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Movement patterns and predator-prey interactions of domestic Atlantic salmon (Salmo salar) following an experimental release in a highly dynamic marine environment

The global seafood production of marine finfish is dominated by Atlantic salmon (Salmo salar) reared in marine net-pens. Incidents and structural failures may lead to salmon escaping net-pens with their fate being poorly understood, particularly for small-scale escape events (N < 100). This study sought to identify spatial patterns and the fate of Atlantic salmon post-smolts following a simulated escape event from an aquaculture site in the Bay of Fundy. Farmed salmon (N = 99) were implanted with an ultrasonic acoustic tag and were released from a farm in small groups ($N \le 5$). Using an established acoustic array, we tracked fish movement patterns and mortality over a ~4 month period. Predation events by warm-bodied predators were assayed using the tag's temperature sensors. Fish took ~5.0 h to leave the release site and initially opted to either move further inshore (N = 8) or out to sea (N = 73), though a large number of fish returned to the release site spending a large proportion of their time budget there (\sim 26.4%). Several fish (N = 14) were also observed in nearby river estuaries. Most fish (72.7%) succumbed to predation shortly after release (mean time to predation = 57.9 h). Our findings suggest that there is a strong association of salmon with the release site that may result from seasonal migratory tendencies,

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which could be exploited to improve recovery of escapees. Also, predation may serve to limit the number of escapee salmon entering the natural environment following a small-scale release.

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Data and Resources

Data preparation and telemetry analyses code

English specification HTML

Explore

Predator identification code

English specification HTML

Explore

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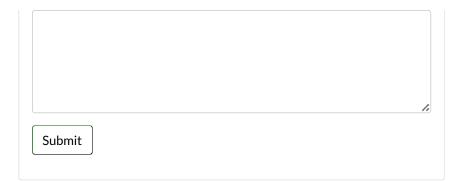
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