

ABSTRACT

VARIATION IN FRESHWATER GROWTH AND DEVELOPMENT AMONG FIVE NEW ENGLAND ATLANTIC SALMON (*SALMO SALAR*) POPULATIONS REARED IN A COMMON ENVIRONMENT

SEPTEMBER 2003

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Phenotypic variation in growth and development between the eyed egg and age-1+ smolt stage was examined among five New England populations of Atlantic salmon (East Machias, Narraguagus, Sheepscot, Penobscot, Connecticut) reared in a common laboratory environment. Study populations originated from rivers varying in size, latitude, and level of hatchery supplementation, and included one reintroduced population (Connecticut was a recipient of Penobscot origin stock). Phenotypic trait differences were found among populations, and the degree of variation depended on ontogeny. Eggs were smaller and hatched earlier in the Penobscot (a northern, intensively managed population), but no population differences were detected in size or growth efficiency from the onset of exogenous feeding to age-0+ summer. Differences again emerged in autumn (age-0+), with the degree of bimodality in length frequency distributions differing among populations; the Connecticut had the highest proportion of upper mode fish, and, ultimately, age-1+ smolts. Although genetic effects could not be entirely separated from maternal effects for alevin size variation, it is likely that differences in hatch timing and smolt age had a genetic basis. Early emphasis on age-1+ hatchery-reared smolts in the Connecticut may have led to divergence in smolt age between the Penobscot and Connecticut in less than eight generations.

Publications:

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