

## 2018 NWFSC Letter of Authorization Annual Report to Office of Protected Resources

The NWFSC received a signed Letter of Authorization (LOA) from the NOAA Office of Protected Resources on August 27, 2018. This letter was the final step in the NWFSC being NEPA compliant and provided limited Incidental Takes of marine mammals during NWFSC research and survey field operations. The document also provided guidance, required monitoring and mitigation measures, training and reporting requirements. This report is being submitted in fulfillment of the NWFSC Annual Report requirement. Prior to this LOA being finalized the NWFSC was operating under self-imposed rules for marine mammal watches and move on rules in order to be in the spirit of compliance. However, since the LOA was not signed until after much of the survey season was completed not all requirements were met in 2018. NWFSC is reporting for the entire 2018 survey season.

- (1.) Annual Acoustic line kilometers was 5465 K using an EK60 5 frequency Scientific Echosounder (18, 38, 70, 120, and 200 kHz) onboard the NOAA Ship *Bell M. Shimada*. The duration of the research Cruise was 24 days, conducted in two Legs from 8/19/18 through 9/14/18. Please see attached calculations for NWFSC Level B Acoustic Take for Hake research and USV operation.
- (2.) NWFSC conducts research and surveys using a variety of sampling methods. In 2018 we conducted the following:

Electrofishing	11 events
Midwater trawls (30 m headrope)	32 trawls
Midwater trawls (100 m to 600 m headrope)	22 trawls
Surface Trawls	142 trawls
Surface Trawls, Pair Trawls	112 trawls
Surface Trawls, Pair Trawls, open cod end	121 trawls
Longline	2 parallel sets of 500 hooks each
Rod and Reel Hook and Line	287 sites, 1334 deployments, 7055 hooks
Bottom Trawls	732 trawls
Tangle nets	86 sets
Diver operations	multiple diver operations
Beach Seining	1374 set

- (3.) Overall, most of NWFSC sampling activities resulted in no marine mammal takes. The exceptions were the following Level B Takes:
  - i) Dive operations to deploy or recover acoustic receivers located on navigation buoy chains disturbed 4 California Sea Lions that were on the buoys.
  - ii) Tangle net sampling where seal bomb deterrents were used to deter 12 California Sea Lions and 4 Steller Sea Lions for the sampling nets
  - iii) Surface trawl, pair trawls, open cod end deployments detecting tagged fish in LCRA disturbed 77 California Sea Lions, 2 Steller Sea Lions and 3 Harbor Seals. Please note this may be an over count since it is possible that we are reporting the same individual animal present throughout a given day as the trawl operations remain in a fixed location for this project over a 6 hour period.



Total NWFSC Level B Takes (excluding Acoustic Level B Takes) for the 2018 calendar year were:

California Sea Lions	93
Steller Sea Lions	6
Harbor Seals	3

- iv) Acoustic takes from Hake research and Unmanned Surface Vehicle (USV) operations. Please see estimates in attached spreadsheets.
- (4.) No additional work on mitigation occurred in 2018 due to late implementation of the signed LOA on August 27, 2018, late in our field season. Marine mammal watches were carried out and logged, as has been our practice for several years. It appears that the watches have been effective to date.
- (5.) There were no Level A takes to report.
- (6.) NWFSC provided copies of our training materials to SWFSC, WCR POC and Headquarters NEPA Leads. SWFSC coordinator Elise Kohli and I continue to work together and discuss common issues.



## 2018 NWFSC Level B Acoustic Take Estimates

Species	LOA Level B Acoustic Takes	Hake Research	Saildrone	NWFSC Total Level B Acoustic Take
Sperm Whale	6	1	1	2
Pygmy or dwarf sperm whale ( <i>Kogia</i> spp.)	3	1	1	2
Cuvier's beaked whale	14	3	3	6
Baird's beaked whale	3	1	1	2
Hubb's, Blainville's, ginkgo- toothed, Perrin's, lesser, or Stejneger's ( <i>Mesoplodont</i> spp.)	3	1	1	2
Bottlenose dolphin	6	1	1	2
Striped dolphin	49	5	6	11
Long-beaked common dolphin	55	6	7	13
Short-beaked common dolphin	895	96	112	208
Pacific white-sided dolphin	61	6	8	14
Northern right whale dolphin	28	3	4	7
Risso's dolphin	30	3	4	7
Killer whale	2	0	0	0
Short-finned Pilot whale	1	0	0	0
Harbor porpoise	110	12	14	26
Dall's Porpoise	218	23	27	50
Guadalupe fur seal	22	2	3	5
Northern fur seal	1878	104	122	226
California sea lion	3659	74	86	160
Steller sea lion	174	18	21	39
Harbor seal	86682	16	18	34
Northern elephant seal	622	84	98	182

