

3-1. Migration and Distribution of Salmon (Oral-11)

Beyond BASIS – Salmon in the Arctic

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With climate change, scientists and others are interested in whether there will be more Pacific salmon in the Arctic. The Chukchi (adjacent to and north of the Bering Sea) and Beaufort (coastal waters east of Chukchi Sea to the Mackenzie River) seas, although biologically productive, are generally regarded as inhospitable to salmon because of their very cold waters during winter. Chum, pink, sockeye, coho, and chinook salmon have been encountered east of the Chukchi within Canadian Arctic waters. While there is some evidence of recent increases in the frequency of occurrence of pink salmon in the Prudhoe Bay area and the western Canadian Arctic, pink salmon east of Prudhoe Bay are generally considered to be vagrants. Coho, sockeye, and chinook salmon, with apparently less tolerance for cold waters than pink and chum, are rarely encountered east of Point Hope, and chum is the only species thought to be natal to the Mackenzie River and tributaries. Where Mackenzie chum live when they are in the ocean is unknown. Over 3300 km³ of fresh water enters the Arctic Ocean annually, of which runoff from the Mackenzie River is a significant component. Whether the Mackenzie River plume goes west in the Beaufort Gyre, or east, is influenced by ice cover and winds – both of which are climate variables. In this presentation we provide an update on the status of Pacific salmon in the Arctic, present several hypotheses to explain the persistence of chum salmon, propose research to test these hypotheses, and speculate on how Pacific salmon are likely to be affected by climate change in the Arctic.