Escaping peril: perceived predation risk affects migratory propensity

Although migratory plasticity is increasingly documented, the ecological drivers of plasticity are not well understood. Predation risk can influence migratory dynamics, but whether seasonal migrants can adjust their migratory behaviour according to perceived risk is unknown. We used electronic tags to record the migration of individual roach (Rutilus rutilus), a partially migratory fish, in the wild following exposure to manipulation of direct (predator presence/absence) and indirect (high/low roach density) perceived predation risk in experimental mesocosms. Following exposure, we released fish in their lake summer habitat and monitored individual migration to connected streams over an entire season. Individuals exposed to increased perceived direct predation risk (i.e. a live predator) showed a higher migratory propensity but no change in migratory timing, while indirect risk (i.e. roach density) affected timing but not propensity showing that elevated risk carried over to alter migratory behaviour in the wild. Our key finding demonstrates predator-driven migratory plasticity, highlighting the powerful role of predation risk for migratory decision-making and dynamics.