

current and ongoing level of trawling is likely, but currently remains unknown.

Are there differences in age-specific survival rates of Steller sea lion between declining Commander Islands and growing Kuril Islands?

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The endangered western Distinct Population Segment of Steller sea lions (SSL) have declined by almost 90% through its range, reaching its smallest size in 2000. Recently SSL populations in many areas are recovering, but SSL in the western and central Aleutian Islands and the Commander Islands (CI) have continued to decline. In contrast some regions such as the Kuril Islands (KI) have positive trends in abundance. Differences in the population trends between the KI and CI may be evidence of different survival. We assessed vital rates of SSL on CI and KI, based on resights of branded SSL (cohorts started in 1989) in Russia from 2002 to 2012. We analyzed recapture histories of 4365 branded pups from four major rookeries on KI and one rookery on CI. Cormack-Jolly-Seber models were applied using Mark. There were no sex-related differences in pup survival on any rookery. Pup survival was higher on CI (0.72) than on KI (0.6). Male juvenile (age 1-3) survival on all sites was less than females, but varied across sites. On CI male survival was 0.74, female 0.8, and on KI the rate was 0.8 and 0.85, respectively. Adult female (4-14) survival rate ranged from 0.78-0.86 on CI and 0.85-0.9 on KI. On the CI, survival of adult females was lower than on KI. Cumulative survival of females aged > 5 years on CI was less than on KI and twice lower by age 14. Adult male (4-14) survival varied from 0.45 to 0.85 on CI, and from 0.49 to 0.86 on KI, with maximum survival for the ages 4-10. The population of SSL on CI has a high proportion of juveniles and inexperienced females, so we suggest that fluctuations in abundance may be a result of high mortality of reproductively active females there.

Effectiveness of pingers for mitigation of bycatch of finless porpoises

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Due to their highly coastal habitats, finless porpoises, *Neophocaena* spp., are under pressure from various human impacts. Among them bycatch in net fisheries is considered a major risk in the several populations around Japan and mitigation measures are required. We carried out a long term study to assess the efficiency of acoustic pingers in keeping finless porpoises away from the net. Encounter rate of echolocating finless porpoise was compared in the presence or

absence of pingers. We set a passive ultrasonic event recorder (A-tag) about 30 m off a small set net in Omura Bay Japan during April 2011 through March 2013. Two Aquamark II pingers were deployed on the net every other 2-weeks. An encounter was defined as a series of porpoise click trains, where the interval between adjacent trains < 3 min. Encounter rate was significantly lower during periods when pingers were present for the first 4 months of the study. However, the difference decreased thereafter. By the eighth month of the study, number of encounters during the ensounded period exceeded those during periods without pingers, suggesting habituation. A four-month period without pingers then followed, to test whether habituation might be reversed. Decrease of encounters was again observed after the resumption of ensounding. Similar to the first trial, the difference of encounters between periods with and without pingers again decreased after 4 months. These results show that the pingers effectively induce avoidance by porpoises, but are effective only for several months likely due to habituation. Possible habituation could be remedied by several months of silence. We suggest that installing pingers during the period when bycatch risk is highest -spring through early summer in Omura Bay- and suspending them for the rest of the season to mitigate habituation, would be useful in reducing incidental mortality of finless porpoises.

Marine Mammal Behavior in Relation to In-Water Pile Driving in Puget Sound, Washington, USA.

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Marine mammal (MM) monitoring was conducted during in-water pile driving (PD) at Naval Base Kitsap Bangor, Washington in Hood Canal during Fall 2011. Vessel-based monitoring was performed on construction days, during both active-construction ("AC", defined as 30 minutes prior to, during, and 30 minutes after PD) and non-construction ("NC", downtime) periods. Baseline surveys were also conducted throughout Hood Canal on days when no PD occurred. Monitoring and baseline surveys occurred over 53 days, during which Marine Mammal Observers (MMOs) recorded 1,207 sightings totaling 2,269 individual MM. Species observed included California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*), and harbor porpoise (*Phocoena phocoena*). Harbor seals were the most frequently observed MM on construction days (n=782 sightings) and baseline survey days (n=197 sightings). The only cetaceans observed were harbor porpoise (n=68 construction, 34 baseline sightings). Harbor seal sighting rates were lower on construction days than on baseline days (0.73 and 1.80 sightings/observer hour [obs hr], respectively). Likewise, harbor porpoise were sighted less often on construction days than on baseline days (0.13 and 0.31 sightings/obs hr, respectively). On construction days, harbor seal sighting rates were actually higher during AC periods than NC periods (3.31 and 0.23 sightings/obs hr, respectively). This is consistent with MMOs' qualitative observations that harbor seals (particularly juveniles) appeared to be attracted to PD, and often moved towards the construction area when PD was initiated. On construction days, pinnipeds were most often observed "diving," "looking," "sinking," and "swimming". During AC, 4% more pinnipeds were observed "diving" vs. NC periods (n=124). On construction days, harbor porpoise were most often observed "traveling". During AC, 27% fewer harbor porpoise were observed "traveling" vs. NC periods (n=18). Overall, minor behavioral disruptions were observed in relation to PD, and were within "take" numbers in the issued Incidental Harassment Authorization.