whale	Eastern North Pacific	1	0	0	2	0	0	2	0	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0	0

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<i>Suborder Odontoceti (toothed whales)</i>										
<i>Family Delphinidae (dolphins)</i>										
Bottlenose dolphin	California, Oregon, & Washington, Offshore	5	0	0	5	0	0	5	0	0
Killer whale	Alaska Resident	0	0	0	0	0	0	0	0	0
	Eastern North Pacific Offshore	67	1	0	67	1	0	69	1	0
	Northern Resident	0	0	0	0	0	0	0	0	0
	West Coast Transient	73	2	0	76	2	0	79	2	0
	Southern Resident [†]	2	0	0	3	0	0	3	0	0
Northern right whale dolphin	California, Oregon, & Washington	7,765	156	0	7,785	156	0	7,985	156	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	5,149	85	0	5,198	86	0	5,311	87	0
Risso’s dolphin	California, Oregon, & Washington	2,234	46	0	2,240	46	0	2,301	46	0
Short-beaked common dolphin	California, Oregon, & Washington	1,133	25	0	1,140	25	0	1,152	25	0

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Short-finned pilot whale	California, Oregon, & Washington	57	0	0	57	0	0	58	0	0
Striped dolphin	California, Oregon, & Washington	424	13	0	426	13	0	432	13	0
Family Kogiidae (Kogia spp.)										
Kogia whales	California, Oregon, & Washington	203	178	0	204	178	0	209	178	0
Family Phocoenidae (porpoises)										
Dall's porpoise	Alaska	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	6,871	6,346	5	6,911	6,368	6	7,088	6,419	6
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0	0	0	0
	Northern Oregon/ Washington Coast	212	87	0	212	87	0	273	99	0
	Northern California/ Southern Oregon	21	0	0	21	0	0	21	0	0
	Washington Inland Waters	6,607	3,409	12	8,010	4,244	16	9,977	5,196	19

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Physeteridae (sperm whale)										
Sperm whale*	California, Oregon, & Washington	508	2	0	510	2	0	519	2	0
Family Ziphiidae (beaked whales)										
Baird’s beaked whale	California, Oregon, & Washington	553	0	0	556	0	0	559	0	0
Cuvier’s beaked whale	California, Oregon, & Washington	1,456	1	0	1,461	1	0	1,497	1	0
Mesoplodon spp	California, Oregon, & Washington	648	1	0	651	1	0	666	1	0
Suborder Pinnipedia										
Family Otariidae (sea lions and fur seals)										
California sea lion	U.S. Stock	3,578	9	0	3,615	9	0	3,698	9	0
Steller sea lion	Eastern U.S.	103	1	0	107	1	0	114	1	0
Guadalupe fur seal*	Mexico	603	3	0	605	3	0	617	3	0
Northern fur seal	Eastern Pacific	2,125	4	0	2,130	4	0	2,162	4	0
	California	43	0	0	43	0	0	44	0	0

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Phocidae (true seals)										
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0	0	0	0
	Oregon/Washington Coastal	0	0	0	0	0	0	1	0	0
	Washington Northern Inland Waters	262	112	0	436	203	0	509	227	0
	Hood Canal	2,298	332	0	2,334	348	0	2,881	417	0
	Southern Puget Sound	464	279	1	730	360	1	822	398	1
Northern elephant seal	California	1,691	209	0	1,698	209	0	1,735	209	0

* ESA-listed species (all stocks) within the NWTT Study Area. †Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.2 Estimated Marine Mammal Impacts per 7-Year Period from Sonar and Other Transducers Under Navy Training Activities

Table E-2 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy training activities under Alternatives 1 and 2 over the course of seven years.

Table E-2: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Training Activities

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Order Cetacea							
Suborder Mysticeti (baleen whales)							
Family Balaenopteridae (rorquals)							
Blue whale*	Eastern North Pacific	11	0	0	11	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0
	California, Oregon, & Washington	285	92	0	291	92	0
Sei whale*	Eastern North Pacific	111	95	0	114	95	0
Minke whale	Alaska	0	0	0	0	0	0
	California, Oregon, & Washington	360	407	0	376	407	0
Humpback whale*	Central North Pacific	18	13	0	20	13	0
	California, Oregon, & Washington	22	10	0	23	11	0
Family Eschrichtiidae (gray whale)							
Gray whale	Eastern North Pacific	10	0	0	14	0	0
	Western North Pacific [†]	0	0	0	0	0	0
Suborder Odontoceti (toothed whales)							
Family Delphinidae (dolphins)							
Bottlenose dolphin	California, Oregon, & Washington, Offshore	33	0	0	33	0	0

**Table E-2: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Training Activities
(continued)**

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Killer whale	Alaska Resident	0	0	0	0	0	0
	Eastern North Pacific Offshore	470	8	0	481	8	0
	Northern Resident	0	0	0	0	0	0
	West Coast Transient	525	13	0	554	15	0
	Southern Resident ^[7]	15	0	0	21	0	0
Northern right whale dolphin	California, Oregon, & Washington	54,399	1,094	0	55,894	1,095	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0
	California, Oregon, & Washington	36,187	601	0	37,180	606	0
Risso's dolphin	California, Oregon, & Washington	15,649	323	0	16,110	323	0
Short-beaked common dolphin	California, Oregon, & Washington	7,947	177	0	8,062	177	0
Short-finned pilot whale	California, Oregon, & Washington	398	0	0	403	0	0
Striped dolphin	California, Oregon, & Washington	2,970	89	0	3,026	89	0
Family Kogiidae (Kogia spp.)							
Kogia whales	California, Oregon, & Washington	1,278	1,120	0	1,316	1,124	0

**Table E-2: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Training Activities
(continued)**

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Phocoenidae (porpoises)							
Dall's porpoise	Alaska	0	0	0	0	0	0
	California, Oregon, & Washington	48,192	44,506	39	49,614	44,930	39
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0
	Northern Oregon/ Washington Coast	1,485	607	0	1,910	692	0
	Northern California/ Southern Oregon	145	0	0	145	0	0
	Washington Inland Waters	52,137	27,369	103	69,828	36,364	134
Family Physeteridae (sperm whale)							
Sperm whale*	California, Oregon, & Washington	3,562	12	0	3,636	12	0
Family Ziphiidae (beaked whales)							
Baird's beaked whale	California, Oregon, & Washington	3,875	0	0	3,913	0	0
Cuvier's beaked whale	California, Oregon, & Washington	10,202	7	0	10,480	7	0
Mesoplodon spp	California, Oregon, & Washington	4,544	5	0	4,662	5	0
Suborder Pinnipedia							
Family Otariidae (sea lions and fur seals)							
California sea lion	U.S. Stock	25,179	64	0	25,884	64	0
Steller sea lion	Eastern U.S.	738	5	0	799	5	0
Guadalupe fur seal*	Mexico	4,226	21	0	4,322	21	0
Northern fur seal	Eastern Pacific	14,885	26	0	15,137	26	0
	California	300	0	0	305	0	0

Table E-2: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Training Activities (continued)

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Phocidae (true seals)							
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0
	Oregon/Washington Coastal	0	0	0	5	0	0
	Washington Northern Inland Waters	2,564	1,165	0	3,561	1,591	0
	Hood Canal	16,238	2,394	0	20,167	2,916	0
	Southern Puget Sound	4,364	2,293	6	5,749	2,788	6
Northern elephant seal	California	11,851	1,462	0	12,142	1,464	0

* ESA-listed species (all stocks) within the NWTT Study Area. [†] Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.3 Estimated Marine Mammal Impacts from Sonar and Other Transducers Under Navy Testing Activities

Table E-3 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy testing activities under Alternatives 1 and 2 over the course of a year.

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Order Cetacea										
Suborder Mysticeti (baleen whales)										
Family Balaenopteridae (rorquals)										
Blue whale*	Eastern North Pacific	2	3	0	3	4	0	4	5	0
Fin whale*	Northeast Pacific	1	1	0	1	1	0	1	1	0
	California, Oregon, & Washington	24	17	0	44	29	0	58	35	0
Sei whale*	Eastern North Pacific	10	21	0	16	35	0	21	43	0
Minke whale	Alaska	0	1	0	1	1	0	1	1	0
	California, Oregon, & Washington	33	74	0	55	131	0	70	166	0
Humpback whale*	Central North Pacific	31	43	0	44	65	0	55	83	0
	California, Oregon, & Washington	26	32	0	36	51	0	44	65	0
Family Eschrichtiidae (gray whale)										
Gray whale	Eastern North Pacific	16	5	0	25	13	0	32	19	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0	0

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<i>Suborder Odontoceti (toothed whales)</i>										
<i>Family Delphinidae (dolphins)</i>										
Bottlenose dolphin	California, Oregon, & Washington, Offshore	2	0	0	3	0	0	5	0	0
Killer whale	Alaska Resident	27	0	0	34	0	0	40	0	0
	Eastern North Pacific Offshore	47	3	0	85	4	0	111	4	0
	Northern Resident	0	0	0	0	0	0	0	0	0
	West Coast Transient	90	18	0	134	20	0	166	22	0
	Southern Resident ^[1]	28	1	0	46	2	0	60	2	0
Northern right whale dolphin	California, Oregon, & Washington	7,649	711	1	12,885	872	1	16,742	975	1
Pacific white-sided dolphin	North Pacific	80	0	0	101	0	0	117	0	0
	California, Oregon, & Washington	8,727	1,088	1	14,394	1,285	1	18,674	1,421	1
Risso's dolphin	California, Oregon, & Washington	2,309	181	0	3,840	228	0	4,994	260	0
Short-beaked common dolphin	California, Oregon, & Washington	329	3	0	963	21	0	1,316	24	0

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Short-finned pilot whale	California, Oregon, & Washington	14	0	0	30	1	0	40	1	0
Striped dolphin	California, Oregon, & Washington	125	3	0	337	7	0	466	8	0
Family Kogiidae (Kogia spp.)										
Kogia whales	California, Oregon, & Washington	110	179	0	160	336	0	197	447	1
Family Phocoenidae (porpoises)										
Dall's porpoise	Alaska	140	341	0	179	459	0	204	574	0
	California, Oregon, & Washington	4,620	7,461	17	6,440	13,729	24	7,766	18,074	29
Harbor porpoise	Southeast Alaska	79	28	0	92	38	0	102	47	0
	Northern Oregon/Washington Coast	21,978	13,305	14	31,335	20,529	19	39,753	26,283	23
	Northern California/Southern Oregon	1,545	134	0	1,579	134	0	1,582	134	0
	Washington Inland Waters	6,952	9,651	131	7,136	10,092	137	8,211	10,699	147

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Physeteridae (sperm whale)										
Sperm whale*	California, Oregon, & Washington	164	3	0	324	3	0	427	4	0
Family Ziphiidae (beaked whales)										
Baird's beaked whale	California, Oregon, & Washington	188	0	0	420	0	0	578	1	0
Cuvier's beaked whale	California, Oregon, & Washington	589	3	0	1,074	3	0	1,399	4	0
Mesoplodon spp	California, Oregon, & Washington	256	1	0	468	2	0	609	2	0
Suborder Pinnipedia										
Family Otariidae (sea lions and fur seals)										
California sea lion	U.S. Stock	11,399	314	0	20,140	330	0	27,015	340	0
Steller sea lion	Eastern U.S.	1,405	3	0	2,124	5	0	2,701	6	0
Guadalupe fur seal*	Mexico	480	9	0	877	10	0	1,152	10	0
Northern fur seal	Eastern Pacific	5,681	122	0	9,332	126	0	12,102	128	0
	California	116	1	0	188	1	0	244	1	0

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2 – Maximum		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Phocidae (true seals)										
Harbor seal	Southeast Alaska - Clarence Strait	1,497	238	0	2,077	275	0	2,513	312	0
	Oregon/ Washington Coastal	439	390	0	531	629	0	602	801	0
	Washington Northern Inland Waters	434	144	0	434	144	0	434	144	0
	Hood Canal	33,742	21,619	0	36,096	22,688	0	37,814	25,594	0
	Southern Puget Sound	2,505	3,196	3	2,544	3,204	3	2,565	3,204	3
Northern elephant seal	California	1,440	291	0	2,429	491	0	3,149	612	0

* ESA-listed species (all stocks) within the NWTT Study Area. [†] Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.4 Estimated Marine Mammal Impacts per 7-Year Period from Sonar and Other Transducers Under Navy Testing Activities

Table E-4 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy testing activities under Alternatives 1 and 2 over the course of seven years.

Table E-4: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Testing Activities

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Order Cetacea							
Suborder Mysticeti (baleen whales)							
Family Balaenopteridae (rorquals)							
Blue whale*	Eastern North Pacific	14	21	0	20	27	0
Fin whale*	Northeast Pacific	5	5	0	7	6	0
	California, Oregon, & Washington	201	140	0	308	191	0
Sei whale*	Eastern North Pacific	78	168	0	113	230	0
Minke whale	Alaska	4	5	0	5	6	0
	California, Oregon, & Washington	264	617	0	379	858	0
Humpback whale*	Central North Pacific	234	341	0	316	462	0
	California, Oregon, & Washington	189	257	0	248	346	0
Family Eschrichtiidae (gray whale)							
Gray whale	Eastern North Pacific	124	47	0	172	85	0
	Western North Pacific [†]	0	0	0	0	0	0

**Table E-4: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Testing Activities
(continued)**

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 7-year</i>			<i>Alternative 2 – 7-year</i>		
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>
<i>Suborder Odontoceti (toothed whales)</i>							
<i>Family Delphinidae (dolphins)</i>							
Bottlenose dolphin	California, Oregon, & Washington, Offshore	14	0	0	22	0	0
Killer whale	Alaska Resident	202	0	0	279	0	0
	Eastern North Pacific Offshore	389	23	0	581	26	0
	Northern Resident	0	0	0	0	0	0
	West Coast Transient	699	132	0	950	150	0
	Southern Resident ^[1]	217	11	0	311	13	0
Northern right whale dolphin	California, Oregon, & Washington	61,209	5,235	7	87,574	5,961	7
Pacific white-sided dolphin	North Pacific	603	0	0	817	0	0
	California, Oregon, & Washington	69,057	7,911	8	97,964	8,821	8
Risso's dolphin	California, Oregon, & Washington	18,293	1,341	0	26,052	1,555	0
Short-beaked common dolphin	California, Oregon, & Washington	3,385	57	0	6,426	126	0
Short-finned pilot whale	California, Oregon, & Washington	124	2	0	204	4	0
Striped dolphin	California, Oregon, & Washington	1,265	29	0	2,268	43	0

**Table E-4: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Testing Activities
(continued)**

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Kogiidae (Kogia spp.)							
Kogia whales	California, Oregon, & Washington	756	1,359	0	1,013	2,039	3
Family Phocoenidae (porpoises)							
Dall's porpoise	Alaska	1,047	2,664	0	1,417	4,015	0
	California, Oregon, & Washington	34,733	62,364	126	44,969	92,058	162
Harbor porpoise	Southeast Alaska	576	218	0	708	332	0
	Northern Oregon/Washington Coast	160,360	103,888	107	219,562	138,853	133
	Northern California/Southern Oregon	9,930	671	0	10,078	673	0
	Washington Inland Waters	48,155	67,615	930	56,479	73,624	1,022
Family Physeteridae (sperm whale)							
Sperm whale*	California, Oregon, & Washington	1,424	19	0	2,233	22	0
Family Ziphiidae (beaked whales)							
Baird's beaked whale	California, Oregon, & Washington	1,738	0	0	2,947	2	0
Cuvier's beaked whale	California, Oregon, & Washington	4,959	20	0	7,379	24	0
Mesoplodon spp	California, Oregon, & Washington	2,161	11	0	3,207	12	0
Suborder Pinnipedia							
Family Otariidae (sea lions and fur seals)							
California sea lion	U.S. Stock	91,662	2,225	0	136,474	2,294	0

Table E-4: Estimated Marine Mammals Impacts per 7-Year Period from Sonar Testing Activities (continued)

Species	Stock	Alternative 1 – 7-year			Alternative 2 – 7-year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Family Otariidae (sea lions and fur seals)							
Steller sea lion	Eastern U.S.	10,715	27	0	15,075	34	0
Guadalupe fur seal*	Mexico	3,958	64	0	5,915	68	0
Northern fur seal	Eastern Pacific	44,953	860	0	63,540	877	0
	California	911	9	0	1,281	9	0
Family Phocidae (true seals)							
Harbor seal	Southeast Alaska - Clarence Strait	11,630	1,754	0	17,511	2,181	0
	Oregon/ Washington Coastal	3,024	3,098	0	3,545	4,209	0
	Washington Northern Inland Waters	2,221	1,006	0	2,221	1,006	0
	Hood Canal	242,342	154,541	0	263,785	179,157	0
	Southern Puget Sound	17,124	22,387	24	17,506	22,431	24
Northern elephant seal	California	11,638	2,385	0	17,479	3,307	0

* ESA-listed species (all stocks) within the NWTT Study Area. [†] Only designated stocks are ESA-listed.
Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.5 Estimated Marine Mammal Impacts from Explosives Under Navy Training Activities

Table E-5 provides a summary of the estimated number of marine mammal impacts from exposure to explosives used during Navy training activities under Alternatives 1 and 2 over the course of a year.

Table E-5: Estimated Marine Mammals Impacts per Year from Explosive Training Activities

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Order Cetacea													
Suborder Mysticeti (baleen whales)													
Family Balaenopteridae (rorquals)													
Blue whale*	Eastern North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	Eastern North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	Central North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Family Eschrichtiidae (gray whale)													
Gray whale	Eastern North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0	0	0	0	0

Table E-5: Estimated Marine Mammals Impacts per Year from Explosive Training Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Suborder Odontoceti (toothed whales)													
Family Delphinidae (dolphins)													
Bottlenose dolphin	California, Oregon, & Washington, Offshore	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	Alaska Resident	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0	0	0	0	0
	Northern Resident	0	0	0	0	0	0	0	0	0	0	0	0
	West Coast Transient	0	0	0	0	0	0	0	0	0	0	0	0
	Southern Resident [†]	0	0	0	0	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	1	0	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	1	0	0
Risso's dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0

Table E-5: Estimated Marine Mammals Impacts per Year from Explosive Training Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Short-finned pilot whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Family Kogiidae (Kogia spp.)													
Kogia whales	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	1	1	0
Family Phocoenidae (porpoises)													
Dall's porpoise	Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	2	6	1	0	4	16	2	0	4	39	6	0
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	Northern Oregon/ Washington Coast	0	0	0	0	0	0	0	0	0	0	0	0
	Northern California/ Southern Oregon	0	0	0	0	0	0	0	0	0	0	0	0
	Washington Inland Waters	0	61	27	0	0	61	27	0	0	102	45	0

Table E-5: Estimated Marine Mammals Impacts per Year from Explosive Training Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Physeteridae (sperm whale)													
Sperm whale*	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Family Ziphiidae (beaked whales)													
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Mesoplodon spp	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Suborder Pinnipedia													
Family Otariidae (sea lions and fur seals)													
California sea lion	U.S. Stock	0	0	0	0	0	0	0	0	0	0	0	0
Steller sea lion	Eastern U.S.	0	0	0	0	0	0	0	0	0	0	0	0
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0	0	0	0	0
Northern fur seal	Eastern Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California	0	0	0	0	0	0	0	0	0	0	0	0

Table E-5: Estimated Marine Mammals Impacts per Year from Explosive Training Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Phocidae (true seals)													
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0	0	0	0	0	0	0
	Oregon/ Washington Coastal	0	0	0	0	0	0	0	0	0	0	0	0
	Washington Northern Inland Waters	0	30	5	0	0	30	5	0	0	50	8	0
	Hood Canal	0	4	1	0	0	4	1	0	0	7	1	0
	Southern Puget Sound	0	0	0	0	0	0	0	0	0	0	0	0
Northern elephant seal	California	0	1	0	0	0	2	1	0	0	5	2	0

* ESA-listed species (all stocks) within the NWTT Study Area. [†] Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.6 Estimated Marine Mammal Impacts per 7-Year Period from Explosives Under Navy Training Activities

Table E-6 provides a summary of the estimated number of marine mammal impacts from exposure to explosives used during Navy training activities under Alternatives 1 and 2 over the course of seven years.

Table E-6: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Training Activities

Species	Stock	Alternative 1 – 7-year				Alternative 2 – 7-year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Order Cetacea									
Suborder Mysticeti (baleen whales)									
Family Balaenopteridae (rorquals)									
Blue whale*	Eastern North Pacific	0	0	0	0	0	0	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Sei whale*	Eastern North Pacific	0	0	0	0	0	0	0	0
Minke whale	Alaska	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Humpback whale*	Central North Pacific	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Family Eschrichtiidae (gray whale)									
Gray whale	Eastern North Pacific	0	0	0	0	0	0	0	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0
Suborder Odontoceti (toothed whales)									
Family Delphinidae (dolphins)									
Bottlenose dolphin	California, Oregon, & Washington, Offshore	0	0	0	0	0	0	0	0

**Table E-6: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Training Activities
(continued)**

Species	Stock	Alternative 1 – 7-year				Alternative 2 – 7-year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Killer whale	Alaska Resident	0	0	0	0	0	0	0	0
	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0
	Northern Resident	0	0	0	0	0	0	0	0
	West Coast Transient	0	0	0	0	0	0	0	0
	Southern Resident ⁺	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	0	0	0	0	0	4	0	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	0	0	0	0	0	5	0	0
Risso's dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Short-finned pilot whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Striped dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Family Kogiidae (Kogia spp.)									
Kogia whales	California, Oregon, & Washington	0	0	0	0	0	8	3	0

**Table E-6: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Training Activities
(continued)**

Species	Stock	Alternative 1 – 7-year				Alternative 2 – 7-year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Phocoenidae (porpoises)									
Dall's porpoise	Alaska	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	20	75	9	0	25	276	45	0
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0	0	0
	Northern Oregon/Washington Coast	0	0	0	0	0	0	0	0
	Northern California/Southern Oregon	0	0	0	0	0	0	0	0
	Washington Inland Waters	0	428	188	0	0	713	313	0
Family Physeteridae (sperm whale)									
Sperm whale*	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Family Ziphiidae (beaked whales)									
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Mesoplodon spp	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Suborder Pinnipedia									
Family Otariidae (sea lions and fur seals)									
California sea lion	U.S. Stock	0	0	0	0	0	0	0	0
Steller sea lion	Eastern U.S.	0	0	0	0	0	0	0	0
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0
Northern fur seal	Eastern Pacific	0	0	0	0	0	0	0	0
	California	0	0	0	0	0	0	0	0

**Table E-6: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Training Activities
 (continued)**

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 7-year</i>				<i>Alternative 2 – 7-year</i>			
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>
<i>Family Phocidae (true seals)</i>									
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0	0	0
	Oregon/ Washington Coastal	0	0	0	0	0	0	0	0
	Washington Northern Inland Waters	0	209	35	0	0	348	59	0
	Hood Canal	0	30	5	0	0	50	8	0
	Southern Puget Sound	0	0	0	0	0	0	0	0
Northern elephant seal	California	0	11	1	0	0	32	12	0

* ESA-listed species (all stocks) within the NWTT Study Area. [†] Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.7 Estimated Marine Mammal Impacts from Explosives Under Navy Testing Activities

Table E-7 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy testing activities under Alternatives 1 and 2 over the course of a year.

Table E-7: Estimated Marine Mammals Impacts per Year from Explosive Testing Activities

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Order Cetacea													
Suborder Mysticeti (baleen whales)													
Family Balaenopteridae (rorquals)													
Blue whale*	Eastern North Pacific	1	0	0	0	1	0	0	0	1	0	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	6	2	0	0	6	2	0	0	6	2	0	0
Sei whale*	Eastern North Pacific	1	1	0	0	1	1	0	0	1	1	0	0
Minke whale	Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	4	2	0	0	4	2	0	0	4	2	0	0
Humpback whale*	Central North Pacific	0	1	0	0	0	1	0	0	0	1	0	0
	California, Oregon, & Washington	1	1	0	0	1	1	0	0	1	1	0	0
Family Eschrichtiidae (gray whale)													
Gray whale	Eastern North Pacific	1	2	0	0	1	2	0	0	1	2	0	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0	0	0	0	0

Table E-7: Estimated Marine Mammals Impacts per Year from Explosive Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<i>Suborder Odontoceti (toothed whales)</i>													
<i>Family Delphinidae (dolphins)</i>													
Bottlenose dolphin	California, Oregon, & Washington, Offshore	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	Alaska Resident	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0	0	0	0	0
	Northern Resident	0	0	0	0	0	0	0	0	0	0	0	0
	West Coast Transient	0	0	0	0	0	0	0	0	0	0	0	0
	Southern Resident [†]	0	0	0	0	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	1	1	0	0	1	1	0	0	1	1	0	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	1	1	0	0	1	1	0	0	1	1	0	0
Risso's dolphin	California, Oregon, & Washington	0	1	0	0	0	1	0	0	0	1	0	0
Short-beaked common dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0

Table E-7: Estimated Marine Mammals Impacts per Year from Explosive Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Short-finned pilot whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Family Kogiidae (Kogia spp.)													
Kogia whales	California, Oregon, & Washington	1	3	2	0	1	3	2	0	1	3	2	0
Family Phocoenidae (porpoises)													
Dall's porpoise	Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	52	177	66	0	52	177	66	0	52	177	66	0
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0	0	0	0	0	0	0
	Northern Oregon/ Washington Coast	55	194	84	0	55	194	84	0	55	194	84	0
	Northern California/ Southern Oregon	91	214	86	0	91	214	86	0	91	214	86	0
	Washington Inland Waters	0	0	0	0	0	0	0	0	0	0	0	0

Table E-7: Estimated Marine Mammals Impacts per Year from Explosive Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Physeteridae (sperm whale)													
Sperm whale*	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Family Ziphiidae (beaked whales)													
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Mesoplodon spp	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Suborder Pinnipedia													
Family Otariidae (sea lions and fur seals)													
California sea lion	U.S. Stock	1	3	1	0	1	3	1	0	1	3	1	0
Steller sea lion	Eastern U.S.	0	1	0	0	0	1	0	0	0	1	0	0
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0	0	0	0	0
Northern fur seal	Eastern Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	California	0	0	0	0	0	0	0	0	0	0	0	0

Table E-7: Estimated Marine Mammals Impacts per Year from Explosive Testing Activities (continued)

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2 – Maximum			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Phocidae (true seals)													
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0	0	0	0	0	0	0
	Oregon/ Washington Coastal	9	11	2	0	9	11	2	0	9	11	2	0
	Washington Northern Inland Waters	0	0	0	0	0	0	0	0	0	0	0	0
	Hood Canal	0	0	0	0	0	0	0	0	0	0	0	0
	Southern Puget Sound	0	0	0	0	0	0	0	0	0	0	0	0
Northern elephant seal	California	7	8	3	0	7	8	3	0	7	8	3	0

* ESA-listed species (all stocks) within the NWTT Study Area. ^[1] Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.8 Estimated Marine Mammal Impacts per 7-Year Period from Explosives Under Navy Testing Activities

Table E-8 provides a summary of the estimated number of marine mammal impacts from exposure to sonar and other transducers used during Navy testing activities under Alternatives 1 and 2 over the course of seven years.

Table E-8: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Testing Activities

Species	Stock	Alternative 1 – 7-year				Alternative 2 – 7-year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Order Cetacea									
Suborder Mysticeti (baleen whales)									
Family Balaenopteridae (rorquals)									
Blue whale*	Eastern North Pacific	3	0	0	0	3	0	0	0
Fin whale*	Northeast Pacific	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	39	9	0	0	40	11	0	0
Sei whale*	Eastern North Pacific	8	3	0	0	8	4	0	0
Minke whale	Alaska	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	24	8	0	0	25	10	0	0
Humpback whale*	Central North Pacific	0	2	0	0	0	3	0	0
	California, Oregon, & Washington	5	5	0	0	7	7	0	0
Family Eschrichtiidae (gray whale)									
Gray whale	Eastern North Pacific	3	7	0	0	6	12	0	0
	Western North Pacific [†]	0	0	0	0	0	0	0	0
Suborder Odontoceti (toothed whales)									
Family Delphinidae (dolphins)									
Bottlenose dolphin	California, Oregon, & Washington, Offshore	0	0	0	0	0	0	0	0

**Table E-8: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Testing Activities
(continued)**

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 7-year</i>				<i>Alternative 2 – 7-year</i>			
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>
Killer whale	Alaska Resident	0	0	0	0	0	0	0	0
	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0
	Northern Resident	0	0	0	0	0	0	0	0
	West Coast Transient	0	0	0	0	0	0	0	0
	Southern Resident [†]	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	7	5	0	0	8	5	0	0
Pacific white-sided dolphin	North Pacific	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	6	4	0	0	7	5	0	0
Risso's dolphin	California, Oregon, & Washington	0	2	0	0	0	3	0	0
Short-beaked common dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Short-finned pilot whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Striped dolphin	California, Oregon, & Washington	0	0	0	0	0	0	0	0
<i>Family Kogiidae (Kogia spp.)</i>									
Kogia whales	California, Oregon, & Washington	5	18	9	0	6	20	9	0

**Table E-8: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Testing Activities
(continued)**

Species	Stock	Alternative 1 – 7-year				Alternative 2 – 7-year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Family Phocoenidae (porpoises)									
Dall's porpoise	Alaska	0	0	0	0	0	0	0	0
	California, Oregon, & Washington	236	908	330	0	299	1,074	397	0
Harbor porpoise	Southeast Alaska	0	0	0	0	0	0	0	0
	Northern Oregon/Washington Coast	167	584	252	0	275	970	418	0
	Northern California/Southern Oregon	278	646	261	0	459	1,071	432	0
	Washington Inland Waters	0	0	0	0	0	0	0	0
Family Physeteridae (sperm whale)									
Sperm whale*	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Family Ziphiidae (beaked whales)									
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Mesoplodon spp	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Suborder Pinnipedia									
Family Otariidae (sea lions and fur seals)									
California sea lion	U.S. Stock	3	11	4	0	5	14	5	0
Steller sea lion	Eastern U.S.	0	2	0	0	0	3	0	0
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0

**Table E-8: Estimated Marine Mammals Impacts per 7-Year Period from Explosive Testing Activities
(continued)**

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 7-year</i>				<i>Alternative 2 – 7-year</i>			
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>
Northern fur seal	Eastern Pacific	0	0	0	0	0	0	0	0
	California	0	0	0	0	0	0	0	0
<i>Family Phocidae (true seals)</i>									
Harbor seal	Southeast Alaska - Clarence Strait	0	0	0	0	0	0	0	0
	Oregon/ Washington Coastal	27	33	6	0	46	54	11	0
	Washington Northern Inland Waters	0	0	0	0	0	0	0	0
	Hood Canal	0	0	0	0	0	0	0	0
	Southern Puget Sound	0	0	0	0	0	0	0	0
Northern elephant seal	California	41	46	17	0	46	51	18	0

* ESA-listed species (all stocks) within the NWTT Study Area. † Only designated stocks are ESA-listed.

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift

E.9 Estimated Sea Turtle Impacts from Sonar and Other Transducers Under Navy Training and Testing Activities

Based on the quantitative analysis, no sea turtle impacts are anticipated from exposure to sonar and other transducers used during Navy training and testing activities under Alternatives 1 and 2 over the course of a year or seven years.

E.10 Estimated Sea Turtle Impacts from Explosives Under Navy Training and Testing Activities

Based on the quantitative analysis, no sea turtle impacts are anticipated from exposure to explosives used during Navy training and testing activities under Alternatives 1 and 2 over the course of a year or seven years.

REFERENCES

U.S. Department of the Navy. (2018). *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (Technical Report prepared by NUWC Division Newport, Space and Naval Warfare Systems Center Pacific, G2 Software Systems, and the National Marine Mammal Foundation). Newport, RI: Naval Undersea Warfare Center.

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