Spinner dolphins in Hawaii: Potential Threats

Disturbance and harassment

New threats to cetaceans have arisen with the expansion of the whale-watching industry. The pursuit and close approach of boats and swimmers to whales and dolphins may have negative impacts on cetacean health and behavior. Examples include long-term displacement from preferred habitat, chronic or acute stress, disruption of feeding, disruption of group cohesion, change in swim speed or direction, and change in surfacing, breathing or dive patterns. Encounters with humans at resting sites may have a significant effect on the spinner dolphins' ability to rest. A study off Maku'a beach on O'ahu suggests that the presence of swimmers in the morning may delay and compress the period of rest for the local population of spinner dolphins. In addition, as the number of swimmers increased, the dolphins departed earlier from the area. Researchers have also found that resting spinner dolphins in Hulopoe Bay, Lana'i could be easily disturbed by approaching swimmers and boats and that a single swimmer could repeatedly disturb a school. In addition, they reported that it was likely that in some areas, schools of spinner dolphins would have humans trying to approach and interact with them during most of their resting period. Two recent studies reported that spinner dolphins in Kealake'akua Bay prematurely curtailed resting during repeated boat and swimmer approaches.

Marine debris

Marine debris is another issue in Hawaiian waters. Plastics and derelict fishing gear can be particularly harmful. A recent study in the Hawaiian Archipelago found plastic debris on all of the nine beaches (on Hawaii, Oahu, Molokai, French Frigate Shoals, and Midway) that were sampled. Ingestion of plastics can have harmful effects such as diminished food consumption, loss of nutrition, internal injury, intestinal blockage, starvation, and death. Plastic particles do not biodegrade and may be passed up the food chain transferring chemical pollutants to organisms including cetaceans. Derelict fishing gear is a particular problem in the northwest Hawaiian Islands. During a removal effort from 1996-2000 more than 63 tons of derelict fishing gear was collected within a 9 square km area of reef.

Anthropogenic noise

Marine mammals are affected by human-produced underwater noise. Sources include transportation (e.g., boat, helicopters, fixed-wing aircraft), offshore drilling, seismic surveys, explosions, dredging, construction, and sonar. The effects on marine mammals include temporary loss of hearing, permanent loss of hearing, disruption of foraging or resting, disruption of communication, change in directional course, change in habitat use, stranding, and chronic or acute stress; all of which can lead to reduced fitness and reproduction, disease, and death. In 2004, more than 150 melon-headed whales (typically deep-water species) congregated in the shallow waters of Hanalei Bay, Kauai, Hawaii. The whales remained in the Bay for approximately 24 hours until they were gently urged back to the open ocean by stranding responders. Although the exact cause of this unusual event was not determined, scientists concluded that U.S. Navy sonar exercises may have contributed.

Coastal pollution and emerging diseases

Infectious diseases, transmitted by domesticated animals via freshwater runoff, are an increasing threat to the health of marine mammals. During the 1990s (1992-1999) infectious diseases and biotoxins were the dominant diagnoses of the documented unusual mortatility events (UMEs) affecting marine mammals in the U.S. In the main Hawaiian Islands, exposure to a number of infectious diseases (e.g., *Chlamydophilus abortus, Sarcocystis neurona, Taxoplasma gondii, and E. coli)* has been observed in monk seals. Spinner dolphins have not been tested for such diseases, but their use of nearshore habitats puts them at risk to exposure.

Fishery Interactions

Fisheries can also have a negative impact on cetacean populations. Equipment used to catch fish (including hooks, lines, nets, floats, and traps) all have the potential for injuring or ensnaring whales and dolphins. Entanglement in fishing gear results in reduced fitness, increased stress, and even death (e.g., chronic infection or drowning). Information on fisheries-related cetacean mortality in Hawaiian waters is limited, but the gear that is used in Hawaiian fisheries is known to injure and kill marine mammals in other U.S. fisheries. For example, observations of the set gillnet fishery in California (1990-1995) found that only 5 out of 1,263 entangled mammals were released alive. Entanglements of spinner dolphins in gill nets have been observed but no estimates of annual injury or mortality exist because the nearshore gillnet fisheries are not monitored or regulated.