

## An Assessment of the State of Chum Salmon Stocks From the East and West Coasts of Kamchatka

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The contribution of Kamchatka chum salmon to the total catch of this species in Russia from 1934 to 2010 ranged from 8% (1995) to 55% (1986, 1990), and averaged 27%. In the recent decade, the catch of Kamchatka chum comprised 38% of the total catch of chum salmon in Russia. Kamchatka chum salmon stocks characteristically demonstrate extensive fluctuations. The catch of chum salmon in Kamchatka for the period 1934–2010 varied from 0.84 (1972) to 35.91 thousand tons (1946), and averaged 11.16 thousand tons. For 2001–2010 the catch of chum salmon along both coasts of Kamchatka increased three times compared to the decade before. Recently there has been an increasing trend. The maximal catch on the west coast of Kamchatka (13.61 thousand tons) was in 2010 and on the east coast (14.81 thousand tons) was in 2005.

An important component of chum salmon commercial stock assessment is the escapement of fish to the spawning grounds. From 1957 to present, the spawning escapement of Kamchatka chum salmon was higher on the east coast. In general the average escapement was about 1.65 million fishes, ranging from 0.39 (1973) to 6.64 million fishes (1959). Minimal average abundance of chum salmon on the spawning grounds of west (0.25 million fish) and east (0.49 million fish) coasts of Kamchatka was observed in 1971–1980. In the next decade, 1981–1990, escapement of chum salmon increased three times. The 1991–2000 decade demonstrated a decrease of chum salmon escapement to West Kamchatka and a two-fold decrease of escapement to East Kamchatka. For the last decade, 2001–2010, the escapement was higher on the west coast, perhaps due to underestimation of the escapement of chum salmon spawning in east coast rivers. From 2001, we observed an intentional increase in escapement and since 2008 chum salmon escapement has decreased.

The maximal and minimal values of brood year abundance can exhibit a 9- to 176-fold difference, depending on the commercial district. We observed an increase in the abundance of brood years 2001–2005 compared to brood years 1991–2000. Thus, the stock abundance and catches of Kamchatka chum salmon were increasing with an increase in escapement and an increase in the subsequent generations. The increase in abundance might arise from better conditions during the freshwater period of life, or from improved feeding conditions at sea.