



SECTION 10: BIOSECURITY & FISH HEALTH (NOTE: Text in red added since approval by RTC)

1. BIOSECURITY

(This section is an interim one as Biosecurity planning is the topic of a RAFTS programme funded through the Scottish Government which is running from 2008 to 2010. A full section that will include the results of this programme will replace this interim section in 2011)

Rationale: The plants and animals that have evolved together in and along the waters of the Tweed catchment and of the Eye since the Ice Age, give a particular local character and interest to our area. Every time a non-native species establishes itself this local character is weakened and our rivers become more anonymous and generalised. If the process is unchecked both here and nationally, then the rivers of the British Isles will no longer be characteristic of their local areas but will simply be channels of water inhabited by a random collection of plant and animal species from around the planet. The aim of this section is therefore to “keep Tweed, Tweed”.

One of the most distinctive characteristics of our rivers and of the rivers of Scotland and the North of England generally, is the lack of native fish species. Since there was no freshwater link between the northern parts of Britain and the continent, no purely freshwater species such as Pike, Perch or Carp species such as Roach, Rudd, Dace, Tench, Barbel, etc. could colonise this area after the Ice Age. The only native species are therefore those that could cross salt water (Salmonids, Eel, Stickleback and Lampreys). This lack of native species is sometimes thought of as a deficiency to be remedied by introduction but it is actually one of the things that makes our rivers different from elsewhere and therefore of particular interest.

As well as the fundamental damage done to our local identity and ecology by the presence of non-native species, there is also the particular damage that can be done by individual non-native species. Signal Crayfish, for instance, exclude juvenile Salmon from hiding places, making them more vulnerable to other predators and reduce the numbers of large invertebrates on which fish feed. Giant Hogweed and Japanese Knotweed can completely dominate banksides, excluding light and destroying all native vegetation underneath. While these particular situations are more dramatic and obvious and grab the headlines, the dilution of local ecological identity by the infiltration of non-native species that do not cause any particular damage is actually just as significant. What has to be remembered is that animal *communities* can become extinct, not only individual species and the presence of even one alien species means that a community has become extinct, even if all the original, native, species are still present.

A. PREVENTION

Rationale: As it is difficult to eradicate a non-native species once it is established, the best course is to prevent the arrival of new species altogether. This not only means alerting and informing the public in general and bodies such as garden centres and aquarists shops in particular of the dangers of non-native species but also working with national agencies to support national policies aimed at exclusion or restriction of non-native species beyond the boundaries of the Fisheries District.

1. Keep national plans and strategies under review and introduce locally any relevant policies or programmes to prevent the arrival of non-native species.
 - a. Co-ordinate work with national agencies such as SNH, Natural England, SEPA and the EA.
 - b. Give scientific support to the RTC’s policy on the prevention of *Gyrodactylus salaris*.
2. Increase public awareness of the issue through local publicity and the provision of materials to local clubs and schools.
 - a. Highlight species that are nearing the boundaries of the catchment e.g. the Chinese Mitten Crab is now established in the Northumberland Tyne.



3. Check the local efficiency of national codes.

- a. On the sale of plants and animals in garden centres and aquarists shops.
 - i) Obtain copies of national codes and identification guides to banned plants and animals.
 - ii) Draw up a list of all local garden centres and aquarists shops.
 - iii) Write to the managers of all of these to ask if they are following their national codes of practice.
 - iv) Set up a programme to monitor local garden centres and aquarists shops to check on plants and animals on sale.
- b. On the discharge of ballast water from ships in Berwick harbour (Eyemouth) (ballast water from ships is known to be a serious biosecurity risk and has been responsible for the transfer of many marine species of plants and animals around the world).
 - i) Contact the Berwick Harbour Commissioners to ask what policy they have on ballast discharge and check that this meets national/international standards.

4. Provide scientific support to the RTC's Code on the stocking and movement of fish species into and around the District.

- a. Maintain a list of local still-water fisheries.
- b. Liaise with the SBC's Biodiversity officer on the creation of new ponds within the District and ensure appropriate restrictions on the stocking of these with plants and animals are imposed.

B. RESPONSE

1. Newly arrived species.

- a. Ensure that the appropriate channels for reporting the presence of new non-native species to national bodies are known.
 - i) If any such species are found, report immediately.
 - ii) Alert local agencies and join any group set up to deal with the new arrivals (this is an interim measure – a national system for rapid response is being developed. However, this may only be triggered if species of national significance are involved, it may not cover local situations).

2. Establishing species (Signal Crayfish and Bullheads).

- a. Determine extent of colonisation.
- b. Work to contain the spread of these as a first response.
- c. Establish if eradication is feasible. **Particular attempts should be made if there is only one population within a sub-catchment that would otherwise be free of that particular alien species. Two such situations are known at present – there are single ponds with Signal Crayfish in the Middle Tweed and Whiteadder catchments. Eradication of these would make these areas free of Signal Crayfish, reducing the risk of further spread. The Whiteadder catchment is unlikely to be further colonised by Signal Crayfish without human assistance as its river mouth is in salt water so eradication of the single pond within this catchment would have the effect of creating a Signal Crayfish-free zone within the Tweed catchment.**
 - i) **Carry out a feasibility study in to the possibility of eradicating Signal Crayfish from the Whiteadder catchment.**
- d. If eradication with present techniques is not feasible, see if it is possible to define areas within the catchment that these species could not reach without further human assistance and work to ensure that these, at least, remain free of these species.



- i) Identify such refugia.
- ii) Advise farmers, landowners, etc. within these areas of the issue and ask that they ensure that no stocking or transfer of these species is made on their land.

C. ERADICATION

1. Support eradication initiatives being undertaken by local bodies (e.g. The Tweed Forum's Invasive Plants work).
 - a. Maintain awareness of techniques in use.
 - b. Develop links with bodies using such techniques.
 - c. Obtain any appropriate training.
2. Where and when practicable, undertake eradication of non-native aquatic species if no other body prepared to do so.
 - a. Identify extent of problem.
 - i) Obtain necessary consents for use of biocides (poisons) or other techniques.
 - ii) Obtain training in use of eradication techniques or commission outside experts.
 - iii) Undertake eradication.
 - iv) Check for success.
3. Where no practicable eradication techniques are available support research to find these.

D. MITIGATION & INVESTIGATION

1. If there is no possible method of eradication, establish any possible mitigation measures, such as identification of areas within the catchment that an alien species cannot get into (without human assistance) and alert farmers, landowners, etc. within such areas to the situation. The aim of this would be to ensure that the alien species was not accidentally introduced into the parts of the catchment they could not invade by themselves (as for RESPONSE 2d).
2. Better information is needed on the impacts of alien species both to assess likely impacts and to provide information to support any case for eradication.
 - a. Set up monitoring sections where Bullhead have established to find their impacts on juvenile Salmon and Trout (there is no consistent view on this – in some cases Bullhead are known to have replaced Trout entirely in small burns but in other places they do not cause any apparent problem).
 - b. Investigate the possibility of monitoring Signal Crayfish and juvenile Trout in the Flodden Burn, a small stream where the former are very numerous. However, a monitoring programme would require the return of any Crayfish sampled back to the water, which would be illegal.

2. FISH HEALTH

Parasites and Diseases of Tweed Fishes.

A. Parasites

1. *Gyrodactylus salaris*: The greatest known threat to the Salmon of the Tweed is the monogenean fluke which has wiped out Salmon in more than 20 rivers in Norway. A contingency plan to deal with an outbreak on the Tweed was produced in 2011.

The other parasites found on Tweed salmonids (Sea-lice, the Fish Louse and Gill-maggots) are not health issues here.



- 2. Anisakis nematode worms: These cause the "Red Vent Syndrome" that has been common in Salmon in some recent years, producing distended and bloody vents. The fish start to heal when they come in to fresh water and will spawn normally, so these are not a fish health issue, though they are for human health: precautions have to be taken when infected fish are eaten or smoked.*

B. Diseases

- 1. UDN: There is no evidence as yet that this actually is an infectious disease, and it is best described as a "syndrome". Its name is simply a description of its symptoms – Ulcerative Dermal Necrosis (meaning skin dying due to ulceration). There were outbreaks on the Tweed in the second half of the 1960s and in the 1880s, with occasional examples at other times and a heightened level in the spring of 2012. It is of marine origin; the fish come in to fresh water with the ulcers which can then become infected with fungus, which is often, incorrectly, thought to be UDN. It is the further destruction of the skin by the fungus which can prove fatal. Fish with UDN can heal as the water warms up and spawn normally. The RTC Annual Reports during the 1960s outbreak report good levels of spawning stocks despite the large numbers of dead fish removed from the river and the outbreak was followed by very large runs of Grilse, spawned during the worst seasons.*
- 2. Saprolegia Fungus: This is the white fungus commonly seen on dying Salmon and Sea-trout at the end of the year. Its spores are present everywhere in a river and can infect fish if their skin gets broken, exposing bare flesh to the water. While diseases or syndromes such as UDN can do this, physical damage from fighting between males or the making of redds by females can also break the skin. Fish with fungus can recover from it in warmer water or if they get back to the sea.*
- 3. Cauliflower disease of Eels: There was an outbreak of this on the Tweed in the early 1980s and one example has been found since. The disease causes "cauliflower" like tumours on the heads of Eels and can, in some cases, prevent them from eating and cause them to starve.*

C. Wild Fish Health Surveys

From time to time, the Fish Health Inspectorate carry out Wild Fish Health Surveys of the country. Samples of Salmon and Trout from the Tweed were tested in 1995, 1999 and 2006. No notifiable diseases were confirmed from any of these samples.

Policy 10.2.1: Collect historical records and data on past outbreaks of diseases and parasites in the District

Policy 10.2.2:

- Investigate any outbreaks, collect samples and have them analysed for causative agents or other information.
- Cooperate with any national disease or parasite surveys or investigations.

Policy 10.2.3: Advise the RTC and other organisations on any useful mitigation measures that can be undertaken during any disease or parasite outbreaks