

Kirkcudbrightshire Dee Salmon Migration Study 2021

Non-technical summary

- To address a series of questions around the migration of Atlantic salmon smolts migrating to sea in the Kirkcudbrightshire Dee a tracking study was conducted in 2021.
- 50 salmon smolts were captured in a trap and fitted with a tag (a transmitter) that emits a unique acoustic signal. These fish were then released in the Polharrow and Coom Burns in April 2021 during the normal migration period.
- Sixteen fixed receivers (listening stations) were deployed throughout the river (see map).
- These were placed to be able to measure smolt migration success and speed through:
 - hydropower impoundments (Earlstoun Dam, Glenlochar Barrage and Tongland Dam)
 - lochs (Loch Ken, Earlstoun Loch)
 - the river channel
 - the upper estuary
- The main finding of this study were:
- Overall, migration success rate of salmon smolts from release site to inner estuary was 58%.
- However, migration success varied between habitat types and river section. Migration success though:
 - river sections - was high at 97.5% successful passage.
 - lochs - was also high with losses of 0 & 1.5% of fish per km in Earlstoun and Loch Ken respectively.
 - dams - was lower (81% and 88% for Earlstoun and Tongland Dams respectively).
- Successful smolt passage through dams occurred almost solely when power was being generated and turbines turning.
- Successful migration through a dam also coincided with higher water flow rates.
- This, and the pattern of passage at the dams, strongly point to the conclusion that smolts are migrating through the turning turbines even when alternative passage routes are available.
- Overall, the pattern of migration success is broadly in line with that expected in naturally draining rivers elsewhere, however, this study only provides a single snapshot of migration in a single year where migration success elsewhere was known to be high.
- We conclude that more information on smolt passage would be of value.
- This work should focus on migration success around the dams and on possible manipulation of dam flow rates to maximise successful and timely salmon migration.

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