REF.	ACTIONS	PARTNERS (lead partners in bold)
18.1	**Assess the significance of existing barriers for each species affected.**	**DDSFB** / RDT / SNH
18.1.1	Collate existing data from the DDSFB survey, EU Salmon LIFE project & DeeCAMP.	RDT
18.2	**Raise awareness of the problems caused by man-made barriers to fish passage.**	**DDSFB / RDT**
18.2.2	Publish locations of impassable man-made obstacles and promote awareness of the issue.	**DDSFB** / **RDT**
18.3	**Encourage riparian owners and relevant authorities to upgrade or remove problem barriers and identify funding mechanisms to enable this to happen.**	**DDSFB** / **SG** / Land managers / Landowners / **AC** / **ACC** / FCS / **RDT** / **FRS**
18.3.1	Seek SG and other funding to facilitate removal of obstacles remaining after LIFE project.	**DDSFB** / **RDT** / **SG**
18.3.2	Clarify the responsibilities and liabilities of different agencies for the removal of large obstacles e.g. Culter Dam.	**DDSFB** / **RDT** / **AC** / **ACC**
18.3.3	Consider whether traps and fish monitoring devices (e.g. the Girnock & Baddoch traps operated by FRS) have adverse effects.	**DDSFB** / **RDT** / **FRS**
18.4	**Install passes that will allow the passage of all migratory species past obstacles that cannot be removed.**	**DDSFB** / **RDT**

Acronyms are listed in the centre of this Action Card

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obstacles to fish passage

18 DEVELOPMENT & ENGINEERING

OBJECTIVE 18. Remove or redesign man-made obstacles in order to facilitate fish passage.

BACKGROUND

Artificial obstructions to the passage of migratory fish exist in the form of sluices, weirs, culverts, water intake structures, bridges etc. most of which have been in place for many years. Some obstruct fish passage by virtue of shallow water depth; others by virtue of height to be jumped. In many cases, the obstruction becomes apparent only when river levels are low.

Fish species have differing migratory abilities. Salmon (and indeed trout) are famous for their ability to ascend water falls, and most fast water stretches do not present a problem. Eels are also well known for their ability to overcome obstacles, often by going round them on wet grass. Lampreys are relatively weak upstream swimmers. Brook and River Lampreys can be stopped by a stretch of rapids; none can ascend any kind of waterfall.

Obstructions to upstream salmon and sea trout migration in the Dee catchment have been assessed and prioritised for remediation/ removal by the River Dee Trust.The aim of the work was to produce a work plan for opening up habitat for salmon and sea trout. Thirty one obstructions were recognised, the majority being barriers to fish movement under most flow-conditions but passable under a limited range of conditions. Tackling the three obstructions highlighted as of greatest priority were estimated to result in an extra 241 adult salmon returning to the Dee to spawn each year. The removal/remediation of all obstructions on the Dee is expected to produce 1364 extra adult spawning salmon in the Dee.

ISSUES

- There are good potential spawning beds (for Atlantic salmon) in the Dee catchment.
- The passage of migratory fish to spawning beds is impeded or, depending on the river water levels, prevented altogether by obstacles which do not allow a sufficient depth of water for fish to negotiate. there are at least 31 such obstructions in the Dee catchment.
- Enabling free passage for these species is of very high commercial and conservation value.
- The freshwater pearl mussel, one of the Dee's Special Area of Conservation (SAC) qualifying species, depends for its reproduction and dispersal on the presence and movement of salmonid species.

EXISTING AND RECENT INITIATIVES

- River Dee Trust 2007 survey of barrier to fish migration.
- The River Dee Trust carries out annual surveys of juvenile fish throughout the catchment using recognised electrofishing techniques. The results of these surveys have been used to confirm the presence or absence of fish and hence identify obstacles to fish passage.
- The Dee District Salmon Fishery Board is removing obstructive structures from the Beltie Burn as part of the Salmon LIFE Project.
- New culverts are now installed deeply enough to allow natural material to form the invert within the culvert.
- Pitched inverts under new bridges are designed to be deep enough to maintain a reasonable depth of water at times of low river levels.



This pipe bridge on the Burn of Skinna (a tributary of the Water of Tanar) is impassable to fish (DDSFB)

WHO IS INVOLVED?

Aberdeenshire Council

Aberdeen City Council

Dee District Salmon Fishery Board

Forestry Commission Scotland

Fisheries Research Services

Landowners

Land managers

River Dee Trust

Scottish Government

Scottish Natural Heritage

Further copies can be downloaded at www.theriverdee.org. For further information contact the Dee Catchment Officer
c/o The Macaulay Institute, Craigiebuckler, Aberdeen AB15 8QH Telephone: 01224 498200 email: info@theriverdee.org

deecatchment partnership

- The Dee Salmon Action Plan has actions linked to obstacles.
- North East Local Biodiversity Action Plan.
- Short-term stocking with salmon of appropriate genetic provenance can be carried before an effective fish pass is installed, provided suitable habitat is available in the inaccessible area.
- Baffles are being retrofitted to culverts and pitched inverts where appropriate.

ACTIONS REQUIRED

- Realistic assessment of the impact caused by artificial obstructions is an essential pre-requisite for future actions.
- All man-made obstacles should be made passable to migratory fish.
- The issue of providing access for Sea and River Lampreys must be addressed (Brook Lampreys could be stocked into suitable habitat quite successfully as they are non-migratory but both River and Sea Lamprey must have access to and from the sea). Lampreys require very different fish pass designs than those suitable for salmonids.

LEGISLATION

See Action Pack Annex for information sources

- Various Salmon Fisheries Acts, most recently the Consolidation Act (2003), enforce the provision of suitable fish passes in man-made obstacles- but this legislation only applies to salmon and sea trout.

GUIDELINES AND INFORMATION

See Action Pack Annex for information sources

- Design guidelines for fish passes suitable for salmon and trout.
- Planning Policy Guidance 5: Simplified planning zones (PPG5)
- The River Dee Trust, assessment of obstructions to salmonid migration on the Dee 2007

BENEFITS TO PROTECTED SPECIES

The following specially protected species will benefit from the Actions:

- Freshwater pearl mussel *Margaritifera margaritifera*
- Atlantic salmon *Salmo salar*
- River lamprey *Lampetra fluviatilis*



Garlogie Dam (DDSFB)

RELATED ACTION CARDS

16. Flood alleviation
17. Channel and bankside engineering works
26. Atlantic salmon
27. Freshwater pearl mussel
32. Fish data