

Mark-recapture Estimation of Masu Salmon (*Oncorhynchus masou*) Smolt Numbers in the Masuhoro River, Northern Hokkaido

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In the spring of 1995 and 1996, a mark-recapture study was undertaken in the Masuhoro River to estimate the numbers of both wild and hatchery origin masu salmon smolts, that had been stocked the previous fall. A partial fence was installed in the Masuhoro River a short distance above the Soya Research Branch of the Hokkaido Fish Hatchery. Masu salmon smolts migrating downstream were diverted by the partial fence into rearing ponds at the Soya Branch. To sample migrating smolts below the partial fence, a rotary screw trap was operated 14.8 km downstream. In 1995, about 2,000 masu smolts were tagged with numbered streamer tags and released

at the upstream site, and 4% of tagged fish were recaptured at the downstream site. Population estimates were generated using the statistical program SPAS (Stratified Population Analysis System). Maximum likelihood estimates of the number of wild and hatchery origin smolts were 49,369 and 2,647 respectively. 95% confidence intervals were about 50% of the population estimates because of insufficient numbers of tagged smolts recaptured. In order to increase the accuracy and precision of the estimates, it is necessary to raise the sampling efficiency at each trapping site.