Red king crab - case study

The red king crab *Paralithodes camtschaticus* was introduced into Russian waters in the 1960s and by 1976 it had migrated to Norway. The species is now found throughout coastal waters of northern Norway, where it competes with local predators, modifies habitat, and may impact the shellfish industry. A fairly comprehensive account of the red king crab in Russian and Norwegian waters is given in ICES (2005).

The native distribution range of this crab is the Okhotsk and Japan Seas, the Bering Sea, and the Northern Pacific Ocean along the Aleutian Islands. From 1961–1969, 1.5 million crab larvae, 10 000 1–3 year old juveniles, and 2609 5–15 year old adults were intentionally introduced to the areas east of Motovsky Bay at the Russian coast of the Barents Sea. (Orlov and Karpevich, 1965; Orlov and Ivanov, 1978) (Figure 1.5.5.2.4).

Red king crabs may live up to 20 years (Kurata, 1961) and can grow to a carapace length of ~220 mm and a weight of ~10 kg (Wallace *et al*., 1949). Young larvae settle in the sublittoral zone shallower than 20 m (Marukawa, 1933). Juvenile crabs are dependent on cover the first 2 years, but later become less dependent (ICES, 2005 and references therein). Red king crabs undertake two migrations, a molting/mating migration to shallower (<60m) water in spring/summer and a feeding migration to deeper water (300–400 m) in autumn/winter. Adult crabs can potentially migrate far and quickly; Jørgensen *et al.* (2007) reported their walking speed to be 270m/h. Additionally, the pelagic larvae drift with water currents as long as they remain in the water column, and may be transported significant distances.

Food consumption and prey composition have been described for the red king crab (ICES, 2005). In the Barents Sea region red king crabs feed on bivalves and echinoderms in the spring and summer and polychaetes in the winter, competing with native crab populations. The availability of food appears to be the most important factor limiting red king crab distribution in its new environment (Gerasimova, 1997). Some changes in the diet of crabs from echinoderms to fish occurred during 1997–2000, probably due to crabs feeding on fish discarded from fishing vessels.

Since 2008 the Norwegian crab fishery is subject to two different management regimes. Inside a commercial area (east of 26° E and inside 12 nm) the crab is managed as a sustainable fishing resource. Outside this area there is an open, non-legislated fishery. The crab's population in the western part of its extended range seems not to have increased recently, indicating possible success for the open (culling) fishery. East of 26° E a TAC (Total Allowable Catch) has been proposed by the Joint Russian-Norwegian Fishery Commission. For 2009/2010 the quota is 1075 tonnes of male crabs, 110 tonnes of crabs with injuries (males), and 106 tonnes of females. This quota is calculated to correspond (approximately) to 474 000 males and 50 000 females.

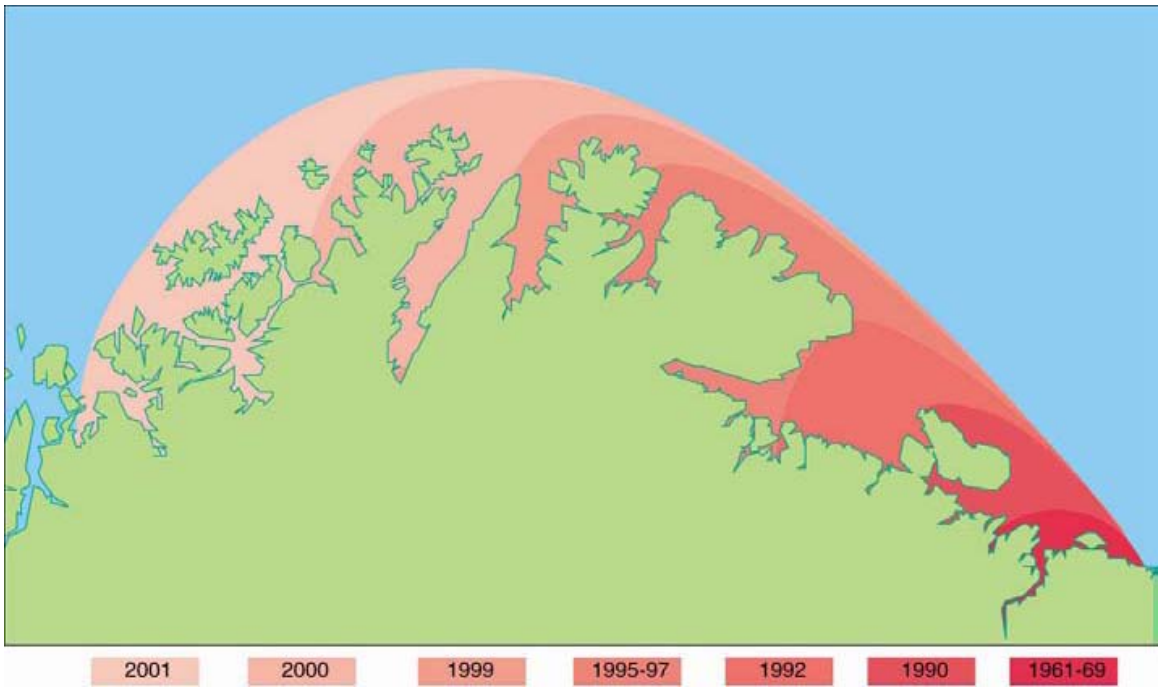

Figure 1.5.5.2.4 Estimated spread and distribution of the red king crab *Paralithodes camtschaticus* from its release region in the Barents Sea. The area shown is the northern tip of Norway. Illustration by Jan Sundet, Institute of Marine Research, Norway.

➥*Go to full ICES overview assessment of non-indigenous species in the OSPAR maritime area (ICES 2009, Advice Book 1, section 1.5.5.2)*