

Marine Debris Entanglements of Easter Population Steller Sea Lions

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Entanglement in marine debris is a contributing factor in Steller sea lion (SSL; *Eumetopias jubatus*) injury and mortality, although to an unknown extent. Our aim was to provide baseline data of marine debris entanglements (i.e., sources, rate, sex or age class biases, population level effects in Alaska) affecting SSLs in Southeast Alaska (SEA), northern British Columbia (NBC), and Oregon (OR). Surveys (SEA/NBC: n = 12; OR: n = 95) of SSL haul-outs and rookeries (SEA/NBC: n = 85; OR: n = 2), were conducted during June and July 2000-2007 in SEA/NBC and from November-April 2005-2007 in OR. We recorded 572 entangled SSLs (388 unique individuals) in SEA/NBC and 129 entangled SSLs (44 unique individuals) in OR. Entanglement rate was 0.26% (SD = 0.0064, n = 69 sites) in SEA/NBC and 0.54% (SD = 0.0016, n = 2 sites) in OR. Entanglements affected both sexes and all age classes. In SEA/NBC, 48.5% (n = 190) of SSLs had some sort of debris around their necks and 50% (n = 194) had interacted with sport or commercial fisheries and had swallowed fishing gear. Packing bands were the most common neck entangling material (55%), followed by rubber bands (30%), rope (7%), net (7%), and monofilament line (2%). Ingested fishing gear included salmon fishery flashers (lures; 80%), longline gear (12%), hook and line (4%), spinners/spoons (2%), and bait hooks (2%). In OR, neck entanglements accounted for all entangled SSLs (n = 44), rubber bands being most common (74%), followed by packing bands (17%), net (4%), and Frisbee (4%). SSLs were observed in OR with salmon flashers and spinners/spoons during June and July. These results highlight the importance of continued documentation of SSL entanglements to fully assess the impact of marine debris on the vital rates and population trends of SSLs in the North Pacific. Incentives should be made to the fishing industry to implement simple solutions to decrease entanglement rates, particularly with regard to plastic packing bands and large rubber bands. Simple procedures such as cutting entangling loops of synthetic material that could potentially end up as marine debris can prevent entanglements.

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