Smolt Tracking

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Adult salmon stocks

- Rod catches suggest adult stocks are doing poorly

Juveniles

- EF surveys show our juvenile salmon stocks are ok, although patchy
- However, long-term monitoring shows in some burns egg deposition is at capacity for only 5 of the previous 20 years
Why track salmon and sea trout?

- **Declining population**
  - Up to about 1975 about 40% of smolts return as adult salmon.
  - Recent data suggest 5-10%

- **Environment Agency**
  - River Corrib, Bush and Welsh Dee (from ICES, 2017) for 1984 to 2014 smolt year classes
Tracking receivers
# 2016 – 2018 Results

<table>
<thead>
<tr>
<th>Year</th>
<th>River tag loss</th>
<th>Harbour tag loss</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>26%</td>
<td>0%</td>
<td>26%</td>
</tr>
<tr>
<td>2017</td>
<td>37%</td>
<td>11%</td>
<td>48%</td>
</tr>
<tr>
<td>2018</td>
<td>21%</td>
<td>28%</td>
<td>49%</td>
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**2018 smolt progression**

![Graph showing the proportion left downstream over time.](image)
Smolt run influences

Strong relationship to discharge

Predominantly night-time migration

Downstream

Date

Discharge

Count at station

0/06/2019
Confidentiality – Critical (C4), High (C3), Medium (C2), None (C1)
Smolt run timing: Presence in the harbour

[Graph showing the presence of smolts in the harbour from April to May with data from 2016, 2017, and 2018.]
So what?.....

• Identified pressures influencing migration
  • River – predators
  • Harbour

• Smolt run timings and triggers

• Use this data to take to Scottish government for management measures
  ▪ Goosander exclusion trial approved and running
  ▪ Marine licencing prevented dredging during critical window for smolt migration
Marine renewables

• Scottish Atlantic salmon migrate to Greenland

• But how?

• Sea trout use coastal waters

• Pathway predictions needed to avoid conflict with important offshore developments
North East tracking

- Trust and MSS joint project – salmon and sea trout tracking at sea
- 2018-2020: 300 salmon and 100 sea trout smolts
- Funded by Aberdeen Bay Wind Farm Ltd and MSS
North East tracking: year 0

- Tide has an effect on the average bearing of the migration
  - Flow – South East
  - Ebb – just North of East

- 34 of 60 tags were detected at the 4km Array = 56%
North East tracking: year 1
North East tracking: year 1

- 2018 72 IDs of 100 detected at the inner array

- Salmon and sea trout spend differing amounts of time within the harbour and coastal areas
• Sea trout, overall, use coastal waters more than Atlantic salmon

• No apparent directional movement for Sea trout compared to Atlantic salmon
During ebb salmon tend to have a bearing just north of East at the harbour mouth and south of East by the time they reach the inner array.

During flow salmon move South-East at the mouth of the harbour and just east of South by the time they reach the inner array.
Next steps

- Tracking array at 4km and 20km

- Where do smolts start to turn North?

- Modelling work continues based on actual movements of tagged fish
Year 2 so far

- Tagged all 150 fish
- 50 on the River Don
- 100 on the River Dee
- Including 50 predator tags to look at predation pressures in the off-shore environment
- Migration period coming to a close at the moment
- Downloading and analysing 2019 data to commence July/August
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