

ABSTRACT

From 2000-2003 the Alaska Department of Fish and Game, Division of Sport Fish, assessed the annual runs of the sockeye salmon *Oncorhynchus nerka* stock of the Buskin River, Kodiak Island, Alaska. This report presents data collected between 2000 and 2003, and spawner-recruit analyses using data collected from 1990-2003.

In 2000, spawning escapement counted at a weir at Buskin Lake was 11,226 sockeye salmon. The reported subsistence harvest was 7,315 sockeye salmon. Age-1.3 and -2.3 fish comprised nearly 72% of the escapement but 86% of the subsistence harvest. The male-female ratio of the weir count was 1.0:0.9 and the ratio for the subsistence harvest was 1.0:1.0.

In 2001, spawning escapement counted at the weir at Buskin Lake was 20,556 sockeye salmon. The reported subsistence harvest was 10,282 sockeye salmon. Age-1.3 and -2.3 fish comprised more than 82% of the escapement and nearly 89% of the subsistence harvest. The male-female ratio of the weir count was 1.0:1.0 and the ratio for the subsistence harvest was 1.0:1.0.

In 2002, the weir count at Buskin Lake was 17,174 sockeye salmon, and 3,581 sockeye salmon at the Lake Louise weir. The reported subsistence harvest was 13,432 sockeye salmon. Age-1.3 and -2.3 fish comprised 70% of the Buskin Lake escapement, nearly 81% of the subsistence harvest, but only 45% of the Lake Louise escapement. The male-female ratio of the Buskin Lake weir count was 1.0:0.9, the ratio for the Lake Louise weir count was 1.0:0.7, and the ratio for the subsistence harvest was 1.0:1.0.

In 2003, the weir count at Buskin Lake was 23,870 sockeye salmon, and 4,488 sockeye salmon at the Lake Louise weir. The reported subsistence harvest was 9,460 sockeye salmon. Age-1.3 and -2.3 fish comprised about 51% of the Buskin Lake escapement, 73% of the subsistence harvest, but only 45% of the Lake Louise escapement. The male-female ratio of the Buskin Lake weir count was 1.0:0.9, the ratio for the Lake Louise weir count was 1.0:0.9, and the ratio for the subsistence harvest was 1.0:0.7.

A traditional analysis using data from brood years 1990 through 1997 estimated $\ln(\alpha)$ as 1.88 (SE = 0.86) and β as 1.09×10^{-4} (SE = 7.68×10^{-5}). The slope of the linearized Ricker model was not significant ($P = 0.21$), so MSY and S_{MSY} were not estimated with that model. The 80% credibility interval for the Bayesian analysis was 3,300-16,900 fish. The range of spawning escapements producing 90% of the MSY for the Bayesian analysis was about 4,100-9,600 fish.

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

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