

Accurate timing of migration prolongs life expectancy in pike

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Two northern pike (*Esox lucius*) returning to spawn in the stream where they were born. They will soon emigrate back to the Baltic Sea, where individuals originating from different streams coexist for most of their lifetimes. Credit: Olof Engstedt

Animal migration is a spectacular phenomenon that has fascinated

humans for long. It is widely assumed that appropriate timing of migratory events is crucial for survival, but the causes and consequences of individual variation in timing are poorly understood. New research based on migrating pike in the Baltic Sea and published in the British Ecological Society's *Journal of Animal Ecology* reveals how behaviours such as punctuality, flexibility and fine-tuning influence life expectancy in fish.

Pike is a widely distributed, long-lived and large keystone predatory fish species that breeds annually after becoming mature. In the Baltic Sea, some pike display homing behaviour and repeatedly migrate to spawn in the same stream where they were born. Migrating pike in the Baltic Sea thus offers interesting and rare opportunities to gain further understanding of the causes and consequences of variation in migratory timing among and within individuals.

Tibblin and collaborators from Linnaeus University (Kalmar, Sweden) studied arrival timing across six years of more than 2000 marked pike that migrated to a small spawning stream that flowed into the southwest of the Baltic Sea.

Lead-author Dr Petter Tibblin elaborates: "results show that individual migratory timing is consistent across years and that arriving too early or too late increases mortality. Individuals also continuously fine-tune their timing with increased experience, a behaviour that is similar to the trial-and-error method used by many mammals but previously not shown for fish."

Results also shed some new light on the long-standing and intriguing issue of whether flexibility is adaptive such that it increases fitness, a topic that recently has received increased scientific attention although it has rarely been investigated empirically.

Study co-author professor Anders Forsman says: "we demonstrate that there is variation among individuals in the degree of flexibility (adjustments in migratory timing across years) and further establish that greater flexibility at early reproductive events improves [life expectancy](#)"

This research emphasizes the complex nature of animal behaviour, and advances our understanding of [migratory behaviour](#). Co-author professor Per Larsson concludes: "that among individual variation and within-individual [flexibility](#) in migratory timing are associated with fitness suggest that these behaviours may also influence the viability of populations in the face of a rapidly changing world, and this should be considered in management programs."

More information: "Causes and consequences of repeatability, flexibility and individual fine-tuning of migratory timing in pike." *Journal of Animal Ecology*, [DOI: 10.1111/1365-2656.12439](https://doi.org/10.1111/1365-2656.12439)

Provided by Expertsvar

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