

Predators: Scotland

# Many predators of salmon

- Invertebrates on eggs/fry
- Fish, eg trout, pike
- Birds, eg goosanders, mergansers, cormorants
- Mammals, eg otters, dolphins, seals
- High seas: sharks, larger fish, mammals

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# Fish-eating birds

- Consume all freshwater life stages (and early sea stages?)
- Salmonids form a larger proportion of the diet at more northern latitudes
- May select for smaller smolts
- Licensed killing to protect fisheries as an aid to scaring
- Impacts on the smolt run may be calculated using an energy balance approach with assumptions
- Impacts may also be estimated with suitable smolt tracking experiments.

# Seals: grey and harbour

- Main focus is on those individuals in rivers
- Diet can include salmonids
- In theory, if smolts are consumed then substantial damage could be done by few individuals
- Methods: direct observations, scat analysis for hard parts, genetic analysis, seal-mounted PIT detectors

# Pike (and large trout)

- Clear danger to smolts migrating downstream through lochs
- Not easy to control
- A species of fisheries interest in it own right
- Large trout similar

# Main up-coming research areas

- Has bird diet changed since 1990s?
- How can bird and salmon conservation be factored into a management system?
- Can tracking of losses of acoustic/radio tagged smolts provide robust evidence of predator (predominantly bird) impacts?
- How can we keep seals out of rivers?
- Impacts on smolts?