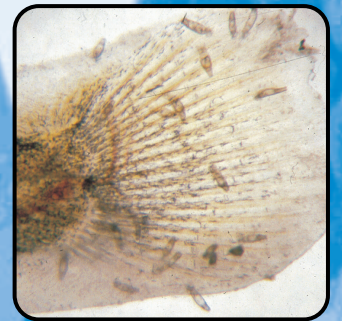
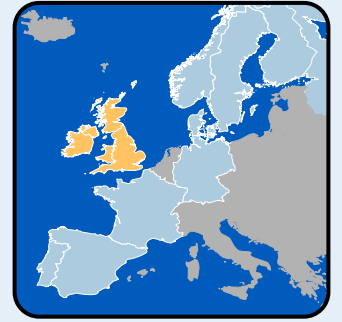


# Code of Practice to Avoid the Introduction of *Gyrodactylus salaris* to GB



SCOTTISH EXECUTIVE  
Environment and  
Rural Affairs Department

**DEFRA**  
Department for  
Environment,  
Food & Rural Affairs

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## INTRODUCTION

The Risk Assessments carried out as part of the Great Britain (GB) Contingency Plans for control of *Gyrodactylus salaris* identified biological pathways by which *G salaris* could be introduced into GB, risk commodities and risk areas. High levels of protection are considered essential, as the consequences of *G. salaris* infection being introduced into GB and becoming established in indigenous salmon populations would be severe.

Communication is a central and integral part of all stages of risk assessment. Regular discussions are and will continue to be held between scientists, policy branches, angling associations, river authorities, fishery owners and fish farmers. This Code of Practice forms a key part of the communication process, providing practical measures to prevent the introduction of *G. salaris* to GB.

The Code describes activities that could potentially result in the introduction of *G salaris* and steps that should be taken to ensure the risk is minimised. There are short checklists for groups carrying out high-risk activities.

In the event of introduction of *G. salaris*, measures to minimise the impact are detailed in the Contingency Plans for the Control of *Gyrodactylus salaris* in GB. Copies are available from FRS or DEFRA, as appropriate.

## Activity 1. The Existing Import Trade in Live Eggs from Susceptible Fish Species

### What are the risks?

- *G. salaris* can be harboured on the surface of eggs for short periods (up to approximately one week). If the eggs or water from the eggs come into contact with susceptible species (Atlantic salmon, *Salmo salar*, rainbow trout, *Oncorhynchus mykiss*, Arctic char, *Salvelinus alpinus*, and grayling, *Thymallus thymallus*), infection may occur.

### How can the risks be minimised?

- **Potential recipients** of eggs should seek advice from the relevant competent authority as listed in Annex 1 as to the *G. salaris* status of the country or area from which they wish to import. All imported ova should be disinfected in accordance with the guidance issued along with a licence to import ova (form DoF8c). Details of zones within the EU that have been demonstrated to be free of *G. salaris* are listed in Commission Decision 96/490/EC as amended by 98/24/EC on certain protective measures with regard to *Gyrodactylus salaris* in salmonids. A licence to import eggs must be obtained from the appropriate authority (see Annex 1) and imports from regions outwith the EU that are of a lower fish health status than GB may not be allowed.
- **Controls on the importation of live eggs** of salmonids that could carry surface contamination with *G. salaris*. Commission Decision 96/490/EC requires that all salmonid eggs are subject to disinfection ensuring the elimination of *G. salaris*.
- **Containers and residual water** used to transport eggs and fish must be disinfected and/or disposed of in a suitable manner, in accordance with the guidance issued with the import licence (DoF8c).
- **Suspicion** of the presence of the infection must by law be officially reported to the appropriate authority (see Annex 1), as *G. salaris* is a notifiable disease under the Diseases of Fish Acts 1937,1983. These Acts have provision for restrictions on movement of infected or suspect infected fish.
- **Movement records** must be kept and may be inspected by the appropriate authority as specified in Annex 1.

## Activity 2. The Import Trade in Live Susceptible Species

### What are the risks?

- Susceptible fish species are currently known to be Atlantic salmon *Salmo salar*, Arctic char *Salvelinus alpinus*, grayling *Thymallus thymallus* and rainbow trout *Oncorhynchus mykiss*. Experimental challenges have also established reproducing populations of the parasite on brook trout, *S. fontinalis*, and lake trout, *S. namaycush*. The parasite does not reproduce on non-salmonid fish.
- The greatest risk of infection is from contact between infected and uninfected fish, or via effluent from infected fish.
- Taking into account the island status of the UK and the inability of the parasite to survive full strength seawater, the risk of natural transfer of the parasite is negligible and can therefore be ignored.

### How can the risks be minimised?

- **Measures to prevent the introduction of *G. salaris*** were included in the “Application for Approved Zones and Other Measures to Prevent the Introduction and Spread of Fish and Shellfish Diseases in Great Britain under Council Directive 91/67/EEC” submitted by GB in 1992 to the EC. This led to Commission Decision 96/490/EC as amended by 98/24/EC, which granted certain protective measures to GB (and other areas) with regard to *G. salaris* in salmonids. These measures included prevention of importation of live salmonids into GB from areas not shown to be free from *G. salaris*.
- **Potential recipients** of fish must not import fish from infected areas. Details of zones that have been demonstrated to be free of *G. salaris* are listed in Commission Decision 96/490/EC as amended by 98/24/EC. Import licences must be obtained from the appropriate authority (see Annex 1) and imports from countries outside the EU that are of lower fish health status than GB may not be allowed.
- **Movement records** must be kept and may be inspected by the appropriate authority as specified in Annex 1.
- **Suspicion** of the presence of the infection must by law be officially reported to the appropriate authority (see Annex 1), as *G. salaris* is a notifiable disease under the Diseases of Fish Acts 1937,1983. These Acts have provision for restrictions on movement of infected or suspect infected fish.

### Activity 3. Imports of Other Fish Species

#### What are the risks?

- *G. salaris* is able to survive for prolonged periods on transport host species (eg eels, coarse fish) although it is not able to reproduce and develop sustaining populations. Unpublished information (Dr T A Mo, National Veterinary Institute, Oslo) indicates that *G. salaris* can survive for at least 100 days on *Salmo trutta*. Contact between infected transport hosts, or via effluent from infected fish, and uninfected fish of susceptible species should be considered high risk.

#### How can the risks be minimised?

- **Potential recipients** should request that the fish be examined by a recognised centre of expertise for gyrodactylid parasites prior to movement and that the absence of *G. salaris* is shown. Contact the relevant authority listed in Annex 1 for advice on suitable centres. Licences are required for the import of all fish species. The particular licence that is required is dependent upon the species to be imported and the area from which the consignment originates. Contact the relevant authority listed in Annex 1 for advice or an application form.
- **No movements** of fish from areas that have not been shown to be free from *G. salaris* should be made. Details of zones that have been demonstrated to be free of *G. salaris* are listed in Commission Decision 96/490/EC as amended by 98/24/EC on certain protective measures with regard to *Gyrodactylus salaris* in salmonids.
- **Samples** of fish or gyrodactylid parasites may be sent to a recognised centre of expertise (contact authorities in Annex I for details) for detection and species identification in advance of the planned movement.
- **Movement records** must be kept, and may be inspected by the appropriate authority as specified in Annex 1.
- **Suspicion** of the presence of the infection must by law be officially reported to the appropriate authority (see Annex 1), as *G. salaris* was made a notifiable disease in 1988 under the Diseases of Fish Acts 1937,1983. Acts gave provision for restrictions on movement of infected or suspect infected fish.

**Activity 4. Equipment Used in Infected Areas, Particularly that Associated with Angling and in Direct Contact with Fish, Which Is Re-used in GB.**

**What are the risks?**

- *G. salaris* has been shown to survive away from a live fish host for five-seven days at ambient river temperatures and for 78 hours and 42 hours at salinities of 10 ppt (parts per thousand) and 20 ppt, respectively. Risk is associated with movement of materials (animate and inanimate) that can carry low salinity water, which have recently been in contact with infected fish, and which have been kept in cool conditions sufficient to permit the temporary survival of the parasite away from live fish. Equipment or product that has been kept cool and damp and is transferred rapidly (within one week) may present high levels of risk.
- The parasite is considered to have a natural origin in Baltic Russian rivers. It is now known to occur in Finland (Baltic and northern watersheds), Sweden, Russia (Baltic and White Sea watersheds), Norway, Denmark, Germany, Spain and possibly in other European countries. The absence of records from other areas should not be taken as evidence of absence, as systematic surveys to demonstrate absence have only been undertaken by the UK, Republic of Ireland and certain parts of Finland. As of 2001, only UK, RI and regions of Finland have completed programmes of surveillance to demonstrate the absence of the parasite to the satisfaction of the European Commission. France has also initiated similar programmes for parts of the country.
- Transfer of equipment or product from full strength seawater or to full strength seawater carries a negligible level of risk as the parasite cannot survive high salinities.

**How can the risks be minimised?**

- **Leaflets** will be distributed to relevant parties to maintain high awareness of the risks. Anglers, proprietors, licensees, ghillies and fishery boards should be aware of the information contained in the leaflet.
- **Anglers** should disinfect gear before returning to GB (Annex 5). Details of zones that have been demonstrated to be free of *G. salaris* are listed in Commission Decision 96/490/EC as amended by 98/24/EC on certain protective measures with regard to *Gyrodactylus salaris* in salmonids. Anglers should contact the relevant authority listed in Annex 1 on the *G. salaris* infection status of the country they are to visit and precautionary measures to be taken.
- **Bait fish**, whether live or dead, must not be imported without the appropriate import licences from the appropriate authority (see Annex 1) and should not be moved between catchments.
- **Proprietors or their agents** should ask visiting anglers when their equipment was last used and where.

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- **Disinfection** facilities should be made available by proprietors or their agents to treat any equipment used outwith GB in the week prior to fishing in GB, or alternative gear provided.
- **Current awareness** of gyrodactylid infections in their areas should be maintained by Fishery boards, Fisheries Trusts and proprietors, through regular examination of fish, particularly any mortalities found. Fish or parasite samples should be submitted to a recognised centre of expertise for parasite detection and identification (contact authorities in Annex 1 for details on submission of samples).
- **Records** must be kept of all fish movements and fish should be examined for gyrodactylid parasites prior to movement.
- **Suspicion** of the presence of the infection must by law be officially reported to the appropriate authority (see Annex 1), as *G. salaris* is a notifiable disease under the Diseases of Fish Acts 1937,1983. These Acts have provision for restrictions on movement of infected or suspect infected fish.

## Activity 5. Movement of Yachts and Other Boat Traffic from Infected Waters to GB.

### What are the risks?

- *G. salaris* has been shown to survive away from a live fish host for five-seven days at ambient river temperatures and for 78 hours and 42 hours at salinities of 10 ppt and 20 ppt, respectively. Risk is associated with collection of fresh water supplies that may contain parasites and is kept in cool conditions sufficient to permit the temporary survival of the parasite away from live fish. Fresh water collected in infected areas and discharged in fresh water in GB may introduce the parasite. The parasite is considered to have a natural origin in Baltic Russian rivers. It is now known to occur in Finland (Baltic and northern watersheds), Sweden, Russia (Baltic and White Sea watersheds), Norway, Denmark, Germany, Spain and possibly in other European countries. The absence of records from other areas should not be taken as evidence of absence, as systematic surveys to demonstrate absence have only been undertaken by the United Kingdom (UK), Republic of Ireland (RI) and certain parts of Finland. As of 2001, only UK, RI and regions of Finland have completed programmes of surveillance to demonstrate the absence of the parasite to the satisfaction of the EU Commission. France has also initiated similar programmes for parts of the country.
- Transfer of water, equipment or product from full strength seawater or to full strength seawater carries a negligible level of risk, as the parasite cannot survive high salinities.

### How can the risks be minimised?

- **Leaflets** will be distributed to relevant parties to maintain high awareness of the risks. Owners and charterers of craft travelling to infected areas should be aware of the information contained in the leaflet.
- **Visitors** to any infected country should not transfer any water collected from untreated sources (natural watercourses) to another area or should disinfect the water before transfer or discharge. Details of zones that have been demonstrated to be free of *G. salaris* are listed in Commission Decision 96/490/EC as amended by 98/24/EC on certain protective measures with regard to *Gyrodactylus salaris* in salmonids.
- **Fish**, whether live or dead, must not be imported without the appropriate import licences from the appropriate authority (see Annex 1) and should not be moved between catchments.
- **Water**, eg drinking water on boats, should be treated before discharge and should not be transferred between catchments.
- **Suspicion** of the presence of the infection must by law be officially reported to the appropriate authority (see Annex 1), as *G. salaris* is a notifiable disease under the Diseases of Fish Acts 1937,1983. These Acts have provision for restrictions on movement of infected or suspect infected fish.

**Areas where risk was not considered to be sufficiently great to warrant special restrictions**

- **Salmonid carcasses** are regularly imported from abroad. With fresh product, risk is reduced through removal of parasites (already detached) by washing during primary processing and packaging, delay in transport to markets and the normal pattern of use of the product not in direct contact with susceptible species of fish. Most salmonid carcass imports are either frozen in the area of origin or are from seawater farms, both of which kill the parasite.
- **Non angling sport equipment** such as canoes and other equipment that had been in contact with water. Although it is recognised that such equipment may carry contaminated water into the country from abroad, the risk of *G. salaris* surviving to be released into UK waters is considered to be low. The frequency of events where such equipment is being moved is unknown. To further reduce risk the Canoe Association issued an advisory note to its members making them aware of the *G. salaris* problem and of effective remedial action they could take.
- **Timber and other bulk imports** which have been in contact with fresh water in risk areas. Cargoes of timber are regularly imported into the UK from Baltic countries. Investigation revealed these shipments are normally stockpiled on land at ports prior to shipping. In addition, the temperature occurring in the holds of ships precludes the likely survival of *G. salaris*.

**Areas currently under further investigation.**

- **Ballast water.** The possibility that live susceptible species of fish may survive in the ballast water of ships is currently being investigated. For a significant risk to exist, ballast would need to be taken on in freshwater or brackish water areas (eg estuaries, inner fjords, Gulf of Bothnia) and to be discharged in similar conditions (eg Perth). The likelihood and frequency of this event occurring will affect the level of risk.

**Annex 1 Authorities to contact when applying for licences to import fish or eggs, to contact in the event of suspicion of the presence of *G. salaris* infection, and responsible for monitoring movement records for fish and eggs**

Scotland

Fisheries Research Services (FRS) Marine Laboratory  
PO Box 101  
Victoria Road  
Aberdeen  
AB11 9DB

Tel. 01224 876544  
Email: fishhealth@marlab.ac.uk

England and Wales

Centre for Environment, Fisheries and Aquaculture Science (CEFAS),  
Weymouth Laboratory,  
The Nothe,  
Barrack Road,  
Weymouth,  
Dorset  
DT4 8UB

Tel. 01305 206673  
Email: fishhealthinspectorate@cefasc.co.uk

Northern Ireland

Department of Agriculture and Rural Development for Northern Ireland (DARDNI),  
Annex 5,  
Castle Grounds,  
Stormont Estate,  
Belfast  
BT4 3PW

Tel. 02890 523216

**Annex 2 Checklist for import of ova**

|   |  |
|---|--|
| Contact appropriate authority for licence (see Annex 1)                             |  |
| Keep movement records   |  |
| Disinfect ova in accordance with guidance issued with licence                       |  |
| Disinfect and dispose of containers in accordance with guidance issued with licence |  |

**Annex 3 Checklist for import of fish**

|   |  |
|---|--|
| Contact appropriate authority for licence (see Annex 1)                             |  |
| Keep movement records   |  |
| Disinfect and dispose of containers in accordance with guidance issued with licence |  |

**Annex 4 Checklist for anglers**

**If you have fished outside UK within the last seven days;**

|  |  |
|--|--|
| Do not import bait fish  |  |
| Disinfect waders, equipment etc. using approved method (contact authorities listed in Annex 1 if in doubt) |  |
| Inform riparian owner or agent of your actions   |  |

**Annex 5 Methods of treating materials or water to avoid the introduction of *G. salaris***

It is recommended that any fishing equipment being transferred to GB should be treated to kill *G. salaris* and be accompanied by a valid certificate from the relevant fish health authority in the country of origin.

Not all the following methods are suitable for treatment of water to be used for drinking, cooking or washing. Water that may be used for these purposes should be treated by methods 2 or 3.

1. Drying to a minimum temperature of 20°C for at least two days
2. Heating to above 60°C for at least one hour
3. Deep freezing for at least one day
4. Immersion of materials in a solution of, or addition of one of the following chemicals to water to the concentration indicated
  - Virkon\* 1%
  - Wescodyne\* 1%
  - Sodium chloride 3%
  - Sodium hydroxide 0.2%

\*These chemicals are available from agricultural chemical suppliers.

The use of trade names is for illustrative purposes only and does not imply endorsement of any particular product.