

## Ecological aspects of the perennial distribution of the Red King Crab *Paralithodes camtschaticus* in Aniva Bay (Sakhalin Island)

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**Abstract.** Regularity of localization and distribution of clusters of commercial individuals of the Red King Crab *Paralithodes camtschaticus* in Aniva Bay (Sakhalin Island) and possible reasons for the transformation of the range of this species in the bay are considered in the interannual aspect. The prospects of restoring this species in the bay have been assessed, the changes in habitat conditions being taken into account. Available reporting (SakhNIRO) and literature data on trawl (trap) catches of the Red King Crab in this area are analyzed and summarized in order to solve these problems. The analysis of the location of the main concentrations of larvae during the period of the highest number of the object is performed. The functional structure of the Red King Crab settlements in Aniva Bay is analyzed according to literary sources, and an assessment of possible problems in the implementation of the reproductive strategy proper to the Red King Crab by the population is carried out. Significant negative changes in the distribution and functional structure of this crab species in Aniva Bay are noted. It is shown that the aggregations of commercial individuals of the Red King Crab have been widespread in both the western and eastern parts of Aniva Bay until 2001. Both parts of the bay were self-sufficient in terms of reproduction, with each showing the signs of juvenile production processes. First of all, this can be seen by the distribution of the places of catching of non-migratory juveniles and larvae. From 2004 to the present, even single catches of the Red King Crab have disappeared in the eastern part of Aniva Bay. At the same time, the dynamics of its reserve recovery is observed in the west of the bay, although in general this process is noticeably slow. We believe that the reason for the deterioration of living conditions and reproduction of the Red King Crab in Aniva Bay is a critical transformation of substrates in the eastern part of the bay, namely, a sharp reduction in the area of soils suitable for the development of epifauna, the presence of which is one of the conditions for the survival of crab juveniles. This transformation became possible due to a significant expansion (up to 20 %) of silty soils in the bay caused by soil dumping in 2003–2006 during the construction of a liquefied natural gas plant.

*Keywords:*

**Red King Crab, distribution, reproduction, dumping, change of living conditions, transformation of areal, Aniva Bay**

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