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SECTION 4 : OTHER FISH SPECIES

The species lists for the Tweed and the Eye are given in Section 3, where it is also pointed out that the introductions, deliberate or accidental, of alien species has meant that the original, native species complex of the Tweed has been well diluted. However, all of these species have not spread to all of the catchment : Grayling, for instance, are kept out of the Ettrick and Gala altogether by caulds and out of some sections of other tributaries by caulds and waterfalls and other alien species have been limited in smaller channels by culverts and other obstacles. As mentioned elsewhere, when obstacles to Salmon and Trout are eased, attention is now given as to whether this might allow alien species to spread further and fish passes and other alterations can be designed to allow Trout and Salmon to pass but prevent other species from doing so - this is relatively easy as none of the alien species in the Tweed catchment at present are able to jump well.

The species complex of the Eye Water is closer to the original, only Baggies (Minnows) and Beardies (Stone Loach) having arrived there. Although no historical records of Salmon being present in the Eye have yet been found, there is a significant population at present, as shown by electric-fishing of juveniles. The ammocoete larvae of Lampreys are widespread in the Eye, but it is not known what species these represent, most likely the Brook and River Lampreys – there are no known records of adult Sea Lampreys.

Apart from Salmon and Trout, the only other exploited fish species within the Fisheries District are the Grayling and the Eel of the Tweed. The former was deliberately introduced to the Tweed to provide Winter fishing for anglers as Grayling are in prime condition at that season as they approach their spawning time in Spring (trout, in Winter, are, by contrast in poor condition as they recover from their Autumn spawning). Eels are native and have occasionally been the target of small commercial net fisheries.

The Tweed is a candidate Special Area of Conservation (SAC) for all three species of Lamprey, and if this is confirmed, then a section covering their conservation will be added to this Management Plan.

The management issues for this group of species are therefore to :-

- (1) Establish Management Levels for Grayling and Eels
- (2) Protect the native fish species
- (3) Prevent the further spread of alien species.
- (4) Prevent the arrival of any more alien species.

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SECTION 4a : GRAYLING

The plan for Grayling generally follows the same form as for Salmon and Trout, but varies where differences in life-history make this necessary

INPUT 4a.A : DEFINE THE POPULATIONS OF TWEED GRAYLING

Rationale : It is not known how much the Grayling of the Tweed move around or whether there are migrations to particular spawning areas and this needs to be determined if the effect of angling pressure is to be assessed. If there is much movement of fish, then pressure will be on the population as a whole, if there is little movement, then pressure will be on local stocks.

Results from previous plans :

None

Policies for the next five years ;

Policy 4a.A (1) : Tag juvenile and adult Grayling to show patterns and extent of movements

- (a) Tag adult Grayling caught and released at the Earlston Grayling competition each year and monitor recaptures at this competition and elsewhere
- (b) Micro-tag juvenile Grayling when these are found during surveys of Salmon and Trout juveniles.

INPUT 4a.B : INVENTORY THE QUANTITY AND QUALITY OF HABITAT FOR GRAYLING

Rationale : Little is known of the habitat used by juvenile or adult Grayling or what and where their spawning areas are. If nursery areas with good numbers of juvenile Grayling could be identified where electric-fishing was practicable, they could be assessed and monitored in the same way as Salmon and Trout juveniles.

Results from previous editions :

- a: *Juvenile Grayling have been regularly found in electric-fishing surveys of the lower Leader, Eden and Ale, but in very small numbers. It may be that most of their spawning takes place in the larger channels in which case it is unlikely that it will be possible to monitor this stage of their life-cycle*

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Policies for the next five years

Policy 4a B (1): Locate and map areas used for spawning by Grayling

- (a) Grayling are very obvious at their spawning areas and it should be possible to observe and map these, especially in tributaries. This could give information on
 - (i) Stock strength – large numbers of spawning areas should indicate large stocks
 - (ii) Stock distribution – some parts of the catchment may have higher densities of spawning areas than others.

Policy 4a.B (2) : Survey and Assess invertebrate food supply for Grayling

(This would be combined with Policy 3.B (4) as Grayling and adult Brown-trout share the same habitat in larger channels)

INPUT 4a.C : MONITOR JUVENILE STOCKS OF GRAYLING AND IDENTIFY THE HABITATS THEY USE

No areas where it would be possible to do this have yet been identified, but this may become possible as more spawning areas are identified.

INPUT 4a.D : MONITOR AND ANALYSE ANGLING CATCHES OF GRAYLING

Rationale : Grayling being inhabitants of deeper water and not running in to small trappable burns at spawning time, like trout, it is not possible to monitor their stocks in the same way. Catches at fishing competitions are therefore the only source of information on the adults of this species.

Results from previous editions:

- a: Monitoring of the catches made at the Earlston Angling Club's annual Grayling competition have shown that catches - and probably stocks - have fluctuated greatly over the past eight years (Appendix D4)*

Policies for the next five years:

Policy 4a D (1) : Monitor the angling catches of Grayling as an index of stock abundance

- (a) Monitor the catches at the Earlston Grayling competition each year

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- (b) Ensure a sufficient number of Tweed Grayling anglers participate in the new National Angling Catch Diaries to provide useful information on catch rates over the years

INPUT 4a.E : ASSESS THE EXPLOITATION RATE OF GRAYLING

Rationale : Unless the degree of pressure being put on stocks by angling is known, it is not possible to assess what management, if any, is appropriate

Results from previous editions :

- a : An appropriate tagging method was found in 2004 and 17% of those tagged (near Melrose) were recaptured within three months of tagging. The majority of recaptures has been at the original tagging sites, with the others having moved only short distances. It appears that these Grayling are very sedentary, remaining in the same areas and being fished over repeatedly, giving the high recapture rate.*

Policy 4a E (1) : Tag Grayling to find recapture rate (few Grayling are killed, so recapture rate is not the same as exploitation rate for this species)

- (a) Continue the tagging of adult Grayling where and when possible

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SECTION 4b : EEL

The European Eel population of the Tweed differs in one very basic respect from all the other fish species found in the Tweed - it breeds outside the Fisheries District and arrives here by migration from its marine spawning areas to live until it is mature enough to leave and spawn. Setting a Management Level for the stock found in the Tweed alone would not therefore serve any purpose, but if it was determined that the species was in decline throughout its range and there was international action to reduce exploitation levels, then an appropriate Management Level could be introduced here.

Results from Previous Plans :

- a: *Data on the Eel population of the Tweed and Eye was supplied to a study being undertaken at Westminster University on the stock levels of the species*
- b. *Electric-fishing data showed large declines in the numbers of Eel found at monitoring sites (Section 3.3 B2)*

INPUT 4b .1 : MONITOR THE STOCKS OF EELS IN THE TWEED AND EYE CATCHMENTS

Policies for the next five years :

Policy 4b.A (1) : Collect information on the distribution and abundance of Eels during survey work of all types

- (a) Update the Tweed Fish Distribution database with these records
- (b) Provide data on distribution and abundance to organisations undertaking research on this species.

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SECTION 4c : OTHER NATIVE FISH SPECIES (Sea, River and Brook Lampreys and the Three-spined Stickleback)

INPUT 4c .1 : COLLECT AND COLLATE HISTORICAL AND PRESENT DAY RECORDS OF THESE SPECIES

Rationale: Knowing what fish species are present and where throughout the District is a basic background requirement for fisheries management. Such information is often of interest to other organisations concerned with conservation and maintenance of this information in a compatible, database, format allows requests for this type of information to be answered quickly and easily.

Results from previous editions :

- a: Distribution data derived from both Tweed Foundation and earlier surveys have been combined into a database from which fish species distribution maps can be made. This data has been contributed to the local Biological Records Centre and to the Institute of Terrestrial Ecology's forthcoming Atlas of British Fishes.*
- b: Data on the three Lamprey species was provided to both Scottish Natural Heritage and English Nature during their investigations into the prospective SAC for these species.*

Policies for the next five years :

Policy 4c.1 (1) : Continue the collection and collation of historical records of these species for the *Tweed Fish Species Distribution Database (pre 1960)*

- (a) Ensure database formats are compatible with those used generally

Policy 4c.1 (2): Continue to enter data on these species from electric-fishing samples into the *Tweed Fish Species Distribution Database (Sites)*

- (a) Ensure database formats are compatible with those used generally
- (b) Analyse these for geographical and other patterns

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Policy 4c.1 (3) : Continue to enter records of these fish species from all other sources into the *Tweed Fish Species Distribution Database (Species)*:

- (a) Ensure database formats are compatible with those used generally

Policy 4c.1 (4) : Provide annual updates of species distribution data to the local Biological Records Centre and to SNH

INPUT 4c.2 : INVENTORY THE QUANTITY AND QUALITY OF HABITAT FOR JUVENILE LAMPREY AND THE DISTRIBUTION OF ADULTS

Rationale : Without good distribution and abundance data, no useful assessment can be made of the status of these species in the catchments. If the SAC for Lamprey is established, then this type of data will be required for the reports that have to be made every six years on the state of the SAC.

Results from previous editions :

- a: A survey of the River Till for lamprey larvae was undertaken in 2002, financed by English Nature.*
- b : A survey of the Scottish Tweed catchment for lamprey larvae was undertaken in 2004, financed by SNH*

Policy 4c.2 (1) : Undertake surveys of appropriate areas of large channels specifically to locate important Lamprey nursery areas.

- (a) Search for and map lamprey spawning sites
- (b) Add records of lamprey larvae made during salmonid and other surveys to the database
 - (i) Train personnel in identification of larvae to species level.
 - (ii) Adapt the electric-fishing / G.I.S. database to hold semi-quantitative data on these species from both the surveys outlined above and from the general electric-fishing surveys made for Salmon and Trout
- (c) Survey areas where no data
 - (i) Use the standardised SAC survey methods to do this

Policy 4c.2 (2) : Devise a trapping programme to catch adult lampreys migrating upstream : adult River and Brook Lamprey are easily identifiable to species, which their juveniles are not.

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SECTION 4d : NON-NATIVE FISH SPECIES (Beardie [Stone Loach], Baggie [Minnow], Gudgeon, Roach, Dace and Bullhead)

INPUT 4d.1 : COLLECT AND COLLATE HISTORICAL AND PRESENT DAY RECORDS OF THESE SPECIES

Rationale: Knowing what fish species are present and where throughout the District is a basic background requirement for fisheries management. Such information is often of interest to other organisations concerned with conservation and maintenance of this information in a compatible, database, format allows requests for this type of information to be answered quickly and easily.

Results from previous editions :

- a: Distribution data derived from both Tweed Foundation and earlier surveys have been combined into a database from which fish species distribution maps can be made. This data has been contributed to the local Biological Records Centre and to the Institute of Terrestrial Ecology's forthcoming Atlas of British Fishes.*

Policies for the next five years :

Policy 4d.1 (1) : Database historical and present day records of these fish species

- (a)** Continue the collection and collation of historical records of these species for the Tweed Fish Species Distribution Database (pre 1960)
- (b)** Continue to enter data from electric-fishing samples into the Tweed Fish Species Distribution Database (Sites)
 - (i)* Analyse these for geographical and other patterns
- (c)** Continue to enter records of fish species from all other sources into the Tweed Fish Species Distribution Database (Species)
- (d)** Ensure database formats are compatible with those used generally
- (e)** Provide annual updates of fish species distribution data to the local Biological Records Centre and to SNH

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INPUT 4d.2 : INVESTIGATE INTERACTIONS BETWEEN NATIVE AND NON-NATIVE SPECIES

Rationale : The presence of introduced species may depress the abundance of native species or threaten them with local extinction. To establish whether any of the native fishes of the Tweed are under threat from these introduced species is a basic need for their conservation

Policy 4d B (1) : Survey the larger channels of the system for presence of species such as Roach and Dace

- (a) Most of the introduced species live in the deeper water of the larger channels and are unlikely therefore to be in direct competition with juvenile Salmon or Trout but until surveys are made of the larger channels this cannot be certain.

INPUT 4d.C : LIMIT THE SPREAD OF NON-NATIVE FISH WITHIN THE TWEED & EYE CATCHMENTS

Rationale : As it is almost impossible to eliminate non-native fish species from a large river system once they have become established, the only viable alternative is to limit their spread. Each time a new species establishes itself in a new area, it fundamentally changes the ecology and further dilutes its original and natural identity. There is also the unknowable impact of new species on existing species of commercial value.

Policies for the next five years

Policy 4d.C (1) : Where obstacles are being eased to allow Salmon and Trout better access, ensure that this does not also allow non-native fish species to spread further upstream.

- (i) This can be ensured by leaving access as a jump rather than by making it completely open

Policy 4d.C (2) : Advise against the stocking of species that could breed in flowing waters into still waters upstream of obstacles that have been preventing them from spreading up the channels.

Policy 4d.C (3) : Establish the extent of colonisation and the area of likely unaided spread by the Bullhead and advise local landowners and fisheries interests to guard against inadvertently spreading this species to other parts of the catchment.

- (i) Undertake surveys to establish the extent of Bullhead colonisation

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SECTION 4d.E :

PREVENT FURTHER INVASIONS OF THE TWEED BY ALIEN FISH AND OTHER AQUATIC SPECIES AND THE SPREAD OF THOSE ALREADY PRESENT.

INPUT 4e A : Monitor the advance of alien species towards the Tweed and devise methods to keep them out.

Rationale : Every time a new species establishes itself in the freshwaters of the District, the basic ecology of the system is changed. Such changes may be adverse, neutral or even advantageous to fish stocks, but this cannot be securely predicted in advance. Even if the advent of a new species was an advantage to one or other of the native fish species -e.g. through the provision of an additional food species - it may not be to other native species of invertebrate or plant. As a precaution therefore, no new species should be allowed to establish in the waters of the District. This also maintains biodiversity on the larger scale: If all possible fish species were to be present in all the freshwaters of the British Isles, then there would be no diversity from one region to another, everywhere would be the same and the original interesting differences would be completely lost.

Policies for the next five years :

Policy 4e A (1) : Monitor the distribution and spread of the Signal Crayfish (*Pacifastacus leniusculus*) , recently arrived in the Ettrick and spreading through the Clyde :-

- (a) Determine the extent of the colonisation of the Ettrick and investigate reports of other colonies in the Tweed catchment.
 - (i) Run a trapping programme
 - (ii) Gather information on control methods
- (b) Consult with other agencies over methods to eliminate populations
- (c) Encourage and support any efforts to control this species on the Clyde. There are two areas of bog and one artificial channel that connect the Tweed and Clyde catchments

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Policy 4e A (2) : Monitor the distribution and spread of other alien species, in particular, the Freshwater Mussel (*Driessanea polymorpha*) now established in Merseyside and the Chinese Mitten Crab (*Eriocheir sinensis*), now in the Northumberland Tyne.

- (i) Support initiatives being taken elsewhere to control or eliminate such species.
- (ii) Publicise the issue of Invasive Species and their dangers locally and nationally
- (iii) Campaign for better legal controls and more resources for public agencies responsible for control.

Policy 4e A (3) : Provide advice to anglers on how to prevent the inadvertent spread of these or other species on fishing equipment.

Policy 4e C (4) : Remind the local trout clubs and fish farms of the risks involved in bringing in fish from outside the catchment.

- (i) Draw up guidelines to prevent accidental introductions.

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