EFFECT OF SEAWATER ENTRANCE

ON FEEDING AND GROWTH OF STEELHEAD SMOLTS

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EXTENDED ABSTRACT ONLY - DO NOT CITE

Anadromous salmonid smolts under cultivation must often be able to tolerate abrupt transfer from fresh water (FW) to seawater (SW) and then continue growth (Clarke et al. 1996). In the present experiment we wanted to test how long a period is needed for steelhead (*Oncorhynchus mykiss*) smolts to fully adjust to SW in terms of feed intake and growth, and whether they can adapt to SW if transferred as pre- or post-smolts. Our previous experiment conducted in 1999 to monitor short term changes in feed intake indicated that steelhead smolts eat significantly less after a 96 h SW exposure than fish in FW, even during the best smolting time.

Steelhead smolts were tested for their SW adaptation in terms of feed intake, growth and osmoregulatory ability. Three separate experiments were carried out at four-week intervals during the spring 2000. Based on the results of the experiment in 1999, the starting dates designated for the three experiments

were 12 April, 10 May and 7 June in order to obtain data from pre-smolts, smolts and post-smolts. Three replicated tanks were used for fish in FW as well as in flowing SW, each containing 50 individuals at the beginning. After the start (i.e. exposure to SW) of each experiment, measurements were made at weeks 1, 2, 4 and 6 for feed intake, growth, plasma sodium and potassium, muscle water and hemoglobin. Fish were also fed a diet containing X-ray dense particles each of the four sampling days; 10 individuals were then collected from each tank and killed with an overdose of MS-222. Food intake was estimated by X-radiography (Jobling, 1993) and individual growth rates for PIT-tagged fish in each experiment were determined. Possible relationships between feed intake and physiological data were evaluated.

References

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