microsatellite markers to assign offspring to parents. Preliminary results suggest that up to eight males successfully fertilised eggs in some nests, though this varied greatly among egg nests, as well as spatially along the brook. We also relate incidence of multiple paternity to variability in mature male parr distribution. This study has implications for determining effective population size, as well as assessing genetic variation at early life stages in Atlantic salmon.

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Phenotypic variation and population structuring in Atlantic salmon in fluctuating environments

We used historical data to examine population structuring and phenotypic variation in neighbouring Atlantic salmon populations over several decades. We also used published sources to compare phenotypic variation among salmon populations and temporal stability within populations at larger geographical scales. Our results indicate that the environment inhabited by Atlantic salmon tends to vary more from year to year than either the genotype or the phenotype, suggesting that there must be considerable adaptive resilience. Fitness-related phenotypic traits tended to differ more between populations than they differed from year to year within populations. Freshwater traits varied the most among populations while marine traits varied the least, when corrected by the degree of temporal stability. Our study suggests that population structuring in anadromous Atlantic salmon is probably adaptive and that local adaptations are perhaps more likely to occur in freshwater than in the sea.

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Two size classes of 0+ perch: is phenotypic plasticity based on food resources?

0+ perch were caught in a gravel pit lake in June (unimodal size distribution) and in July and September (bimodal size distribution) to analyse differences in morphology. Independent of size, perch developed a deeper body and a shorter tail during ontogenesis (June to July/September). Perch of the large size cohort had an even deeper body and smaller tail than perch of the small size cohort. This supports the hypothesis that 0+ perch of the small size cohort were malnourished and individuals of the large size cohort showed the regular ontogenetic development. In a second step, we excluded the assumed factor "food quantity" of the field investigations, to focus on the influence of different food resources on morphology. Two groups of 0+ perch were fed for 40 days in mesocosms with the same biomass of either plankton or cyprinid fishes. At the end of the experiment, the two experimental groups of 0+ perch did not differ in size but in some morphological details. The mouth of the piscivorous 0+ perch became larger, the pectoral fins and the centre of mass of the posterior abdomen were shifted backwards. The results suggest that the factor "food quantity", and due to this the state of nutrition of 0+ perch is the major factor influencing growth and morphology. The type of food, however, is although important and might lead to further functional adaptations in morphology.

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