

Schmidt, J. S. and D. Evans. 2010. Stock assessment of sockeye salmon in the Buskin River, 2007-2009. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report (Study No. 07-402). Alaska Department of Fish and Game, Division of Sport Fish, Anchorage, Alaska.

Abstract

Since 1990, the Alaska Department of Fish and Game, Division of Sport Fish, has assessed the annual run of Buskin River sockeye salmon *Oncorhynchus nerka* stock, Kodiak Island, Alaska. This report presents data collected between 2007 and 2009, and a spawner-recruitment analysis using data collected from 1990-2009.

In 2007, the weir count of sockeye salmon for Buskin River was 16,502, the weir count for Lake Louise was 1,676, and the reported subsistence harvest was 11,151. Age-1.3 and -2.3 sockeye salmon comprised 93% of the Buskin River escapement, 98% of the subsistence harvest, but only 68% of the Lake Louise escapement. The male-female ratio was 1.30:1.0 for the Buskin River, 0.92:1.0 for Lake Louise, and 1.02:1.0 for the subsistence harvest. Enumerated sockeye salmon spawning escapement for the entire Buskin River drainage was 18,178.

In 2008, the weir count of sockeye salmon for Buskin River was 5,900, the weir count for Lake Louise was 833, and the reported subsistence harvest was 2,664. Age-1.3 and -2.3 sockeye salmon comprised 53% of the Buskin River escapement, 80% of the subsistence harvest, but only 27% of the Lake Louise escapement. The male-female ratio was 0.97:1.0 for Buskin River, 1.02:1.0 for Lake Louise, and 1.38:1.0 for the subsistence harvest. Enumerated sockeye salmon spawning escapement for the entire drainage was 6,733.

In 2009, the weir count of sockeye salmon for Buskin River was 7,757, and the weir count for Lake Louise was 992. The total reported subsistence harvest was not yet available. Age-1.3 and -2.3 sockeye salmon comprised 73% of the Buskin River escapement, nearly 82% of the subsistence harvest, but only 37% of the Lake Louise escapement. The male-female ratio was 1.16:1.0 for Buskin River, 1.28:1.0 for Lake Louise, and 0.62:1.0 for the subsistence harvest. Enumerated sockeye salmon spawning escapement for the entire drainage was 8,749.

A Bayesian spawner-recruitment analysis estimated the sockeye salmon spawning escapement for maximum sustained yield to be about 6,550 (90% credibility interval of 4,950-8,700). A traditional linear regression analysis yielded similar results. A sustained yield probability analysis suggests lowering the sustainable escapement goal range for the Buskin River system to 5,000-8,000.

Key words: sockeye salmon, *Oncorhynchus nerka*, escapement, Buskin River, age, length, sex composition, sport harvest, spawner recruit, subsistence harvest, stock assessment.