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Agenda and Abstracts

Organizational Committee
Alexander M. Burdin (Russia)
Angela M. Doroff (U.S.A.)
Michelle M. Staedler (U.S.A.)

FEEDING OF SEA OTTERS IN THE COMMANDER ISLANDS: VISUAL OBSERVATIONS AND SCAT ANALYSIS

N.P. Zimenko , I.N. Shevchenko, A.V. Rzhavsky and E.A. Ivanjushina
Institute of Fisheries and Oceanography, Moscow, Russia,107140

Feeding of sea otters (*Enhydra lutris*) in Commander Isls has been studied since thirties and later (Barabash-Nikiforov, Sevostjanov, Burdin et al), but only in eighties Rjazanov (unpubl.) began detailed quantitative analysis of sea otter scats. Foraging of sea otters was studied using scat analysis and visual observations. We examined 136 spring and winter scats from 3 sites in the Bering Isl. (collected in April, 1999) and 68 spring and winter scats from 2 sites in Medny Isl. (collected in summers of 1995 and 1997). Typical remains of prey items were used to calculate consumption rate. Diameters of sea urchins were estimated from the size of their teeth (Rjazanov 1991). Visual observations of sea otter foraging behavior were conducted during summers 1988 and 1993-95 at 2 sites in Medny Isl. and in 1990-91 at a site in Bering Isl. In summer in breeding areas foraging zones are associated with kelp spots and their boundary coincides with lower limit of Alaria fistulosa distribution (15-20 m). Sea otters use some sites of the foraging zones more intensively than others probably because of patchy benthic distribution. Scat analysis showed that crustaceans, mollusks and sea urchins were the main prey of sea otters during winter and spring. The ratio of other prey did not exceed 1% with an exception of Glinka Bay where it was 5%. The ratios of crustaceans in scats collected from the Bering Isl. were 20.9% (Point Vkhodnoj Reef), 11.0% (Bujan Bay) and 75.3% (Point Severo-Zapadnyj). The ratios of mollusks were 33.9%, 57.7%, 7.0% and those of sea urchins constituted 45.1%, 30.6 % and 17.0% respectively. Dominating crustaceans were Dermaturus mandtii and Majidae, mollusks were dominated by small Buccinidae, Collisella spp. and Tonicella spp. In the scats from Point Vkhodnoj Reef and Bujan Bay dominating sea urchin was Strongylocentrotus pallidus (86% and 69%) and those from Point Severo-Zapadnyj were dominated by S.polyacanthus (57.6%). According to Oshurkov et al. (1991) biomass of S.polyacanthus in 1986 in Bering Isl. was maximum at the depths of 10-15 m, which coincides with main foraging depths of sea otters. However, in 1999 S.pallidus dominated in the scats from 2 sites at the Bering Isl. Apparently, the density of S.polyacanthus decreased and sea otters began to obtain prey deeper or ratio of S.pallidus increased at usual depths for sea otters foraging. The diameters (mean±SE) of consumed S.pallidus in these sites were 22.3±2.9 mm, 26.4±2.9 mm, 22.5±2.4 mm and those of S.polyacanthus were 24.0±3.0 mm, 32.3±3.6 mm, and 22.0±2,5 mm respectively. The diameter of consumed S.polyacanthus from Bujan Bay was significantly higher but the ratio of large specimens (45-50 mm) did not exceed 8%. The scats from the Gladkovskaja Bay (Medny Island) were dominated by mollusks Littorina spp. and Collisella spp. (85.2%). Crustaceans and sea urchins (58.8% of them were S.pallidus) constituted 1.8% and 12.3% of prey items respectively. The diameter of S.polyacanthus was 23.9±3.8 mm and that of S.pallidus - 26.6±3.2 mm. Crustaceans (41%, mainly D.mandtii and Idothea spp.) and mollusks (36%, mainly Hiatella arctica, Tonicella spp., Hiatella spp.) dominated in the scats collected from Glinka Bay. The dominating sea urchin was S.polyacanthus (86%) with diameters of 20-30 mm. The visual observation data were most comprehensive in summer of 1995 in Glinka Bay. Sea urchins (81%) and sand lances Ammodytes sp. (16%) dominated predator's ration. Sea otters preferred sea urchins with diameters >40 mm. During one dive sea otters usually collect one type of prey and success of foraging does not correlate with dive duration. Observed seasonal differences in feeding of sea otters in Glinka Bay probaly reflect biology of both predators and prey (such as seasonal migrations), but these results may be also strongly influenced by different methods of data collecting.