

3-3. Feeding Habits and Trophic Interaction (Oral-21)

The Role of Pacific Salmon in Trophic Structure of the Upper Epipelagic Layer in the Western Bering Sea during Summer-Autumn 2002–2006

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Results of 6 surveys conducted by TINRO-Centre in frames of international BASIS program in the upper epipelagic layer of the western Bering Sea in summer and autumn 2002–2006 are summarized. Food relationships of nekton are determined and consumption of forage resources by nekton organisms is estimated. The overall amount of forage resources consumed by nekton in the upper epipelagic layer of the western Bering Sea was 9.7 million tons in the period of high abundance of juvenile walleye pollock in 2002–2003 and 3–5 times less in the period of low walleye pollock abundance in 2004–2006. In 2002–2003 the main consumers of forage resources was walleye pollock, in 2004–2006 — were Pacific salmon, squids, and sometimes Atka mackerel (yearlings), herring and capelin. Pacific salmon utilized 2.3 million tons of different zooplankton and nekton forage organisms during summer and 1.3 million tons during autumn (note that in autumn biomass of juvenile salmon in the western Bering Sea was relatively low). The main part of forage resources was consumed (by nekton) in deep-water areas (Commander Basin and western Aleutian Basin) in summer. In autumn (especially 2002–2003 when pollock juveniles were abundant) the area of maximal consumption shifted to Olyutorsky and Anadyr Bays, and Navarin shelf. In such a way, the carrying capacity of the western Bering Sea for producing Pacific salmon varies with changing environmental factors (in this case with changing of abundance the main consumers of forage resources). Spatio-temporal differences of consumption due to feeding migrations of main consumers is very important for trophic structure of western Bering Sea ecosystem because it allows to avoid overexploitation of forage resources in the upper epipelagic layer during summer–autumn feeding period and at the same time it provides their more complete utilization.