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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



# Environmental Impact Statement/Overseas Environmental Impact Statement

## Hawaii-Southern California Training and Testing

### TABLE OF CONTENTS

<b>Appendix E</b>	<b>Estimated Marine Mammal and Sea Turtle Impacts from Exposure to Acoustic and Explosive Stressors Under Navy Training and Testing Activities .....</b>	<b>E-1</b>
<b>E.1</b>	<b>Estimated Marine Mammal Impacts from Sonar and Other Transducers Under Navy Training Activities .....</b>	<b>E-1</b>
<b>E.2</b>	<b>Estimated Impacts Marine Mammal Impacts per Five Year Period from Sonar and Other Transducers Under Navy Training Activities .....</b>	<b>E-6</b>
<b>E.3</b>	<b>Estimated Marine Mammal Impacts from Sonar and Other Transducers Under Navy Testing Activities.....</b>	<b>E-9</b>
<b>E.4</b>	<b>Estimated Marine Mammal Impacts per Five Year Period from Sonar and Other Transducers Under Navy Testing Activities.....</b>	<b>E-14</b>
<b>E.5</b>	<b>Estimated Marine Mammal Impacts from Air Guns Under Navy Training Activities .....</b>	<b>E-17</b>
<b>E.6</b>	<b>Estimated Marine Mammal Impacts from Air Guns Under Navy Testing Activities .....</b>	<b>E-17</b>
<b>E.7</b>	<b>Estimated Marine Mammal Impacts per Five year Period from Air Guns Under Navy Testing Activities.....</b>	<b>E-20</b>
<b>E.8</b>	<b>Estimated Marine Mammal Impacts from Pile Driving Under Navy Training Activities.....</b>	<b>E-21</b>
<b>E.9</b>	<b>Estimated Marine Mammal Impacts per Five year Period from Pile Driving Under Navy Training Activities.....</b>	<b>E-24</b>
<b>E.10</b>	<b>Estimated Marine Mammal Impacts from Pile Driving Under Navy Testing Activities .....</b>	<b>E-25</b>
<b>E.11</b>	<b>Estimated Marine Mammal Impacts from Explosives Under Navy Training Activities .....</b>	<b>E-25</b>
<b>E.12</b>	<b>Estimated Marine Mammal Impacts per Five year Period from Explosives Under Navy Training Activities.....</b>	<b>E-32</b>
<b>E.13</b>	<b>Estimated Marine Mammal Impacts from Explosives Under Navy Testing Activities.....</b>	<b>E-37</b>
<b>E.14</b>	<b>Estimated Marine Mammal Impacts per Five Year Period from Explosives Under Navy Testing Activities .....</b>	<b>E-44</b>
<b>E.15</b>	<b>Estimated Sea Turtle Impacts from Sonar and Other Transducers Under Navy Training and Testing Activities.....</b>	<b>E-49</b>
<b>E.16</b>	<b>Estimated Sea Turtle Impacts from Air Guns Under Navy Training and Testing Activities .....</b>	<b>E-49</b>
<b>E.17</b>	<b>Estimated Sea Turtle Impacts from Pile Driving Under Navy Training and Testing Activities .....</b>	<b>E-49</b>

**E.18 Estimated Sea Turtle Impacts from Explosives Under Navy Training and Testing Activities .....E-49**

**E.19 Estimated Sea Turtle Impacts per Five year Period from Explosives Under Navy Training and Testing Activities.....E-50**

### List of Tables

Table E-1: Estimated Marine Mammals Impacts per Year from Sonar Training Activities ..... E-2

Table E-2: Estimated Marine Mammals Impacts per Five-Year Period from Sonar Training Activities..... E-6

Table E-3: Estimated Marine Mammals Impacts per Year from Sonar Testing Activities ..... E-10

Table E-4: Estimated Marine Mammals Impacts per Five-Year Period from Sonar Testing Activities ..... E-14

Table E-5: Estimated Marine Mammals Impacts per Year from Air Gun Activities ..... E-18

Table E-6: Estimated Marine Mammals Impacts per Five-Year Period from Air Gun Activities ..... E-20

Table E-7: Estimated Marine Mammals Impacts per Year from Pile Driving Activities ..... E-22

Table E-8: Estimated Marine Mammals Impacts per Five-Year Period from Pile Driving Activities ..... E-24

Table E-9: Estimated Marine Mammals Impacts per Year from Explosive Training Activities ..... E-26

Table E-10: Estimated Marine Mammals Impacts per Five-Year Period from Explosive Training Activities ..... E-33

Table E-11: Estimated Marine Mammals Impacts per Year for Explosive Testing Activities ..... E-38

Table E-12: Estimated Marine Mammals Impacts per Five-Year Period from Explosive Testing Activities..... E-45

Table E-13: Estimated Sea Turtle Impacts per Year from Explosive Training and Testing Activities ..... E-49

Table E-14: Estimated Sea Turtle Impacts per Five-Year Period from Explosive Training and Testing Activities .... E-50

### List of Figures

There are no figures in this appendix.

## **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 *Quantitative Analysis for Estimating Acoustic and Explosive Impacts to Marine Mammals and Sea Turtles* (U.S. Department of the Navy, 2017c). 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). In addition, across training and testing activities, the five-year total impacts in each table may be less than five times the maximum impact in any year, because the level of certain activities may vary annually as described in Chapter 2 (Description of Proposed Action and Alternatives).

### **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		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>										
<b>Family Balaenopteridae (rorquals)</b>										
Blue whale*	Central North Pacific	9	23	0	9	25	0	11	33	0
	Eastern North Pacific	344	571	0	408	739	0	519	898	0
Bryde's whale	Eastern Tropical Pacific	7	14	0	8	18	0	9	25	0
	Hawaiian	24	72	0	25	80	0	31	101	0
Fin whale*	California, Oregon, & Washington	381	617	0	457	781	0	572	975	0
	Hawaiian	13	17	0	14	19	0	16	19	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	50	448	0	65	591	0	73	723	1
	Central North Pacific	1,583	3,575	0	1,643	3,939	0	1,850	4,760	1
Minke whale	California, Oregon, & Washington	127	421	0	141	504	0	184	702	0
	Hawaiian	699	2,402	0	750	2,703	1	871	3,229	1
Sei whale*	Eastern North Pacific	14	30	0	15	37	0	20	48	0
	Hawaiian	26	79	0	28	90	0	34	103	0
<b>Family Eschrichtiidae</b>										
Gray whale <sup>†</sup>	Eastern North Pacific	441	1,595	1	573	2,122	2	616	2,372	2
	Western North Pacific <sup>†</sup>	1	2	0	1	3	0	1	3	0
<b>Suborder Odontoceti (toothed whales)</b>										
<b>Family Physeteridae (sperm whale)</b>										
Sperm whale*	California, Oregon, & Washington	1,144	33	0	1,351	43	0	1,600	53	0
	Hawaiian	1,526	21	0	1,691	23	0	1,966	27	0

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Family Kogiidae (sperm whales)</b>										
Dwarf sperm whale	Hawaiian	2,981	9,587	12	3,124	10,700	14	3,477	13,121	16
Pygmy sperm whale	Hawaiian	1,155	3,845	5	1,214	4,296	6	1,364	5,219	6
Kogia whales	California, Oregon, & Washington	1,253	3,901	9	1,346	4,588	12	1,658	6,357	15
<b>Family Ziphiidae (beaked whales)</b>										
Baird's beaked whale	California, Oregon, & Washington	1,155	8	0	1,307	10	0	1,831	12	0
Blainville's beaked whale	Hawaiian	3,428	11	0	3,675	12	0	4,495	14	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0
	Hawaiian	1,149	2	0	1,232	3	0	1,470	3	0
Longman's beaked whale	Hawaiian	12,057	52	0	12,953	57	0	15,939	70	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	9,452	76	0	10,614	98	0	14,566	124	0
<b>Family Delphinidae (dolphins)</b>										
Bottlenose dolphin	California Coastal	182	5	0	189	5	0	189	5	0
	California, Oregon, & Washington Offshore	24,320	2,320	0	28,953	3,007	0	35,590	3,651	0
	Hawaiian Pelagic	1,856	82	0	1,993	92	0	2,361	104	0
	Kauai & Niihau	70	0	0	74	0	0	75	0	0
	Oahu	8,134	35	0	8,137	35	0	8,188	35	0
	4-Island	148	2	0	150	2	0	151	2	0
	Hawaii	39	3	0	39	3	0	42	5	0
False killer whale <sup>†</sup>	Hawaii Pelagic	622	26	0	672	29	0	819	32	0
	Main Hawaiian Islands Insular <sup>†</sup>	381	9	0	394	10	0	485	13	0

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
	Northwestern Hawaiian Islands	226	10	0	245	11	0	299	12	0
Fraser's dolphin	Hawaiian	25,225	772	0	27,491	910	0	31,075	1,008	0
Killer whale	Eastern North Pacific Offshore	53	8	0	63	10	0	83	15	0
	Eastern North Pacific Transient/West Coast Transient	99	15	0	117	18	0	155	27	0
	Hawaiian	74	3	0	80	4	0	92	5	0
Long-beaked common dolphin	California	89,185	7,093	0	119,518	9,324	0	130,970	11,093	0
Melon-headed whale	Hawaiian Islands	1,949	148	0	2,141	192	0	2,669	192	0
	Kohala Resident	180	2	0	180	2	0	211	4	0
Northern right whale dolphin	California, Oregon, & Washington	41,973	5,103	0	50,090	6,692	0	61,039	8,025	0
Pacific white-sided dolphin	California, Oregon, & Washington	32,075	3,999	0	38,735	5,156	0	47,145	6,355	0
Pantropical spotted dolphin	Hawaii Island	2,437	114	0	2,463	122	0	2,821	182	0
	Hawaii Pelagic	6,002	299	0	6,467	341	0	8,077	398	0
	Oahu	4,092	29	0	4,097	29	0	4,114	29	0
	4-Island	259	1	0	259	1	0	271	1	0
Pygmy killer whale	Hawaiian	5,018	268	0	5,510	305	0	6,386	354	0
	Tropical	370	30	0	433	38	0	568	47	0
Risso's dolphin	California, Oregon, & Washington	56,098	6,402	0	67,867	8,356	0	81,280	10,099	0
	Hawaiian	5,761	304	0	6,253	336	0	7,676	391	0
Rough-toothed dolphin	Hawaiian	3,717	251	0	4,012	280	0	4,806	328	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0	0



Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Short-beaked common dolphin	California, Oregon, & Washington	705,511	75,760	1	832,626	99,397	1	1,055,419	121,779	2
Short-finned pilot whale	California, Oregon, & Washington	808	51	0	922	68	0	1,119	81	0
	Hawaiian	7,671	284	0	8,271	320	0	9,788	370	0
Spinner dolphin	Hawaii Island	86	1	0	88	1	0	90	1	0
	Hawaii Pelagic	2,753	152	0	2,972	166	0	3,815	177	0
	Kauai & Niihau	264	1	0	309	1	0	370	1	0
	Oahu & 4-Island	1,469	16	0	1,473	16	0	1,504	17	0
Striped dolphin	California, Oregon, & Washington	99,418	7,404	0	109,630	9,566	0	148,534	12,136	0
	Hawaiian	4,615	274	0	5,076	312	0	5,952	351	0
<b>Family Phocoenidae (porpoises)</b>										
Dall's porpoise	California, Oregon, & Washington	5,064	17,166	50	5,715	21,082	64	6,473	27,223	79
<b>Suborder Pinnipedia</b>										
<b>Family Otariidae (eared seals)</b>										
California sea lion	U.S.	59,495	3,591	0	65,455	3,709	0	75,497	3,890	0
Guadalupe fur seal*	Mexico	428	10	0	506	12	0	558	17	0
Northern fur seal	California	8,250	79	0	9,684	100	0	12,163	129	0
<b>Family Phocidae (true seals)</b>										
Harbor seal	California	950	1,466	1	1,138	1,937	1	1,196	2,157	1
Hawaiian monk seal*	Hawaiian	91	40	0	92	44	0	100	63	0
Northern elephant seal	California	21,498	10,452	0	24,582	13,351	1	30,109	16,784	1

\*ESA-listed species (all stocks) within the HSTT Study Area. †Only designated stocks are ESA-listed. <sup>1</sup>NSD: No stock designation. PTS: permanent threshold shift; TTS: temporary threshold shift.

**E.2 ESTIMATED IMPACTS MARINE MAMMAL IMPACTS PER FIVE 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 five years.

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

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>							
<b>Family Balaenopteridae (rorquals)</b>							
Blue whale*	Central North Pacific	42	97	0	53	151	0
	Eastern North Pacific	1,827	3,171	0	2,562	4,474	0
Bryde's whale	Eastern Tropical Pacific	37	78	0	46	123	0
	Hawaiian	115	314	0	149	457	0
Fin whale*	California, Oregon, & Washington	2,049	3,400	0	2,834	4,862	0
	Hawaiian	62	71	0	73	86	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	279	2,525	0	356	3,612	3
	Central North Pacific	7,842	15,706	0	9,101	21,776	3
Minke whale	California, Oregon, & Washington	655	2,249	0	913	3,493	0
	Hawaiian	3,462	10,161	2	4,245	14,339	2
Sei whale*	Eastern North Pacific	70	162	0	100	238	0
	Hawaiian	127	326	0	161	449	0
<b>Family Eschrichtiidae</b>							
Gray whale <sup>†</sup>	Eastern North Pacific	2,509	9,088	7	3,033	11,850	11
	Western North Pacific <sup>†</sup>	3	11	0	4	14	0
<b>Suborder Odontoceti (toothed whales)</b>							
<b>Family Physeteridae (sperm whale)</b>							
Sperm whale*	California, Oregon, & Washington	6,053	186	0	7,921	267	0
	Hawaiian	6,997	81	0	9,081	119	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Family Kogiidae (sperm whales)</b>							
Dwarf sperm whale	Hawaiian	14,946	41,963	49	17,193	59,432	68
Pygmy sperm whale	Hawaiian	5,790	16,824	20	6,739	23,609	28
Kogia whales	California, Oregon, & Washington	6,417	20,572	50	8,227	31,538	74
<b>Family Ziphiidae (beaked whales)</b>							
Baird's beaked whale	California, Oregon, & Washington	6,001	43	0	9,091	59	0
Blainville's beaked whale	Hawaiian	16,321	43	0	21,457	59	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0
	Hawaiian	5,488	9	0	7,028	12	0
Longman's beaked whale	Hawaiian	56,966	206	0	75,671	304	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	49,077	425	0	72,299	616	0
<b>Family Delphinidae (dolphins)</b>							
Bottlenose dolphin	California Coastal	752	24	0	758	24	0
	California, Oregon, & Washington Offshore	129,894	12,944	0	176,229	18,221	0
	Hawaiian Pelagic	8,711	340	0	11,168	464	0
	Kauai & Niihau	356	0	0	377	0	0
	Oahu	40,671	177	0	40,941	177	0
	4-Island	739	11	0	754	11	0
	Hawaii	194	13	0	211	27	0
False killer whale <sup>†</sup>	Hawaii Pelagic	2,906	99	0	3,858	137	0
	Main Hawaiian Islands Insular <sup>†</sup>	1,873	39	0	2,381	59	0
	Northwestern Hawaiian Islands	1,057	37	0	1,409	51	0
Fraser's dolphin	Hawaiian	119,407	3,339	0	146,716	4,564	0
Killer whale	Eastern North Pacific Offshore	282	44	0	413	73	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
	Eastern North Pacific Transient/West Coast Transient	524	82	0	766	136	0
	Hawaiian	338	14	0	424	21	0
Long-beaked common dolphin	California	518,773	40,017	0	647,923	55,313	0
Melon-headed whale	Hawaiian Islands	9,015	686	0	12,446	859	0
	Kohala Resident	901	12	0	1,055	21	0
Northern right whale dolphin	California, Oregon, & Washington	224,296	28,590	0	302,249	40,037	0
Pacific white-sided dolphin	California, Oregon, & Washington	172,522	22,249	0	233,540	31,717	0
Pantropical spotted dolphin	Hawaii Island	12,036	567	0	14,014	909	0
	Hawaii Pelagic	27,948	1,255	0	38,060	1,786	0
	Oahu	20,463	142	0	20,571	146	0
	4-Island	1,289	6	0	1,357	6	0
Pygmy killer whale	Hawaiian	23,304	1,121	0	29,758	1,573	0
	Tropical	1,941	164	0	2,804	234	0
Risso's dolphin	California, Oregon, & Washington	302,456	35,847	0	402,777	50,398	0
	Hawaiian	26,931	1,210	0	36,139	1,704	0
Rough-toothed dolphin	Hawaiian	17,473	1,033	0	22,716	1,454	0
	NSD <sup>1</sup>	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	3,734,713	424,461	6	5,223,474	607,478	8
Short-finned pilot whale	California, Oregon, & Washington	4,204	288	0	5,542	401	0
	Hawaiian	35,880	1,181	0	46,118	1,652	0
Spinner dolphin	Hawaii Island	428	5	0	448	6	0
	Hawaii Pelagic	12,322	504	0	17,530	657	0
	Kauai & Niihau	1,385	2	0	1,834	4	0
	Oahu & 4-Island	7,346	79	0	7,516	83	0
Striped dolphin	California, Oregon, & Washington	509,735	41,090	0	736,477	60,512	0
	Hawaiian	21,438	1,088	0	27,710	1,497	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Family Phocoenidae (porpoises)</b>							
Dall's porpoise	California, Oregon, & Washington	26,564	92,325	278	32,012	134,842	393
<b>Suborder Pinnipedia</b>							
<b>Family Otariidae (eared seals)</b>							
California sea lion	U.S.	307,054	18,188	0	375,420	19,446	0
Guadalupe fur seal*	Mexico	2,334	52	0	2,791	83	0
Northern fur seal	California	43,571	436	0	60,342	647	0
<b>Family Phocidae (true seals)</b>							
Harbor seal	California	5,121	8,309	4	5,898	10,778	6
Hawaiian monk seal*	Hawaiian	455	192	0	496	305	0
Northern elephant seal	California	112,002	57,762	3	149,089	83,680	4

\*ESA-listed species (all stocks) within the HSTT Study Area.

†Only designated stocks are ESA-listed.

<sup>1</sup>NSD: No stock designation.

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		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>										
<b>Family Balaenopteridae (rorquals)</b>										
Blue whale*	Central North Pacific	6	8	0	6	8	0	6	8	0
	Eastern North Pacific	367	436	0	383	444	0	383	444	0
Bryde's whale	Eastern Tropical Pacific	6	8	0	6	8	0	6	8	0
	Hawaiian	15	26	0	15	26	0	15	26	0
Fin whale*	California, Oregon, & Washington	356	583	0	378	595	0	380	596	0
	Hawaiian	7	8	0	7	8	0	7	8	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	130	309	0	133	312	0	133	311	0
	Central North Pacific	1,145	2,284	0	1,194	2,291	0	1,193	2,289	0
Minke whale	California, Oregon, & Washington	111	154	0	118	156	0	118	156	0
	Hawaiian	467	962	0	483	966	0	485	966	0
Sei whale*	Eastern North Pacific	11	14	0	12	14	0	11	15	0
	Hawaiian	18	30	0	18	31	0	19	30	0
<b>Family Eschrichtiidae</b>										
Gray whale <sup>†</sup>	Eastern North Pacific	719	1,127	1	742	1,147	1	743	1,148	1
	Western North Pacific <sup>†</sup>	1	1	0	1	1	0	1	1	0
<b>Suborder Odontoceti (toothed whales)</b>										
<b>Family Physeteridae (sperm whale)</b>										
Sperm whale*	California, Oregon, & Washington	1,045	10	0	1,084	10	0	1,093	10	0
	Hawaiian	750	7	0	775	7	0	775	7	0
<b>Family Kogiidae (sperm whales)</b>										

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Dwarf sperm whale	Hawaiian	2,525	3,629	9	2,633	3,638	9	2,639	3,631	9
Pygmy sperm whale	Hawaiian	1,023	1,447	4	1,067	1,454	4	1,069	1,448	4
Kogia whales	California, Oregon, & Washington	1,250	1,644	5	1,365	1,678	5	1,373	1,672	5
<b>Family Ziphiidae (beaked whales)</b>										
Baird's beaked whale	California, Oregon, & Washington	678	4	0	723	4	0	738	4	0
Blainville's beaked whale	Hawaiian	1,638	4	0	1,694	4	0	1,688	4	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0
	Hawaiian	541	1	0	560	1	0	560	1	0
Longman's beaked whale	Hawaiian	5,999	23	0	6,199	23	0	6,174	23	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	6,394	20	0	6,840	20	0	6,886	20	0
<b>Family Delphinidae (dolphins)</b>										
Bottlenose dolphin	California Coastal	1,560	33	0	1,561	33	0	1,561	33	0
	California, Oregon, & Washington Offshore	21,798	667	0	22,747	669	0	22,868	667	0
	Hawaiian Pelagic	1,174	39	0	1,203	39	0	1,195	39	0
	Kauai & Niihau	409	31	0	460	31	0	410	31	0
	Oahu	444	15	0	460	15	0	462	15	0
	4-Island	135	7	0	197	7	0	197	7	0
	Hawaii	35	3	0	35	3	0	35	3	0
False killer whale <sup>†</sup>	Hawaii Pelagic	313	13	0	327	13	0	320	13	0
	Main Hawaiian Islands Insular <sup>†</sup>	173	6	0	178	6	0	177	6	0
	Northwestern Hawaiian Islands	115	5	0	120	5	0	117	5	0

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Fraser's dolphin	Hawaiian	11,857	368	0	12,287	369	0	12,133	368	0
Killer whale	Eastern North Pacific Offshore	33	1	0	33	1	0	34	1	0
	Eastern North Pacific Transient/West Coast Transient	61	2	0	62	2	0	64	2	0
	Hawaiian	38	2	0	38	2	0	39	2	0
Long-beaked common dolphin	California	108,573	4,399	0	113,786	4,397	0	113,672	4,399	0
Melon-headed whale	Hawaiian Islands	1,064	39	0	1,119	38	0	1,111	39	0
	Kohala Resident	149	7	0	161	7	0	151	7	0
Northern right whale dolphin	California, Oregon, & Washington	38,513	1,337	0	39,922	1,328	0	40,240	1,337	0
Pacific white-sided dolphin	California, Oregon, & Washington	29,325	919	0	30,487	916	0	30,677	920	0
Pantropical spotted dolphin	Hawaii Island	1,266	105	0	1,304	105	0	1,295	105	0
	Hawaii Pelagic	3,432	132	0	3,505	133	0	3,508	132	0
	Oahu	176	15	0	187	15	0	189	15	0
	4-Island	304	15	0	441	15	0	439	15	0
Pygmy killer whale	Hawaiian	2,548	95	0	2,612	95	0	2,617	95	0
	Tropical	258	12	0	277	12	0	274	12	0
Risso's dolphin	California, Oregon, & Washington	46,491	1,724	0	48,211	1,720	0	48,456	1,725	0
	Hawaiian	2,627	110	0	2,696	110	0	2,695	110	0
Rough-toothed dolphin	Hawaiian	2,042	92	0	2,099	92	0	2,102	92	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	515,030	18,786	0	540,773	18,796	0	542,718	18,794	0



Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Short-finned pilot whale	California, Oregon, & Washington	831	56	0	867	56	0	867	56	0
	Hawaiian	4,081	110	0	4,225	110	0	4,197	110	0
Spinner dolphin	Hawaii Island	187	11	0	191	11	0	190	11	0
	Hawaii Pelagic	1,336	36	0	1,359	36	0	1,367	36	0
	Kauai & Niihau	1,249	62	0	1,374	62	0	1,253	62	0
	Oahu & 4-Island	249	13	0	314	13	0	315	13	0
Striped dolphin	California, Oregon, & Washington	50,550	2,031	0	53,992	2,022	0	54,545	2,032	0
	Hawaiian	2,247	92	0	2,302	92	0	2,316	92	0
<b>Family Phocoenidae (porpoises)</b>										
Dall's porpoise	California, Oregon, & Washington	7,816	8,213	17	8,312	8,182	17	8,351	8,290	17
<b>Suborder Pinnipedia</b>										
<b>Family Otariidae (eared seals)</b>										
California sea lion	U.S.	46,695	921	1	47,719	920	1	47,774	921	1
Guadalupe fur seal*	Mexico	871	3	0	936	3	0	942	3	0
Northern fur seal	California	5,219	23	0	5,479	23	0	5,501	23	0
<b>Family Phocidae (true seals)</b>										
Harbor seal	California	1,235	1,023	0	1,280	1,025	0	1,281	1,025	0
Hawaiian monk seal*	Hawaiian	34	12	0	48	12	0	48	12	0
Northern elephant seal	California	17,060	4,276	0	18,208	4,302	0	18,277	4,303	0

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

<sup>1</sup>NSD = No stock designation.

PTS = permanent threshold shift; TTS = temporary threshold shift.

### E.4 ESTIMATED MARINE MAMMAL IMPACTS PER FIVE 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 five years.

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

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>							
<b>Family Balaenopteridae (rorquals)</b>							
Blue whale*	Central North Pacific	28	37	0	29	38	0
	Eastern North Pacific	1,842	2,135	0	1,904	2,171	0
Bryde's whale	Eastern Tropical Pacific	31	38	0	32	38	0
	Hawaiian	74	120	0	76	121	0
Fin whale*	California, Oregon, & Washington	1,791	2,870	0	1,885	2,926	0
	Hawaiian	35	39	0	36	39	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	651	1,510	0	661	1,517	0
	Central North Pacific	5,768	10,838	0	5,960	10,916	0
Minke whale	California, Oregon, & Washington	562	737	0	589	746	0
	Hawaiian	2,347	4,486	0	2,418	4,536	0
Sei whale*	Eastern North Pacific	54	70	0	57	70	0
	Hawaiian	90	139	0	93	141	0
<b>Family Eschrichtiidae</b>							
Gray whale <sup>†</sup>	Eastern North Pacific	3,608	5,517	3	3,708	5,605	3
	Western North Pacific <sup>†</sup>	4	7	0	4	7	0
<b>Suborder Odontoceti (toothed whales)</b>							
<b>Family Physeteridae (sperm whale)</b>							
Sperm whale*	California, Oregon, & Washington	5,208	44	0	5,407	44	0
	Hawaiian	3,700	31	0	3,806	31	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Family Kogiidae (sperm whales)</b>							
Dwarf sperm whale	Hawaiian	12,772	16,929	42	13,208	17,059	42
Pygmy sperm whale	Hawaiian	5,174	6,737	18	5,348	6,792	18
Kogia whales	California, Oregon, & Washington	6,379	7,920	24	6,854	8,075	24
<b>Family Ziphiidae (beaked whales)</b>							
Baird's beaked whale	California, Oregon, & Washington	3,400	18	0	3,646	18	0
Blainville's beaked whale	Hawaiian	8,098	19	0	8,313	19	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0
	Hawaiian	2,670	5	0	2,751	5	0
Longman's beaked whale	Hawaiian	29,640	103	0	30,396	104	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	32,081	93	0	34,057	94	0
<b>Family Delphinidae (dolphins)</b>							
Bottlenose dolphin	California Coastal	7,802	164	0	7,806	164	0
	California, Oregon, & Washington Offshore	109,203	3,106	0	113,511	3,123	0
	Hawaiian Pelagic	5,834	179	0	5,923	180	0
	Kauai & Niihau	2,069	92	0	2,072	92	0
	Oahu	2,218	76	0	2,293	76	0
	4-Island	736	33	0	982	33	0
	Hawaii	172	14	0	173	14	0
False killer whale <sup>†</sup>	Hawaii Pelagic	1,560	62	0	1,591	62	0
	Main Hawaiian Islands Insular <sup>†</sup>	866	26	0	881	26	0
	Northwestern Hawaiian Islands	571	23	0	582	23	0
Fraser's dolphin	Hawaiian	58,632	1,673	0	59,837	1,683	0
Killer whale	Eastern North Pacific Offshore	163	3	0	169	3	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
	Eastern North Pacific Transient/West Coast Transient	303	6	0	313	6	0
	Hawaiian	189	9	0	193	10	0
Long-beaked common dolphin	California	546,154	21,403	0	566,667	21,426	0
Melon-headed whale	Hawaiian Islands	5,271	152	0	5,466	154	0
	Kohala Resident	759	36	0	767	36	0
Northern right whale dolphin	California, Oregon, & Washington	192,644	6,132	0	199,615	6,168	0
Pacific white-sided dolphin	California, Oregon, & Washington	146,709	4,191	0	152,185	4,218	0
Pantropical spotted dolphin	Hawaii Island	6,301	490	0	6,426	491	0
	Hawaii Pelagic	17,017	591	0	17,340	604	0
	Oahu	883	74	0	937	74	0
	4-Island	1,652	74	0	2,188	74	0
Pygmy killer whale	Hawaiian	12,586	419	0	12,887	427	0
	Tropical	1,295	56	0	1,361	56	0
Risso's dolphin	California, Oregon, & Washington	232,439	7,945	0	240,360	7,982	0
	Hawaiian	12,995	492	0	13,289	499	0
Rough-toothed dolphin	Hawaiian	10,125	399	0	10,382	404	0
	NSD <sup>1</sup>	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	2,582,358	88,389	0	2,694,739	89,093	0
Short-finned pilot whale	California, Oregon, & Washington	4,168	272	0	4,315	272	0
	Hawaiian	20,261	484	0	20,762	490	0
Spinner dolphin	Hawaii Island	936	57	0	949	57	0
	Hawaii Pelagic	6,606	161	0	6,743	164	0
	Kauai & Niihau	6,340	190	0	6,356	190	0
	Oahu & 4-Island	1,306	65	0	1,572	65	0
Striped dolphin	California, Oregon, & Washington	253,588	9,287	0	269,681	9,428	0
	Hawaiian	11,120	417	0	11,418	423	0

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Family Phocoenidae (porpoises)</b>							
Dall's porpoise	California, Oregon, & Washington	39,593	39,225	78	41,691	39,682	78
<b>Suborder Pinnipedia</b>							
<b>Family Otariidae (eared seals)</b>							
California sea lion	U.S.	233,207	4,542	4	237,668	4,544	4
Guadalupe fur seal*	Mexico	4,344	13	0	4,641	13	0
Northern fur seal	California	26,049	105	0	27,200	106	0
<b>Family Phocidae (true seals)</b>							
Harbor seal	California	6,211	4,945	0	6,394	4,957	0
Hawaiian monk seal*	Hawaiian	184	45	0	240	45	0
Northern elephant seal	California	86,031	20,431	0	90,843	20,675	0

\*ESA-listed species (all stocks) within the HSTT Study Area.

†Only designated stocks are ESA-listed.

<sup>1</sup>NSD: No stock designation. PTS = permanent threshold shift; TTS = temporary threshold shift.

### E.5 ESTIMATED MARINE MAMMAL IMPACTS FROM AIR GUNS UNDER NAVY TRAINING ACTIVITIES

There are no air gun activities under training; therefore, there would be no takes.

### E.6 ESTIMATED MARINE MAMMAL IMPACTS FROM AIR GUNS UNDER NAVY TESTING ACTIVITIES

Table E-5 provides a summary of the estimated number of marine mammal impacts from exposure to air guns used during Navy testing activities under Alternatives 1 and 2 over the course of a year. Most species and stocks in the Study Area either do not occur in areas where air gun activities take place, or did not result in any estimated impact based on the quantitative analysis.

Table E-5: Estimated Marine Mammals Impacts per Year from Air Gun Activities

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>										
<b>Family Balaenopteridae (rorquals)</b>										
Blue whale*	Eastern North Pacific	1	0	0	1	0	0	1	0	0
<b>Family Eschrichtiidae</b>										
Gray whale	Eastern North Pacific	1	0	0	1	0	0	1	0	0
<b>Suborder Odontoceti (toothed whales)</b>										
<b>Family Kogiidae (sperm whales)</b>										
Dwarf sperm whale	Hawaiian	0	6	1	0	6	1	0	6	1
Pygmy sperm whale	Hawaiian	0	3	1	0	3	1	0	3	1
Kogia whales	California, Oregon, & Washington	0	1	1	0	1	1	0	1	1
<b>Family Delphinidae (dolphins)</b>										
Bottlenose dolphin	California, Oregon, & Washington Offshore	6	0	0	6	0	0	6	0	0
Long-beaked common dolphin	California	51	0	0	51	0	0	51	0	0
Northern right whale dolphin	California, Oregon, & Washington	9	0	0	9	0	0	9	0	0
Pacific white-sided dolphin	California, Oregon, & Washington	6	0	0	6	0	0	6	0	0
Risso's dolphin	California, Oregon, & Washington	23	0	0	23	0	0	23	0	0
Short-beaked common dolphin	California, Oregon, & Washington	198	2	1	198	2	1	198	2	1
<b>Family Phocoenidae (porpoises)</b>										
Dall's porpoise	California, Oregon, & Washington	3	5	2	3	5	2	3	5	2
<b>Suborder Pinnipedia</b>										

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – Minimum</i>			<i>Alternative 1 – Maximum</i>			<i>Alternative 2</i>		
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>
<b><i>Family Otariidae (eared seals)</i></b>										
California sea lion	U.S.	6	0	0	6	0	0	6	0	0
Northern fur seal	California	1	0	0	1	0	0	1	0	0
<b><i>Family Phocidae (true seals)</i></b>										
Harbor seal	California	3	0	0	3	0	0	3	0	0
Northern elephant seal	California	9	2	0	9	2	0	9	2	0

\* ESA-listed species (all stocks) within the HSTT Study Area. PTS = permanent threshold shift; TTS = temporary threshold shift.

### E.7 ESTIMATED MARINE MAMMAL IMPACTS PER FIVE YEAR PERIOD FROM AIR GUNS UNDER NAVY TESTING ACTIVITIES

Table E-6 provides a summary of the estimated number of marine mammal impacts from exposure to air guns used during Navy testing activities under Alternatives 1 and 2 over the course of five years. Most species or stock in the Study Area either do not occur in areas where air gun activities take place, or did not result in any estimated impact based on the quantitative analysis.

**Table E-6: Estimated Marine Mammals Impacts per Five-Year Period from Air Gun Activities**

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Mysticeti (baleen whales)</b>							
<b>Family Balaenopteridae (rorquals)</b>							
Blue whale*	Eastern North Pacific	3	0	0	3	0	0
<b>Family Eschrichtiidae</b>							
Gray whale	Eastern North Pacific	6	0	0	6	0	0
<b>Suborder Odontoceti (toothed whales)</b>							
<b>Family Kogiidae (sperm whales)</b>							
Dwarf sperm whale	Hawaiian	0	29	6	0	29	6
Pygmy sperm whale	Hawaiian	0	13	3	0	13	3
Kogia whales	California, Oregon, & Washington	0	4	3	0	4	3
<b>Family Delphinidae (dolphins)</b>							
Bottlenose dolphin	California, Oregon, & Washington Offshore	31	0	0	31	0	0
Long-beaked common dolphin	California	254	0	0	254	0	0
Northern right whale dolphin	California, Oregon, & Washington	44	0	0	44	0	0
Pacific white-sided dolphin	California, Oregon, & Washington	31	0	0	31	0	0
Risso's dolphin	California, Oregon, & Washington	113	0	0	113	0	0
Short-beaked common dolphin	California, Oregon, & Washington	992	10	7	992	10	7
<b>Family Phocoenidae (porpoises)</b>							



Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
Dall's porpoise	California, Oregon, & Washington	14	26	10	14	26	10
<b>Suborder Pinnipedia</b>							
<b>Family Otariidae (eared seals)</b>							
California sea lion	U.S.	30	0	0	30	0	0
Northern fur seal	California	6	0	0	6	0	0
<b>Family Phocidae (true seals)</b>							
Harbor seal	California	16	0	0	16	0	0
Northern elephant seal	California	45	10	0	45	10	0

\* ESA-listed species (all stocks) within the HSTT Study Area. PTS = permanent threshold shift; TTS = temporary threshold shift.

### E.8 ESTIMATED MARINE MAMMAL IMPACTS FROM PILE DRIVING UNDER NAVY TRAINING ACTIVITIES

Table E-7 provides a summary of the estimated number of marine mammal impacts from exposure to pile driving used during Navy training activities under Alternatives 1 and 2 over the course of a year. Pile driving only occurs in the Southern California region of the Study Area, therefore species or stocks that occur near or around Hawaii would not be impacted. Most species or stocks in the Study Area either do not occur in areas where pile driving activities take place, or did not result in any estimated impact based on the quantitative analysis.

Table E-7: Estimated Marine Mammals Impacts per Year from Pile Driving Activities

Species	Stock	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Odontoceti (toothed whales)</b>										
<b>Family Delphinidae (dolphins)</b>										
Bottlenose dolphin	California Coastal	20	0	0	20	0	0	20	0	0
	California, Oregon, & Washington Offshore	8	0	0	8	0	0	8	0	0
Long-beaked common dolphin	California	82	0	0	82	0	0	82	0	0
Northern right whale dolphin	California, Oregon, & Washington	12	0	0	12	0	0	12	0	0
Pacific white-sided dolphin	California, Oregon, & Washington	6	0	0	6	0	0	6	0	0
Risso's dolphin	California, Oregon, & Washington	18	0	0	18	0	0	18	0	0
Short-beaked common dolphin	California, Oregon, & Washington	238	0	0	238	0	0	238	0	0
Striped dolphin	California, Oregon, & Washington	2	0	0	2	0	0	2	0	0
<b>Family Phocoenidae (porpoises)</b>										
Dall's porpoise	California, Oregon, & Washington	2	2	0	2	2	0	2	2	0
<b>Suborder Pinnipedia</b>										
<b>Family Otariidae (eared seals)</b>										
California sea lion	U.S.	150	0	0	150	0	0	150	0	0
Northern fur seal	California	2	0	0	2	0	0	2	0	0

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – Minimum</i>			<i>Alternative 1 – Maximum</i>			<i>Alternative 2</i>		
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>
<i>Family Phocidae (true seals)</i>										
Harbor seal	California	2	0	0	2	0	0	2	0	0
Northern elephant seal	California	12	0	0	12	0	0	12	0	0

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

### E.9 ESTIMATED MARINE MAMMAL IMPACTS PER FIVE YEAR PERIOD FROM PILE DRIVING UNDER NAVY TRAINING ACTIVITIES

Table E-8 provides a summary of the estimated number of marine mammal impacts from exposure to pile driving used during Navy training activities under Alternatives 1 and 2 over the course of five years. Pile driving only occurs in the Southern California region of the Study Area, therefore species or stocks that occur near or around Hawaii would not be impacted. Most species or stocks in the Study Area either do not occur in areas where pile driving activities take place, or did not result in any estimated impact based on the quantitative analysis.

**Table E-8: Estimated Marine Mammals Impacts per Five-Year Period from Pile Driving Activities**

Species	Stock	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
		Behavioral Response	TTS	PTS	Behavioral Response	TTS	PTS
<b>Suborder Odontoceti (toothed whales)</b>							
<b>Family Delphinidae (dolphins)</b>							
Bottlenose dolphin	California Coastal	100	0	0	100	0	0
	California, Oregon, & Washington Offshore	40	0	0	40	0	0
Long-beaked common dolphin	California	410	0	0	410	0	0
Northern right whale dolphin	California, Oregon, & Washington	60	0	0	60	0	0
Pacific white-sided dolphin	California, Oregon, & Washington	30	0	0	30	0	0
Risso's dolphin	California, Oregon, & Washington	90	0	0	90	0	0
Short-beaked common dolphin	California, Oregon, & Washington	1190	0	0	1190	0	0
Striped dolphin	California, Oregon, & Washington	10	0	0	10	0	0
<b>Family Phocoenidae (porpoises)</b>							
Dall's porpoise	California, Oregon, & Washington	10	10	0	10	10	0
<b>Suborder Pinnipedia</b>							
<b>Family Otariidae (eared seals)</b>							
California sea lion	U.S.	750	0	0	750	0	0
Northern fur seal	California	10	0	0	10	0	0
<b>Family Phocidae (true seals)</b>							

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 5-Year</i>			<i>Alternative 2 – 5-Year</i>		
		<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>	<i>Behavioral Response</i>	<i>TTS</i>	<i>PTS</i>
Harbor seal	California	10	0	0	10	0	0
Northern elephant seal	California	60	0	0	60	0	0

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

**E.10 ESTIMATED MARINE MAMMAL IMPACTS FROM PILE DRIVING UNDER NAVY TESTING ACTIVITIES**

There are no pile driving activities under testing; therefore, there would be no takes.

**E.11 ESTIMATED MARINE MAMMAL IMPACTS FROM EXPLOSIVES UNDER NAVY TRAINING ACTIVITIES**

Table E-9 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. In addition to impacts listed in Table E-9, over the course of a year, the quantitative analysis estimates mortality of one short-beaked common dolphin and one California sea lion (a total of two marine mammals) as a result of exposure to explosive training activities.

Table E-9: Estimated Marine Mammals Impacts per Year from Explosive Training Activities

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Mysticeti (baleen whales)</b>													
<b>Family Balaenopteridae (rorquals)</b>													
Blue whale*	Central North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific	0	8	1	0	0	8	1	0	0	8	1	0
Bryde's whale	Eastern Tropical Pacific	0	1	0	0	0	1	0	0	0	1	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	California, Oregon, & Washington	0	7	0	0	0	7	0	0	0	7	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	0	13	1	0	0	13	1	0	0	13	1	0
	Central North Pacific	0	21	1	0	0	22	1	0	0	22	1	0
Minke whale	California, Oregon, & Washington	0	3	1	0	0	4	1	0	0	4	1	0
	Hawaiian	0	8	0	0	0	10	0	0	0	10	0	0
Sei whale*	Eastern North Pacific	0	1	0	0	0	1	0	0	0	1	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Eschrichtiidae</b>													
Gray whale <sup>†</sup>	Eastern North Pacific	0	56	3	0	0	56	3	0	0	56	3	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
	Western North Pacific <sup>†</sup>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Suborder Odontoceti (toothed whales)</b>													
<b>Family Physeteridae (sperm whale)</b>													
Sperm whale*	California, Oregon, & Washington	2	1	0	0	2	1	0	0	2	1	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Kogiidae (sperm whales)</b>													
Dwarf sperm whale	Hawaiian	29	102	20	0	31	106	21	0	31	106	21	0
Pygmy sperm whale	Hawaiian	13	31	9	0	14	32	10	0	14	32	10	0
Kogia whales	California, Oregon, & Washington	32	44	11	0	33	45	11	0	33	45	11	0
<b>Family Ziphiidae (beaked whales)</b>													
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Blainville's beaked whale	Hawaiian	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
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Longman's beaked whale	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	1	2	0	0	1	2	0	0	1	2	0	0
<b>Family Delphinidae (dolphins)</b>													
Bottlenose dolphin	California Coastal	0	0	0	0	0	0	0	0	0	0	0	0
	California, Oregon, & Washington Offshore	6	12	2	0	6	12	2	0	6	12	2	0
	Hawaiian Pelagic	0	1	0	0	0	1	0	0	0	1	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0	0	0	0	0
	Oahu	3	11	1	0	3	11	1	0	3	11	1	0
	4-Island	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaii	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale <sup>†</sup>	Hawaii Pelagic	0	0	0	0	0	0	0	0	0	0	0	0
	Main Hawaiian Islands Insular <sup>†</sup>	0	1	0	0	0	1	0	0	0	1	0	0
	Northwestern Hawaiian Islands	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	Hawaiian	3	5	1	0	3	5	1	0	3	5	1	0



Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Killer whale	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific Transient/West Coast Transient	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Long-beaked common dolphin	California	27	43	13	1	27	43	13	1	27	43	13	1
Melon-headed whale	Hawaiian Islands	0	0	0	0	1	1	0	0	1	1	0	0
	Kohala Resident	0	0	0	0	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	8	18	7	1	8	18	7	1	8	18	7	1
Pacific white-sided dolphin	California, Oregon, & Washington	4	13	3	0	4	13	3	0	4	13	3	0
Pantropical spotted dolphin	Hawaii Island	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaii Pelagic	0	1	0	0	0	1	0	0	0	1	0	0
	Oahu	0	1	0	0	0	1	0	0	0	1	0	0
	4-Island	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	Hawaiian	0	1	0	0	0	1	0	0	0	1	0	0
	Tropical	0	0	0	0	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Risso's dolphin	California, Oregon, & Washington	8	27	6	0	8	27	6	0	8	27	6	0
	Hawaiian	0	0	0	0	0	1	0	0	0	1	0	0
Rough-toothed dolphin	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	47	139	38	6	50	142	38	6	50	142	38	6
Short-finned pilot whale	California, Oregon, & Washington	0	0	1	0	0	0	1	0	0	0	1	0
	Hawaiian	1	2	0	0	1	2	0	0	1	2	0	0
Spinner dolphin	Hawaii Island	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaii Pelagic	0	0	0	0	0	0	0	0	0	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0	0	0	0	0
	Oahu & 4-Island	1	3	1	0	1	3	1	0	1	3	1	0
Striped dolphin	California, Oregon, & Washington	6	14	1	0	7	14	1	0	7	14	1	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Phocoenidae (porpoises)</b>													
Dall's porpoise	California, Oregon, & Washington	150	329	73	0	150	331	73	0	150	331	73	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Pinnipedia</b>													
<b>Family Otariidae (eared seals)</b>													
California sea lion	U.S.	78	151	82	8	78	151	82	8	78	151	82	8
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0	0	0	0	0
Northern fur seal	California	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Phocidae (true seals)</b>													
Harbor seal	California	18	24	6	0	18	24	6	0	18	24	6	0
Hawaiian monk seal*	Hawaiian	0	3	1	0	0	3	1	0	0	3	1	0
Northern elephant seal	California	46	176	68	2	47	177	69	2	47	177	69	2

\* ESA-listed species (all stocks) within the HSTT Study Area.

† Only designated stocks are ESA-listed.

<sup>1</sup>NSD = No stock designation; PTS = permanent threshold shift; TTS = temporary threshold shift.

## **E.12 ESTIMATED MARINE MAMMAL IMPACTS PER FIVE YEAR PERIOD FROM EXPLOSIVES UNDER NAVY TRAINING ACTIVITIES**

Table E-10 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 five years. In addition to impacts listed in Table E-10, over the course of a five-year period, the quantitative analysis estimates mortality of three short-beaked common dolphins and four California sea lions (a total of seven marine mammals) as a result of exposure to explosive training activities.

**Table E-10: Estimated Marine Mammals Impacts per Five-Year Period from Explosive Training Activities**

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Mysticeti (baleen whales)</b>									
<b>Family Balaenopteridae (rorquals)</b>									
Blue whale*	Central North Pacific	0	0	0	0	0	0	0	0
	Eastern North Pacific	0	38	3	0	0	40	3	0
Bryde's whale	Eastern Tropical Pacific	0	3	0	0	0	3	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Fin whale*	California, Oregon, & Washington	0	33	0	0	0	34	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	0	60	3	0	0	61	3	0
	Central North Pacific	0	106	5	0	0	112	5	0
Minke whale	California, Oregon, & Washington	0	16	4	0	0	17	4	0
	Hawaiian	0	41	0	0	0	51	0	0
Sei whale*	Eastern North Pacific	0	4	0	0	0	4	0	0
	Hawaiian	0	0	0	0	0	0	0	0
<b>Family Eschrichtiidae</b>									
Gray whale <sup>†</sup>	Eastern North Pacific	0	263	12	0	0	263	12	0
	Western North Pacific <sup>†</sup>	0	0	0	0	0	0	0	0
<b>Suborder Odontoceti (toothed whales)</b>									
<b>Family Physeteridae (sperm whale)</b>									
Sperm whale*	California, Oregon, & Washington	12	6	0	0	12	6	0	0
	Hawaiian	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Family Kogiidae (sperm whales)</b>									
Dwarf sperm whale	Hawaiian	148	514	99	0	157	528	105	0
Pygmy sperm whale	Hawaiian	64	155	44	0	68	162	48	0
Kogia whales	California, Oregon, & Washington	160	217	55	0	162	221	56	0
<b>Family Ziphiidae (beaked whales)</b>									
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Blainville's beaked whale	Hawaiian	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Longman's beaked whale	Hawaiian	0	0	0	0	0	0	0	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	5	9	0	0	5	9	0	0
<b>Family Delphinidae (dolphins)</b>									
Bottlenose dolphin	California Coastal	0	0	0	0	0	0	0	0
	California, Oregon, & Washington Offshore	29	59	9	0	30	59	9	0
	Hawaiian Pelagic	0	4	0	0	0	4	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0
	Oahu	13	57	5	0	13	57	5	0
	4-Island	0	0	0	0	0	0	0	0
	Hawaii	0	0	0	0	0	0	0	0
False killer whale <sup>†</sup>	Hawaii Pelagic	0	0	0	0	0	0	0	0
	Main Hawaiian Islands Insular <sup>†</sup>	0	3	0	0	0	3	0	0

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
	Northwestern Hawaiian Islands	0	0	0	0	0	0	0	0
Fraser's dolphin	Hawaiian	13	25	3	0	13	25	3	0
Killer whale	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0
	Eastern North Pacific Transient/West Coast Transient	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Long-beaked common dolphin	California	132	208	64	5	132	208	64	5
Melon-headed whale	Hawaiian Islands	2	2	0	0	4	4	0	0
	Kohala Resident	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	35	87	34	6	36	87	34	6
Pacific white-sided dolphin	California, Oregon, & Washington	20	61	12	0	20	61	13	0
Pantropical spotted dolphin	Hawaii Island	0	0	0	0	0	0	0	0
	Hawaii Pelagic	0	4	0	0	0	4	0	0
	Oahu	0	5	0	0	0	5	0	0
	4-Island	0	0	0	0	0	0	0	0
Pygmy killer whale	Hawaiian	0	3	0	0	0	4	0	0
	Tropical	0	0	0	0	0	0	0	0
Risso's dolphin	California, Oregon, & Washington	37	130	30	0	37	130	30	0
	Hawaiian	0	2	0	0	0	3	0	0
Rough-toothed dolphin	Hawaiian	0	0	0	0	0	0	0	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Short-beaked common dolphin	California, Oregon, & Washington	232	687	183	27	245	697	186	28
Short-finned pilot whale	California, Oregon, & Washington	0	0	5	0	0	0	5	0
	Hawaiian	6	10	0	0	6	10	0	0
Spinner dolphin	Hawaii Island	0	0	0	0	0	0	0	0
	Hawaii Pelagic	0	0	0	0	0	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0
	Oahu & 4-Island	4	16	5	0	4	16	5	0
Striped dolphin	California, Oregon, & Washington	32	69	3	0	34	71	3	0
	Hawaiian	0	0	0	0	0	0	0	0
<b>Family Phocoenidae (porpoises)</b>									
Dall's porpoise	California, Oregon, & Washington	730	1,617	356	0	732	1,622	357	0
<b>Suborder Pinnipedia</b>									
<b>Family Otariidae (eared seals)</b>									
California sea lion	U.S.	390	754	409	38	391	754	410	38
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0
Northern fur seal	California	0	0	0	0	0	0	0	0
<b>Family Phocidae (true seals)</b>									
Harbor seal	California	80	116	30	0	80	116	30	0
Hawaiian monk seal*	Hawaiian	0	15	3	0	0	15	3	0
Northern elephant seal	California	225	877	338	8	228	882	343	8

\*ESA-listed species (all stocks) within the HSTT Study Area. †Only designated stocks are ESA-listed. <sup>1</sup>NSD: No stock designation. PTS: permanent threshold shift; TTS: temporary threshold shift.



### **E.13 ESTIMATED MARINE MAMMAL IMPACTS FROM EXPLOSIVES UNDER NAVY TESTING ACTIVITIES**

Table E-11 provides a summary of the estimated number of marine mammal impacts from exposure to explosives used during Navy testing activities under Alternatives 1 and 2 over the course of a year. In addition to impacts listed in Table E-11 over the course of a year, the quantitative analysis estimates mortality of one short-beaked common dolphin as a result of exposure to explosive testing activities.

**Table E-11: Estimated Marine Mammals Impacts per Year for Explosive Testing Activities**

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Mysticeti (baleen whales)</b>													
<b>Family Balaenopteridae (rorquals)</b>													
Blue whale*	Central North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific	0	5	0	0	0	5	0	0	0	5	0	0
Bryde's whale	Eastern Tropical Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	California, Oregon, & Washington	0	7	1	0	0	7	1	0	0	7	1	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	0	3	0	0	0	4	0	0	0	4	0	0
	Central North Pacific	0	37	2	0	0	37	2	0	0	37	2	0
Minke whale	California, Oregon, & Washington	0	2	0	0	0	2	0	0	0	2	0	0
	Hawaiian	0	18	1	0	0	18	1	0	0	18	1	0
Sei whale*	Eastern North Pacific	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Eschrichtiidae</b>													
Gray whale <sup>†</sup>	Eastern North Pacific	0	29	1	0	0	30	1	0	0	30	1	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
	Western North Pacific†	0	0	0	0	0	0	0	0	0	0	0	0
<b>Suborder Odontoceti (toothed whales)</b>													
<b>Family Physeteridae (sperm whale)</b>													
Sperm whale*	California, Oregon, & Washington	0	1	0	0	0	2	0	0	0	2	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
<b>Family Kogiidae (sperm whales)</b>													
Dwarf sperm whale	Hawaiian	82	100	19	0	82	100	19	0	82	100	19	0
Pygmy sperm whale	Hawaiian	34	37	8	0	34	37	8	0	34	37	8	0
Kogia whales	California, Oregon, & Washington	31	34	7	0	35	41	9	0	35	41	9	0
<b>Family Ziphiidae (beaked whales)</b>													
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
Blainville's beaked whale	Hawaiian	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
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Longman's beaked whale	Hawaiian	0	1	0	0	0	1	0	0	0	1	0	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	1	1	0	0	1	2	0	0	1	2	0	0
<b>Family Delphinidae (dolphins)</b>													
Bottlenose dolphin	California Coastal	1	0	0	0	1	0	0	0	1	0	0	0
	California, Oregon, & Washington Offshore	7	6	1	0	7	7	1	0	7	7	1	0
	Hawaiian Pelagic	0	0	0	0	0	0	0	0	0	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0	0	0	0	0
	Oahu	0	0	0	0	0	0	0	0	0	0	0	0
	4-Island	2	1	0	0	2	1	0	0	2	1	0	0
	Hawaii	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale <sup>†</sup>	Hawaii Pelagic	0	0	0	0	0	0	0	0	0	0	0	0
	Main Hawaiian Islands Insular <sup>†</sup>	0	0	0	0	0	0	0	0	0	0	0	0
	Northwestern Hawaiian Islands	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	Hawaiian	3	5	1	0	3	5	1	0	3	5	1	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Killer whale	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0	0	0	0	0
	Eastern North Pacific Transient/West Coast Transient	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0	0	0	0	0
Long-beaked common dolphin	California	20	22	4	1	21	23	5	1	21	23	5	1
Melon-headed whale	Hawaiian Islands	0	0	0	0	0	0	0	0	0	0	0	0
	Kohala Resident	0	0	0	0	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	11	9	3	0	11	9	3	0	11	9	3	0
Pacific white-sided dolphin	California, Oregon, & Washington	6	7	2	0	7	8	2	0	7	8	2	0
Pantropical spotted dolphin	Hawaii Island	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaii Pelagic	1	1	0	0	1	1	0	0	1	1	0	0
	Oahu	0	0	0	0	0	0	0	0	0	0	0	0
	4-Island	1	1	0	0	1	1	0	0	1	1	0	0
Pygmy killer whale	Hawaiian	0	1	0	0	0	1	0	0	0	1	0	0
	Tropical	0	0	0	0	0	0	0	0	0	0	0	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Risso's dolphin	California, Oregon, & Washington	16	13	3	0	16	15	3	0	16	15	3	0
	Hawaiian	1	1	0	0	1	1	0	0	1	1	0	0
Rough-toothed dolphin	Hawaiian	1	1	0	0	1	1	0	0	1	1	0	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	156	174	37	4	163	188	39	4	163	187	39	4
Short-finned pilot whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaiian	2	1	0	0	2	1	0	0	2	1	0	0
Spinner dolphin	Hawaii Island	0	0	0	0	0	0	0	0	0	0	0	0
	Hawaii Pelagic	1	0	0	0	1	0	0	0	1	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0	0	0	0	0
	Oahu & 4-Island	2	2	0	0	2	2	0	0	2	2	0	0
Striped dolphin	California, Oregon, & Washington	8	11	2	0	9	12	2	0	9	12	2	0
	Hawaiian	1	1	0	0	1	1	0	0	1	1	0	0
<b>Family Phocoenidae (porpoises)</b>													
Dall's porpoise	California, Oregon, & Washington	280	254	48	0	300	289	53	0	300	289	53	0

Species	Stock	Alternative 1 – Minimum				Alternative 1 – Maximum				Alternative 2			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Pinnipedia</b>													
<b>Family Otariidae (eared seals)</b>													
California sea lion	U.S.	11	7	3	0	11	9	4	1	11	9	4	1
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0	0	0	0	0
Northern fur seal	California	1	1	1	0	1	1	1	0	1	1	1	0
<b>Family Phocidae (true seals)</b>													
Harbor seal	California	9	8	1	0	9	8	1	0	9	8	1	0
Hawaiian monk seal*	Hawaiian	3	3	0	0	3	3	0	0	3	3	0	0
Northern elephant seal	California	54	98	25	0	58	123	27	0	58	122	27	0

\* ESA-listed species (all stocks) within the HSTT Study Area.

† Only designated stocks are ESA-listed.

<sup>1</sup>NSD = No stock designation; PTS = permanent threshold shift; TTS = temporary threshold shift.

#### **E.14 ESTIMATED MARINE MAMMAL IMPACTS PER FIVE YEAR PERIOD FROM EXPLOSIVES UNDER NAVY TESTING ACTIVITIES**

Table E-12 provides a summary of the estimated number of marine mammal impacts from exposure to explosives used during Navy testing activities under Alternatives 1 and 2 over the course of five years. In addition to impacts listed in Table E-12, over the course of a five-year period, the quantitative analysis estimates mortality of three short-beaked common dolphins as a result of exposure to explosive testing activities.



**Table E-12: Estimated Marine Mammals Impacts per Five-Year Period from Explosive Testing Activities**

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
<b>Suborder Mysticeti (baleen whales)</b>									
<b>Family Balaenopteridae (rorquals)</b>									
Blue whale*	Central North Pacific	0	0	0	0	0	0	0	0
	Eastern North Pacific	0	25	0	0	0	27	0	0
Bryde's whale	Eastern Tropical Pacific	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Fin whale*	California, Oregon, & Washington	0	34	3	0	0	34	3	0
	Hawaiian	0	0	0	0	0	0	0	0
Humpback whale <sup>†</sup>	California, Oregon, & Washington <sup>†</sup>	0	17	0	0	0	18	0	0
	Central North Pacific	0	171	10	0	0	171	10	0
Minke whale	California, Oregon, & Washington	0	10	0	0	0	11	0	0
	Hawaiian	0	85	4	0	0	85	4	0
Sei whale*	Eastern North Pacific	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
<b>Family Eschrichtiidae</b>									
Gray whale <sup>†</sup>	Eastern North Pacific	0	146	4	0	0	152	4	0
	Western North Pacific <sup>†</sup>	0	0	0	0	0	0	0	0
<b>Suborder Odontoceti (toothed whales)</b>									
<b>Family Physeteridae (sperm whale)</b>									
Sperm whale*	California, Oregon, & Washington	0	7	0	0	0	8	0	0
	Hawaiian	0	0	0	0	0	0	0	0
<b>Family Kogiidae (sperm whales)</b>									

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		Behavioral Response	TTS	PTS	Injury	Behavioral Response	TTS	PTS	Injury
Dwarf sperm whale	Hawaiian	392	485	92	0	392	485	92	0
Pygmy sperm whale	Hawaiian	166	180	39	0	166	180	39	0
Kogia whales	California, Oregon, & Washington	157	183	40	0	173	205	45	0
<b>Family Ziphiidae (beaked whales)</b>									
Baird's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
Blainville's beaked whale	Hawaiian	0	0	0	0	0	0	0	0
Cuvier's beaked whale	California, Oregon, & Washington	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Longman's beaked whale	Hawaiian	0	3	0	0	0	3	0	0
Mesoplodon spp (beaked whale guild)	California, Oregon, & Washington	4	7	0	0	4	8	0	0
<b>Family Delphinidae (dolphins)</b>									
Bottlenose dolphin	California Coastal	2	0	0	0	2	0	0	0
	California, Oregon, & Washington Offshore	37	33	4	0	37	35	4	0
	Hawaiian Pelagic	0	0	0	0	0	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0
	Oahu	0	0	0	0	0	0	0	0
	4-Island	6	3	0	0	6	3	0	0
	Hawaii	0	0	0	0	0	0	0	0
False killer whale <sup>†</sup>	Hawaii Pelagic	0	0	0	0	0	0	0	0
	Main Hawaiian Islands Insular <sup>†</sup>	0	0	0	0	0	0	0	0
	Northwestern Hawaiian Islands	0	0	0	0	0	0	0	0

<i>Species</i>	<i>Stock</i>	<i>Alternative 1 – 5-Year</i>				<i>Alternative 2 – 5-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>
Fraser's dolphin	Hawaiian	15	25	5	0	15	25	5	0
Killer whale	Eastern North Pacific Offshore	0	0	0	0	0	0	0	0
	Eastern North Pacific Transient/West Coast Transient	0	0	0	0	0	0	0	0
	Hawaiian	0	0	0	0	0	0	0	0
Long-beaked common dolphin	California	99	110	21	3	103	117	23	3
Melon-headed whale	Hawaiian Islands	0	0	0	0	0	0	0	0
	Kohala Resident	0	0	0	0	0	0	0	0
Northern right whale dolphin	California, Oregon, & Washington	53	44	15	0	53	46	16	0
Pacific white-sided dolphin	California, Oregon, & Washington	31	38	8	0	33	41	10	0
Pantropical spotted dolphin	Hawaii Island	0	0	0	0	0	0	0	0
	Hawaii Pelagic	3	4	0	0	3	4	0	0
	Oahu	0	0	0	0	0	0	0	0
	4-Island	5	3	0	0	5	3	0	0
Pygmy killer whale	Hawaiian	0	3	0	0	0	3	0	0
	Tropical	0	0	0	0	0	0	0	0
Risso's dolphin	California, Oregon, & Washington	78	71	15	0	80	77	15	0
	Hawaiian	4	4	0	0	4	4	0	0
Rough-toothed dolphin	Hawaiian	4	4	0	0	4	4	0	0
	NSD <sup>1</sup>	0	0	0	0	0	0	0	0
Short-beaked common dolphin	California, Oregon, & Washington	786	896	188	21	813	936	194	21

Species	Stock	Alternative 1 – 5-Year				Alternative 2 – 5-Year			
		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
	Hawaiian	8	4	0	0	8	4	0	0
Spinner dolphin	Hawaii Island	0	0	0	0	0	0	0	0
	Hawaii Pelagic	3	0	0	0	3	0	0	0
	Kauai & Niihau	0	0	0	0	0	0	0	0
	Oahu & 4-Island	10	8	0	0	10	8	0	0
Striped dolphin	California, Oregon, & Washington	42	56	10	0	45	62	10	0
	Hawaiian	4	5	0	0	4	5	0	0
<b>Family Phocoenidae (porpoises)</b>									
Dall's porpoise	California, Oregon, & Washington	1,421	1,332	250	0	1,499	1,443	264	0
<b>Suborder Pinnipedia</b>									
<b>Family Otariidae (eared seals)</b>									
California sea lion	U.S.	53	38	17	2	53	47	20	3
Guadalupe fur seal*	Mexico	0	0	0	0	0	0	0	0
Northern fur seal	California	4	4	4	0	5	5	4	0
<b>Family Phocidae (true seals)</b>									
Harbor seal	California	47	39	5	0	47	42	5	0
Hawaiian monk seal*	Hawaiian	11	14	0	0	11	14	0	0
Northern elephant seal	California	275	551	131	0	291	610	135	0

\* ESA-listed species (all stocks) within the HSTT Study Area.

† Only designated stocks are ESA-listed.

<sup>1</sup>NSD: No stock designation. PTS = permanent threshold shift; TTS = temporary threshold shift.

**E.15 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 five years.

**E.16 ESTIMATED SEA TURTLE IMPACTS FROM AIR GUNS UNDER NAVY TRAINING AND TESTING ACTIVITIES**

There are no air gun activities under training; therefore, there would be no takes. No sea turtle impacts are anticipated from exposure to air guns used during Navy testing activities under Alternatives 1 and 2 over the course of a year and over the course of five years.

**E.17 ESTIMATED SEA TURTLE IMPACTS FROM PILE DRIVING UNDER NAVY TRAINING AND TESTING ACTIVITIES**

There are no pile driving activities under testing; therefore, there would be no takes. No sea turtle impacts are anticipated from exposure to pile driving used during Navy training activities under Alternatives 1 and 2 over the course of a year and over the course of five years.

**E.18 ESTIMATED SEA TURTLE IMPACTS FROM EXPLOSIVES UNDER NAVY TRAINING AND TESTING ACTIVITIES**

Table E-13 provides a summary of the estimated number of sea turtle impacts from exposure to explosives used during Navy training and testing activities under Alternatives 1 and 2 over the course of a year.

**Table E-13: Estimated Sea Turtle Impacts per Year from Explosive Training and Testing Activities**

<i>Species</i>	<i>Alternative 1 – Minimum</i>			<i>Alternative 1 – Maximum</i>			<i>Alternative 2</i>		
	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>	<i>TTS</i>	<i>PTS</i>	<i>Injury</i>
<b><i>Explosive Training Activities</i></b>									
<b><i>Family Cheloniidae (hardshell turtles)</i></b>									
Green turtle*	20	7	1	20	7	1	20	7	1
Hawksbill turtle*	0	0	0	0	0	0	0	0	0
Loggerhead turtle*	0	0	0	0	0	0	0	0	0
Olive ridley turtle*	0	0	0	0	0	0	0	0	0
<b><i>Family Dermochelyidae (scuteless turtles)</i></b>									
Leatherback turtle*	0	0	0	0	0	0	0	0	0
<b><i>Explosive Testing Activities</i></b>									
<b><i>Family Cheloniidae (hardshell turtles)</i></b>									
Green turtle*	0	0	0	0	0	0	0	0	0
Hawksbill turtle*	0	0	0	0	0	0	0	0	0
Loggerhead turtle*	0	0	0	0	0	0	0	0	0

Species	Alternative 1 – Minimum			Alternative 1 – Maximum			Alternative 2		
	TTS	PTS	Injury	TTS	PTS	Injury	TTS	PTS	Injury
Olive ridley turtle*	0	0	0	0	0	0	0	0	0
<b>Family Dermochelyidae (scuteless turtles)</b>									
Leatherback turtle*	0	0	0	0	0	0	0	0	0

\*ESA-listed species within the HSTT Study Area. PTS: permanent threshold shift; TTS: temporary threshold shift.

### E.19 ESTIMATED SEA TURTLE IMPACTS PER FIVE YEAR PERIOD FROM EXPLOSIVES UNDER NAVY TRAINING AND TESTING ACTIVITIES

Table E-14 provides a summary of the estimated number of sea turtle impacts from exposure to explosives used during Navy training and testing activities under Alternatives 1 and 2 per five-year period.

**Table E-14: Estimated Sea Turtle Impacts per Five-Year Period from Explosive Training and Testing Activities**

Species	Alternative 1 – 5-Year			Alternative 2 – 5-Year		
	TTS	PTS	Injury	TTS	PTS	Injury
<b>Explosive Training Activities</b>						
<b>Family Cheloniidae (hardshell turtles)</b>						
Green turtle*	98	35	3	98	35	3
Hawksbill turtle*	0	0	0	0	0	0
Loggerhead turtle*	0	0	0	0	0	0
Olive ridley turtle*	0	0	0	0	0	0
<b>Family Dermochelyidae (scuteless turtles)</b>						
Leatherback turtle*	0	0	0	0	0	0
<b>Explosive Testing Activities</b>						
<b>Family Cheloniidae (hardshell turtles)</b>						
Green turtle*	0	0	0	0	0	0
Hawksbill turtle*	0	0	0	0	0	0
Loggerhead turtle*	0	0	0	0	0	0
Olive ridley turtle*	0	0	0	0	0	0
<b>Family Dermochelyidae (scuteless turtles)</b>						
Leatherback turtle*	0	0	0	0	0	0

\*ESA-listed species within the HSTT Study Area. PTS = permanent threshold shift; TTS = temporary threshold shift.