ABSTRACT

The sockeye salmon (*Oncorhynchus nerka*) run returning to Hetta Lake on Prince of Wales Island plays a central role in culturally based subsistence practices of current Hydaburg residents. This same, once abundant resource, provided for the original Haida settlements in the area starting in the late 1700s and Tlingit settlements before that, and also supplied several early commercial salmon canneries from the late 1800s through the 1950s. In more recent years, Hydaburg residents became increasingly concerned about low harvests and a possible decline in the Hetta Lake sockeye run. The Hydaburg Cooperative Association partnered with the Alaska Department of Fish and Game to begin a new stock assessment program in 2001. A subsistence harvest survey and sockeye salmon escapement count were once again completed in 2008, the eighth year of this program. Lake temperature, light profiles, and zooplankton populations were also measured, and hydroacoustic and trawl surveys were conducted to estimate small fish populations in the lake. The harvest survey documented a total harvest of 3,585 sockeye salmon from Hetta Cove, mainly during July through mid-August. The escapement count was 4,883 sockeye salmon passing the Hetta Creek weir from June through late September. While the subsistence sockeye harvest was about the same as in 2007, the escapement was down sharply from the previous 2 years. The combined return (subsistence harvest plus escapement) was substantially below the recent 4 -year average. The estimated seasonal mean zooplankton biomass was only 10 $mg \cdot m^{-2}$, well below the low levels observed in previous seasons. The estimated sockeye fry population of about 383,000 fish showed a dramatic increase from numbers in 2005 and 2006, when the Hetta Lake fish assemblage was dominated by threespine sticklebacks (*Gasterosteus aculeatus*).

Key words: sockeye salmon, *Onchorynchus nerka*, subsistence, Hetta Lake, Hydaburg, Prince of Wales Island, Southeast Alaska, escapement, mark-recapture, harvest census, zooplankton, fry, stickleback, hydroacoustic