

# INDIRECT INFLUENCE OF BEAR PREDATION ON THE PERFORMANCE OF THE STELLER'S SEA EAGLE POPULATION

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**Abstract.** *Background.* Earlier it was reported that the Sakhalin population of Steller's Sea Eagles in recent years has been suffering from predation by Brown Bears which take 19 % of the offspring produced. However, we found that in addition to the direct damage to the population, bear predation also has an indirect, delayed effect. *Materials and methods.* The study contains an analysis of the further fate of the nesting territories due to predation. We estimated the reproduction efficiency of the eagles on nesting territories suffering predation (n = 114) or affected by nestling mortality (n = 38), and compared it with the performance of territories after nesting success (n = 472). For a more detailed analysis, we decomposed breeding performance into four components: the territory occupancy, the proportion of breeding pairs, breeding success, and brood size. *Results.* On territories with nestling mortality, the decline in productivity was mainly due to lower breeding success and smaller brood size, which can be associated with the poor quality of the territories. Following bear predation, the decline in performance was due to the decrease in the territory occupancy (from 89 to 72 %), the proportion of breeding pairs (from 62 to 51 %), and the breeding success (from 78 to 57 %). Ultimately, on the year following either nest failure due to bear predation or nestling mortality, territories produced half the number of offspring (respectively 0.32 and 0.26 fledglings per territory) compared to previous success (0.60 fledglings per territory). *Conclusions.* Therefore, the indirect damage from predation, operating through negative breeding experience of the eagles and destruction of their nests, can significantly exceed the direct effect. The presence of indirect, including delayed, damage should always be taken into account when assessing the state and stability of populations exposed to negative impacts.

**Keywords:** Steller's Sea Eagle, *Haliaeetus pelagicus*, Sakhalin Island, Brown Bear, *Ursus arctos*, predation pressure.

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