

Whitefish Biology, Distribution, and Fisheries in the Yukon and Kuskokwim River Drainages in Alaska: a Synthesis of Available Information

Whitefish species in Alaska are subject to intensive subsistence fisheries everywhere they occur, commercial fisheries in certain places, and limited sport fisheries. Our understanding of whitefish biology comes primarily from studies of the same or similar species in other places, although some biological studies have taken place locally. Whitefish fisheries in the Yukon and Kuskokwim River drainages in Alaska have been documented in numerous anthropological and social science publications and in subsistence harvest surveys, but usually without species distinctions. Scientific sampling work since the 1960s has been reasonably effective at describing the species that are present and their distributions within the two drainages, but our understanding of populations, migrations, and demographic distribution among habitats is poor. We are just beginning to understand that major spawning migrations into upstream reaches of the drainage occur each summer and fall, juvenile and non-spawning fish dominate the lower reaches of both rivers and the coastal areas, and mature and spawning fish dominate the upper reaches. A small number of whitefish spawning areas have been identified in gravel substrate reaches of main-stem and tributary rivers in both turbid and clear water. Genetics work with whitefish species has focused more on taxonomy and biogeography issues than for management applications. With two exceptions in the entire Yukon and Kuskokwim River drainages, population abundance data are absent. Our ability to protect essential habitats for whitefish populations is growing with the improved understanding of their spawning destinations and life histories. Our ability to monitor whitefish population trends and to make effective harvest regulations, however, is very limited at this point.

In the following manuscript we provide an overview of the whitefish and whitefish fisheries in the Yukon and Kuskokwim River drainages in Alaska. The geography and aquatic habitat qualities of the two drainages are explored in detail. The taxonomy of whitefish species present in the drainage is discussed. We introduce a selection of important biological qualities of whitefish species, as documented in the literature. The nature of the many fisheries on whitefish species is described based on individual community studies and regional harvest surveys. Threats to whitefish populations, as identified in two meetings of delegates from a wide range of experience with whitefish harvest, research, and management, are critically examined. These include threats that may arise from overharvest of fishery resources, from habitat destruction that may occur during development activities, and from natural environmental changes. We then review the current state of knowledge of whitefish populations, distribution, and life history within the study area. Information that would improve our ability to protect essential habitats, monitor the abundance of whitefish populations, obtain harvest estimates, and establish reasonable and effective harvest regulations are identified. Finally, a general

approach to research of whitefish populations is outlined and a number of specific research concepts and project ideas are recommended for the four species we thought most likely to be impacted by human activities.

Citation:

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