

North-East Atlantic Commission

NEA(06)3

*Report of the Working Group on Gyrodactylus salaris in the North-East
Atlantic Commission Area*

NEA(06)3

Report of the Working Group on Gyrodactylus salaris in the North-East Atlantic Commission Area

1. At the Commission's 2004 Annual Meeting it received a report from a Working Group on *Gyrodactylus salaris*. The recommendations of this Working Group were adopted unchanged and a 'road map' was agreed which detailed the actions to be taken, the responsibilities for taking the action and the timelines in relation to monitoring, research and exchange of information and the need for revisions to international guidelines and strengthened national and regional legislation. The Commission also agreed Terms of Reference for a Working Group on *G. salaris* to, *inter alia*, review progress with implementing the 'road map'. This Working Group held its first meeting in Oslo, Norway, during 21-23 March 2006 under the Chairmanship of Mr Stian Johnsen (Norway), and its report is attached.
2. With regard to monitoring, research and exchange of information, the Working Group developed a number of recommendations which are detailed in paragraphs 5.8 to 5.12 of the report. The Working Group also proposed some minor changes to the 'road map' and these are shown in Annex 4 of the report and it agreed that at its next meeting it would be useful if each Party or relevant jurisdiction provided a summary of the results of research conducted in relation to *G. salaris*.
3. The Working Group endorsed the recommendations in the 'road map' concerning revisions to international guidelines and strengthened national and regional legislation and believed that there should be urgency in their implementation since the threats posed have not diminished in any way. Under the 'road map' it is stated that each Party or relevant jurisdiction should have a contingency plan in place for the treatment, containment and eradication of *G. salaris*. The Working Group recognised that these contingency plans will need to be tailored to the situation in each country but agreed guidelines for establishing contingency plans, which are contained in paragraph 7.3 of the attached report. The Working Group also considered information from the European Commission which indicated that the level of Community protection against the importation of *G. salaris* has not been diminished under the new EU Fish Health Directive. The Working Group concluded that this would only be the case if the existing Additional Guarantees were permanently adopted under the new Directive rather than being subject to review. The Working Group recommends that the North-East Atlantic Commission seek further clarification from the European Commission on this matter to ensure that the protection against import of *G. salaris* is not diminished under the new Directive. The Working Group also recommended that the NASCO Secretariat and the Russian delegation co-operate in contacting the government of Karelia in relation to live rainbow trout movements from Finland to Karelia, with a view to seeing what action could be taken to stop the spread of the parasite with such movements of live fish.
4. The Working Group also developed recommendations with regard to treatment programmes for *G. salaris*, contained in paragraph 7.5 of the attached report, and discussed the implications of the EU 'Biocides Directive' for such treatment programmes.

5. The Commission is asked to consider the recommendations of the Working Group and to take such action as it considers appropriate.

Secretary
Edinburgh
7 April 2006

GSWG(06)6

Report of the Working Group on Gyrodactylus salaris in the North-East Atlantic Commission Area

**Grand Hotel, Oslo, Norway
21-23 March 2006**

1. Opening of the Meeting

- 1.1 The Chairman of the Working Group, Mr Stian Johnsen (Norway), opened the meeting and welcomed participants to Oslo. He indicated that the objective of the meeting is to review progress in implementing the 'road map' adopted by the North-East Atlantic Commission of NASCO in 2004 and then to explore the possibilities to further enhance cooperation among NASCO's Parties on monitoring, information exchange and research, and on measures to prevent the further spread of the parasite.
- 1.2 The Secretary of NASCO, Dr Malcolm Windsor, added his welcome and thanked the Norwegian Government for hosting the meeting and for the arrangements made. He indicated that NASCO's objective is the conservation of wild Atlantic salmon and that the parasite *Gyrodactylus salaris* is a very serious threat to the resource. He reported that the previous Working Group's recommendations had been adopted unchanged by NASCO's North-East Atlantic Commission in the form of a 'road map' which detailed actions, responsibilities and timelines in relation to cooperation on monitoring, research and exchange of information and on the need for revisions to international guidelines and strengthened national and regional legislation. He noted that the objective of the Working Group is to develop recommendations to prevent further spread of the parasite and that while this raised complicated issues related to trade agreements, it should not influence the Working Group in developing appropriate recommendations. However, these factors will play a role in determining which of these recommendations are finally implemented.
- 1.3 A list of participants is contained in Annex 1.

2. Nomination of a Rapporteur

- 2.1 Dr Peter Hutchinson, Assistant Secretary of NASCO, was appointed as rapporteur.

3. Adoption of the Agenda

- 3.1 The Working Group adopted its agenda, GSWG(06)5 (Annex 2).

4. Consideration of the Terms of Reference

- 4.1 The Working Group reviewed its Terms of Reference, GSWG(06)2, which had been adopted by NASCO's North-East Atlantic Commission. Under the Terms of Reference the tasks for the Working Group are:

- to provide a forum for exchange of information among the Parties and their relevant jurisdictions on research on, and monitoring and control programmes for, the parasite;
 - to develop recommendations for enhanced cooperation on measures to prevent the further spread of the parasite and for its eradication in areas where it has been introduced;
 - to develop recommendations for workshops and seminars to facilitate improved exchange of information (including input for academic and other research institutes) and to develop recommendations for research requirements;
 - to undertake cost benefit analyses in support of research, guarantees, policy decisions, publicity, etc.;
 - to consider other fish health issues of relevance to wild Atlantic salmon.
- 4.2 The Working Group considered that it did not have the socio-economic expertise available to it to undertake cost benefit analyses but nonetheless agreed that it would be useful to exchange information on such analyses where these had been undertaken by the Parties and their relevant jurisdictions (see paragraph 8 below).
- 4.3 In accordance with the Terms of Reference, the Secretary had invited the World Organization for Animal Health (OIE) to participate in the meeting, in an observer capacity, but no response to this invitation had been received.
- 5. Implementation of the ‘road map’: monitoring, research and exchange of information**
- 5.1 Reports were presented on monitoring programmes for, and on the distribution of, *G. salaris*, on measures taken to prevent the spread of the parasite and to eradicate it where it has been introduced, on research programmes, and on the development and updating of publicity material. These presentations are contained in Annex 3.
- 5.2 The representative of the EU (UK - England and Wales) reported that in 2004/2005 monitoring for the parasite had occurred at approximately 250 sites and while gyrodactylids had been found, *G. salaris* was not recorded. England and Wales remain free of the parasite. The measures taken in England and Wales to prevent the spread of the parasite were similar to those reported for Scotland.
- 5.3 The Working Group received a report of the movement of rainbow trout eggs only from Finland to the Murmansk region of Russia. The Working Group noted with concern a report from Finland that live rainbow trout had been imported from Finland into the Republic of Karelia and there had been no requirement that these fish be from sources shown to be free of *G. salaris*.
- 5.4 The Working Group noted that while Norway had very successfully treated several rivers, the parasite had returned to some of these rivers even though the treatments had been very carefully planned and conducted. While 34 infected rivers have been treated, the parasite has been recorded again in eight of these rivers. It was recognized that a single parasite can start an epizootic and that there are both biological and hydrological reasons why a treatment may fail. For example, some fish may avoid treatment in small creeks and backwaters. Nevertheless, there is broad public and political support for the treatment programme in Norway. In recent years,

the programme has evolved from treatment of single rivers to comprehensive treatment of rivers in a particular region. For example, the treatment programme for the Ranafjord area required the coordinated treatment of 21 rivers (both infected and uninfected) in a short period of time (14 days) and involved 100 personnel. Recent treatments involving the use of aluminium sulphate (acid aluminium), a very common chemical substance in fresh waters and one used extensively in drinking water treatment plants, had been very encouraging although multiple treatments may be required. This chemical, which can only be used in running water, had been used to treat the Laerdal River and it had been shown to kill the parasite and some invertebrates but not fish. While the results to date had been encouraging the Norwegian authorities believe that the future success of the treatment programme will require that both rotenone and acid aluminium are available for use.

- 5.5 The Working Group noted that the pathogenicity of *G. salaris* appears to vary. For example, a strain of *G. salaris* has been identified in Norway which is tolerated by salmon from the Drammen River and a strain of the parasite found in Denmark had little effect on Scottish and other origin Atlantic salmon. Furthermore, on the West Coast of Sweden the impact of the parasite on salmon parr densities has varied markedly although baseline data on parr densities are limited. The most marked reductions in parr density appear to have occurred in the River Atran, although these were not as marked as reported in Norwegian rivers, whereas in other rivers there has been limited impact. It was noted that these Swedish rivers vary in water quality and it is possible that there has been genetic mixing of Atlantic and Baltic salmon. In Sweden, liming of rivers has led to increased parasite abundance. It was also noted that not all Baltic salmon stocks are resistant to the parasite. The River Indalselven population, for example, appears to be as susceptible to the parasite as Atlantic salmon, although the high aluminium levels present in the Indalselven may prevent severe damage to salmon in this river. Host-parasite interactions are therefore complicated, influenced by environmental conditions, and merit further research.
- 5.6 Clarification was sought from EU (Finland) and EU (Sweden) concerning the status of *G. salaris* in rainbow trout farms. In Finland, the parasite was detected at about half the fish farms monitored in the northern part of the country although not all farms are monitored, but the situation in the south of the country is unclear. In Sweden, there are only two rainbow trout farms used for stocking purposes and where fish are to be released into uninfected rivers they must be from a fish farm that has been certified to be free of the parasite.
- 5.7 There has been considerable effort to increase public awareness of the damage caused by *G. salaris*. In Scotland, about 30,000 leaflets have been distributed to angling associations, tackle dealers and airports and the consultation meetings in relation to the new aquaculture and fisheries bill had been used to raise awareness of the damage caused by the parasite. Furthermore, the Scottish Task Force on *G. salaris* will be making recommendations on increasing public awareness of the risks of introducing the parasite. In Norway, 1,500 posters and 70,000 leaflets are distributed annually and information about the parasite is also available on various websites, including those of angling associations, white-water rafting and fishing licensing organizations. Publicity material has also been developed in Finland and Sweden.

Development of recommendations

- 5.8 The Working Group developed its recommendations in relation to monitoring, exchange of information and research through a Sub-Group under the Chairmanship of Dr Carey Cunningham (EU - UK (Scotland)). This Sub-Group also reviewed the existing elements of the 'road map' relating to monitoring, exchange of information and research and developed some proposals for changes. In addition to the recommendations that follow below, the Working Group recommends to the North-East Atlantic Commission the proposed adoption of the amendments to the 'road map' shown in Annex 4.
- 5.9 ***Future research requirements and opportunities for improved coordination of research (7.3.4, 7.3.5)***

Road Map Proposed Action:

The Working Group should keep research requirements and monitoring needs under review and report to the Commission (7.3.4).

There may be a need for improved coordination of research funded by the EU, national programmes and research undertaken at universities and other research facilities. This aspect might be considered by the Working Group (7.3.5).

Current situation:

Several research projects have been started, continued or planned since the 'road map' was developed. Many of these involve international cooperation. There is a great deal of information already available in 'grey' literature such as internal reports or reports in languages other than English that could be used to inform future research and monitoring.

Recommendations:

The Working Group endorses the recommendation in the 'road map' that research be undertaken or continued on:

- the natural distribution and genetics of *G. salaris*;
- the effects of salmon genetics on sensitivity to *G. salaris*;
- general biology and mechanisms of spread of the parasite;
- effect of environmental parameters and ecology on the distribution of *G. salaris*.

The Working Group further suggests that:

- research on discriminating harmful and non-harmful forms of the parasite, and the effects of environmental factors on pathogenicity, should also be continued;
- there is a need for improved coordination of research in different organizations and countries. Regular meetings to discuss current and planned research would facilitate this;

- NASCO should continue to coordinate such meetings or workshops, either as stand-alone events or attached to relevant international conferences;
- NASCO should seek an exchange of information on *G. salaris* monitoring and research from the ICES Working Group on Pathology and Diseases of Marine Organisms and the EC community reference laboratory for fish diseases;
- Wider availability of grey literature should be encouraged.

5.10 ***Future monitoring needs and the extent of harmonization of monitoring methods (7.3.1, 7.3.4, 7.3.5)***

Road Map Proposed Action:

The extent of harmonisation of monitoring methods, as detailed in the OIE Manual of Diagnostic Tests for Aquatic Animals and the Aquatic Animal Health Code and in the EC Directive, might be explored by the Working Group (7.3.1).

The Working Group should keep research requirements and monitoring needs under review and report to the Commission (7.3.4).

There may be a need for improved coordination of research funded by the EU, national programmes and research undertaken at universities and other research facilities. This aspect might be considered by the Working Group (7.3.5).

Current situation:

The OIE provides minimum requirements for monitoring.

Recommendations:

Further workshops and research should be conducted to develop guidelines for monitoring for *G. salaris*, including risk-based surveillance, quality control, eradication, treatment and management. The role of the Working Group in coordinating such meetings should continue.

5.11 ***Opportunities to obtain information on G. salaris from countries without wild Atlantic salmon (7.3.2)***

Road Map Proposed Action:

Opportunities for obtaining information from countries that do not have wild Atlantic salmon should be explored. The Working Group should be asked to consider options for obtaining information from EU Member States and other countries which do not have wild Atlantic salmon stocks (7.4.6).

Current situation:

Information on the natural distribution of *G. salaris* may be obtained through international cooperation and contact.

Recommendations:

Exchange of information should continue to be facilitated by workshops and sub-groups. The Working Group should continue to coordinate such meetings. NASCO should seek an exchange of information on *G. salaris* via the ICES Working Group on Pathology and Diseases of Marine Organisms and the EC community reference laboratory for fish diseases.

5.12 **Possible workshops and seminars**

The Working Group should continue to coordinate workshops or meetings, with as many relevant participants as possible, on:

- Current and planned research;
- Mapping the distribution of *G. salaris*;
- Monitoring programme results and methods;
- Management, treatment and eradication.

NASCO should seek an exchange of information on *G. salaris* monitoring and research with the ICES Working Group on Pathology and Diseases of Marine Organisms and the EC community reference laboratory for fish diseases.

6. Implementation of the ‘road map’: revisions to international guidelines and other measures to prevent the spread of *G. salaris*

- 6.1 In accordance with the ‘road map’ the Parties were asked to report on any actions taken with regard to representations made to DG SANCO and OIE, on progress in implementing the OIE Aquatic Animal Health Code, on any movements of live fish from a lower to a higher disease status zone, on progress in requiring trade in gametes rather than live fish and in introducing procedures to record all movements involving live fish, and on international cooperation in shared catchments.
- 6.2 The representative of the EU (UK) indicated that the UK has participated actively in the European Commission’s Working Group which is developing the draft Fish Health Directive and the UK’s position is that it seeks to have *G. salaris* listed in the new Directive. However, to date this proposal, which only the UK and Ireland have supported, has not been accepted. In an attempt to find a compromise, the UK had proposed that those Member States that do not wish to control *G. salaris* should be relieved of the need to undertake expensive surveillance and monitoring programmes, although this would mean they would not have disease-free status for *G. salaris*. However, that approach was not employed by the European Commission’s Working Group. All Parties are working on alternative formulations for ways to protect free areas from the introduction of the parasite. The UK has also highlighted to the Commission the discrepancy in approach in the new Fish Health Directive and the OIE Aquatic Animal Health Code, which does list *G. salaris*. The provisions of this Code are fully implemented by the UK. For the UK, there have been no live salmonid movements from a lower to a higher disease status zone although there have been imports of ova which were disinfected at source.
- 6.3 The representative of Iceland reported that Iceland complies with the OIE Code but that no representations had been made to either OIE or DG SANCO. No movements

of live fish are allowed from a lower to a higher disease status zone and all imports are restricted to disinfected eggs.

- 6.4 The representative of the EU (Finland) reported that he was not fully aware of the position his country had taken in relation to listing of *G. salaris* in the Fish Health Directive. However, the intention is to be able to continue to protect the areas of the EU having Additional Guarantees for *G. salaris* in future. The draft Directive is now being developed under the Presidency of Finland and Austria, so Finland is heavily involved in the process. In Finland, movements of live fish into the watercourses of the Barents Sea, and between these watercourses, is prohibited and only disinfected eggs may be moved.
- 6.5 The representative of EU (Sweden) indicated that Sweden had been involved in the discussions about the need to maintain Additional Guarantees under Article 43 of the draft Directive, but Sweden had not been in favour of listing *G. salaris*. These additional requirements would lead to higher requirements for the importation of live fish to Sweden. There is a requirement in Sweden that fish for stocking rivers that are free of *G. salaris* originate from hatcheries that are free of the parasite.
- 6.6 The representative of Norway indicated that Norway wished to see *G. salaris* listed or to have Additional Guarantees under Article 43 of the draft Directive. With regard to the OIE Code, Norway considered that this contained general measures that do not necessarily apply to *G. salaris*. Norway does not permit any movements of fish from a lower to a higher disease status zone, but there is trade in live fish and there is no requirement for trade to be restricted only to gametes.
- 6.7 The Secretary indicated that in June 2004, the North-East Atlantic Commission of NASCO had adopted a recommendation, to which the European Union was party, that *G. salaris* be listed in the new Fish Health Directive. However, it appeared that DG SANCO was not prepared to agree to such listing. He had drawn this paradox to the attention of the Head of the EU delegation to NASCO, Mr John Spencer of DG Fish. The representative of the European Commission attending the Working Group meeting, Mr Richard Bates, indicated that work had been ongoing on revisions to the Fish Health Directive for some years and that while *G. salaris* had originally been included in the draft Directive it had subsequently been removed. The draft has now been considered by the Council and debated in the Parliament and a further 50 or so amendments have been proposed, including changes in relation to *G. salaris*. He had been advised by DG SANCO that the protection available to Member States in relation to *G. salaris* had not been weakened in any way.
- 6.8 A letter from Mr Spencer was made available to the Working Group in which it was stated that the level of Community protection against the importation of *G. salaris* has not been diminished under the new draft Directive. The Working Group considered that this would only be the case if the existing Additional Guarantees are permanently adopted under the new Directive rather than being subject to review, which is scheduled for 2007. The Working Group, therefore, recommends that the North-East Atlantic Commission of NASCO seek further clarification from the European Commission that the Additional Guarantees will be permanently adopted and not subject to review, so that the protection against import of *G. salaris* is not diminished under the new Directive.

Development of recommendations

6.9 The Working Group developed its recommendations in relation to revisions to international guidelines and other measures (section 6) and for strengthening national and regional legislation and measures (section 7) to prevent the further spread of *G. salaris* through a Sub-Group under the Chairmanship of Mr Stian Johnsen (Norway). The Working Group endorses the recommendations in the ‘road map’ concerning revisions to international guidelines and other measures and believes there should be urgency in their implementation by the Parties to the North-East Atlantic Commission of NASCO and their relevant jurisdictions because the risks posed by *G. salaris* have not diminished in any way.

7. Implementation of the ‘road map’: strengthening national and regional legislation and measures to prevent the further spread of *G. salaris*

(a) Reports on aspects of the ‘road map’ not covered elsewhere on the agenda

7.1 There were no additional reports by the Parties on aspects of the ‘road map’ since these had been addressed under previous agenda items.

(b) Development of recommendations

7.2 The Working Group endorsed the recommendations in the ‘road map’ for strengthened national and regional legislation and measures to prevent the further spread of *G. salaris* and believes there should be urgency in their implementation by the Parties to the North-East Atlantic Commission of NASCO and their relevant jurisdictions because the risks posed by *G. salaris* have not diminished in any way.

7.3 The ‘road map’ states that each country should have a contingency plan in place for the treatment, containment and eradication of *G. salaris* and that a legal basis for the use of rotenone and other treatment, containment and eradication measures should be put in place. The Working Group considers that it is essential that each Party and relevant jurisdiction should have a contingency plan to deal with an outbreak of *G. salaris*. These contingency plans will need to be tailored to the situation in each country but the Working Group believes that all plans should contain at least the following elements. These might be considered as guidelines for establishing contingency plans:

Guidelines for establishing contingency plans for the treatment, containment and eradication of *G. salaris*

Legal aspects

1. There should be a legal basis which describes what powers the authorities have or do not have to deal with an outbreak of *G. salaris*. A clear statement should be prepared in advance of the policy that will be followed concerning eradication or containment of the parasite.

Publicity

2. As a precautionary measure the public should be advised in advance of what actions they should take in the event of an outbreak of the parasite.

Movement restrictions

3. In the case of a suspected outbreak, movements of live fish and equipment from the suspect area should immediately be regulated.

Strategy Groups

4. Each Party or relevant jurisdiction should establish a Disease Strategy Group to manage the response to the outbreak. The contingency plan should contain a list of factors to be considered by this group in deciding upon an eradication or containment policy. If necessary, local disease control centres could also be established.
5. An expert scientific group should be established to ensure that up-to-date scientific knowledge is available to the Disease Strategy Group.
6. The role of these groups should be clearly established in advance, together with contact details.

Review

7. The plan should be reviewed annually in January and updated in the light of new information. A test run of these arrangements should be conducted periodically.

Investigations

8. Epidemiological and other appropriate investigations should start immediately an outbreak is suspected.

- 7.4 With reference to paragraph 5.3, the Working Group asked that the Russian delegation and the NASCO Secretariat cooperate in contacting the Government of Karelia to determine if the report of movements of live rainbow trout from Finland to Karelia was correct, and to see what action could be taken to stop the spread of the parasite with imports of rainbow trout.

7.5 With regard to treatment programmes for *G. salaris*, the Working Group recommends that the NASCO Parties and their relevant jurisdictions:

- continue to develop methods for the use of chemical treatment which minimize any environmental impacts;
- establish whether the use of alternatives or complementary methods to rotenone might be restricted or regulated under EU or other legislation;
- make available to the Working Group information, including the results of field trials, on the effects of alternative or complementary methods;
- identify the means of ensuring continued experimental use of alternative or complementary methods to rotenone so that it is easier to obtain permits for experimental use of new products.

7.6 The Working Group recommends that any new compounds should be available as an alternative to, or for complementary use with, rotenone.

8. Exchange of information on cost benefit analyses to support research, policy decisions, etc.

8.1 The representative of Norway indicated that it had undertaken cost benefit analyses in relation to its eradication programme, which indicated that the cost of the measures was low relative to those associated with the damage caused by the parasite. The yearly socio-economic loss due to the parasite has been estimated to be NOK200 - 250 million including both direct losses, such as loss of income from sports fisheries and fisheries in fjords, and secondary effects, such as those related to loss of tourism income. The total expenditure associated with implementing the action plan to eradicate *G. salaris* is currently NOK34 - 37 million, including measures to preserve stocks and monitoring and eradication measures, but the action plan is being updated and will then cost NOK50 million annually to implement. The EU (UK-Scotland) informed the Working Group that an economic impact study had been commissioned to assess the economic implications of the introduction of *G. salaris* to Scotland. This study would be available in April. EU (UK-Scotland) agreed to make this information available to the Working Group through the NASCO Secretariat.

9. Implications of the EU Biocides Directive for *G. salaris* eradication programmes

9.1 A report on the so-called 'Biocides Directive', 98/8/EC, was presented by Norway. A consequence of this Directive is a ban on the use of rotenone from 1 September 2006. However, rotenone is a key tool for the eradication of *G. salaris* and alien species in fresh water. In Norway, the introduction of alien species is considered the main threat to biodiversity in freshwater ecosystems. In response to correspondence from the Norwegian Pollution Control Authority and the Directorate General Environment of the European Commission, Norway had been advised that there are two options which would allow for the continuing use of rotenone:

- an application prior to 1 March 2006 for inclusion of rotenone in the positive list of the Directive, which would allow the continuing use of rotenone in the time period during which the application is evaluated (about 2 years). A positive response to such an application from the European Commission would allow for continued use of rotenone within the framework of the Directive;

- an application for essential use of rotenone. A positive response to such an application would allow the use of rotenone until 14 May 2010. After this extended phase-out period, the use of rotenone would depend on an application for essential use in each particular case and an authorisation in these cases will be temporary, with a time limit of 120 days.

9.2 The representative of Norway advised the Working Group that an application for essential use derogation for rotenone was submitted to the European Commission by the Norwegian Government on 16 March 2006. The case for essential use of rotenone in Norway was on the basis of its use to control and eradicate *G. salaris* and similar pests, to control the spread of invasive aquatic species such as the minnow and for the eradication of exotic species which threaten biodiversity if introduced. In addition, the private company, VESO, had submitted a dossier for registration of rotenone in the positive list of the Directive to the UK Health and Safety Executive, the competent authority appointed by the Commission to evaluate the dossier in accordance with a completeness check. If rotenone is included in the positive list of the Directive then it will be available for use throughout Europe, subject to its approval by national authorities, whereas a successful application for essential use will apply only to the country applying.

9.3 The Working Group recognized that the eradication programme for *G. salaris* in Norway involves the use of both rotenone and acid aluminium. The Working Group believes that both these existing, and additional new tools, will be essential for the control of the parasite in future. Rotenone is also essential in the control of introduced fish species.

10. Consideration of other fish health issues of relevance to Atlantic salmon

10.1 The Working Group was not able to consider other fish health issues but recognized that progress in the management of interactions between sea lice and wild Atlantic salmon might be reviewed at its next meeting.

11. Any Other Business

11.1 There was no other business.

12. Date and Place of Next Meeting

12.1 Under its Terms of Reference, it is proposed that the Working Group should meet initially on an annual basis. The Working Group suggests to the Commission that it should meet again in approximately one year's time to consider further progress in implementing the 'road map' and the recommendations it had developed, and that the Chairman and Secretary make appropriate arrangements. The Working Group agreed that at its next meeting it would be useful if each Party or relevant jurisdiction provided a summary of the findings of research being conducted in relation to *G. salaris*.

13. Report of the Meeting

13.1 The Working Group agreed a report of its meeting.

14. Close of Meeting

14.1 The Chairman thanked all participants for their contribution to the meeting.

List of Participants

EUROPEAN UNION

Mr Richard Bates	European Commission, Brussels, Belgium
Dr Carey Cunningham	FRS Marine Laboratory, Aberdeen, UK
Mr Perttu Koski	National Veterinary and Food Research Institute, Oulu, Finland
Mr Fredrik Nordwall	Swedish Board of Fisheries, Gothenburg, Sweden
Dr Nick Taylor	CEFAS, Weymouth, UK
Mr Dave Wyman	SEERAD, Edinburgh, UK

ICELAND

Mr Arni Isaksson	Agricultural Authority of Iceland, Reykjavik
Mr Gisli Jonsson	Agricultural Authority of Iceland, Reykjavik

NORWAY

Dr Gunnbjørn Bremset	Directorate for Nature Management, Trondheim
Mr Pål Erik Jensen	Norwegian Food Safety Authority, Brumunddal
Mr Bjorn-Ove Johnsen	Norwegian Institute of Nature Research, Trondheim
Mr Stian Johnsen (Chairman)	Norwegian Food Safety Authority, Brumunddal
Mr Helge Lorentzen	Royal Ministry of the Environment, Oslo
Dr Tor Atle Mo	National Veterinary Institute, Oslo
Mr Ketil Skar	VESO Trondheim, Trondheim
Mr Jarle Steinkjer	Directorate for Nature Management, Trondheim

RUSSIAN FEDERATION

Mr Andrei Karasev	PINRO, Murmansk
Dr Sergei Prusov	PINRO, Murmansk
Dr Igor Studenov	SevPINRO, Archangel

SECRETARIAT

Dr Malcolm Windsor	Secretary
Dr Peter Hutchinson	Assistant Secretary

GSWG(06)5

***Working Group on Gyrodactylus salaris
in the North-East Atlantic Commission Area***

**Grand Hotel, Oslo, Norway
21-23 March 2006**

Agenda

- 1. Opening of the Meeting**
- 2. Nomination of a Rapporteur**
- 3. Adoption of the Agenda**
- 4. Consideration of the Terms of Reference, GSWG(06)2**
- 5. Implementation of the ‘road map’: monitoring, research and exchange of information**
 - (a) Reports on monitoring programmes (including progress in introducing OIE monitoring standards and diagnostic techniques) for, and on the distribution of, *G. salaris* (Ref: 7.3.1, 7.3.2, 7.4.3, 7.5.1, 7.5.2 of ‘road map’)
 - (b) Reports on measures taken to prevent the spread of the parasite and to eradicate it where it has been introduced (Ref: 7.2, 7.5.7, 7.5.11)
 - (c) Reports on research programmes (Ref: 7.3.4)
 - (d) Reports on the development and updating of publicity material (Ref: 7.3.5)
 - (e) Future research requirements and opportunities for improved coordination of research (Ref: 7.3.4, 7.3.5)
 - (f) Future monitoring needs and the extent of harmonization of monitoring methods (Ref: 7.3.1, 7.3.4, 7.3.5)
 - (g) Opportunities to obtain information on *G. salaris* from countries without wild Atlantic salmon (Ref: 7.3.2)
 - (h) Development of recommendations (including possible workshops/seminars)
- 6. Implementation of the ‘road map’: revisions to international guidelines and other measures to prevent the spread of *G. salaris***
 - (a) Reports on representations made to DG SANCO (Ref: 7.4.1, 7.4.2, 7.4.4, 7.4.8)
 - (b) Reports on representations made to OIE (Ref: 7.4.4, 7.4.5)
 - (c) Reports on progress in implementing the OIE Aquatic Animal Health Code (Ref: 7.4.9, 7.5.6)
 - (d) Reports on any movements of live fish from a lower to a higher disease status zone (Ref: 7.4.8, 7.5.3)
 - (e) Reports on progress in requiring trade in gametes rather than live fish and in introducing procedures to record all movements involving live fish (Ref: 7.4.10, 7.5.10, 7.5.14)
 - (f) Reports on international cooperation in shared catchments (Ref: 7.4.11, 7.5.12)

- (g) Development of recommendations
- 7. Implementation of the ‘road map’: strengthening national and regional legislation and measures to prevent the further spread of *G. salaris***
 - (a) Reports on aspects of the ‘road map’ not covered elsewhere on the agenda
(*Ref: 7.5*)
 - (b) Development of recommendations
- 8. Exchange of information on cost benefit analyses to support research, policy decisions, etc.**
- 9. Implications of the EU Biocides Directive for *G. salaris* eradication programmes**
- 10. Consideration of other fish health issues of relevance to Atlantic salmon**
- 11. Any Other Business**
- 12. Date and Place of Next Meeting**
- 13. Report of the Meeting**
- 14. Close of Meeting**

Reports on Monitoring Programmes for, and on distribution of, *G. salaris*, on measures taken to prevent the spread of the parasite and to eradicate it where it has been introduced, on research programmes and on development and updating of publicity material

European Union

EU - Finland

Perttu Koski, National Veterinary and Food Research Institute, Oulu Regional Department

Monitoring of *Gyrodactylus salaris* in Finland in 2004-2005

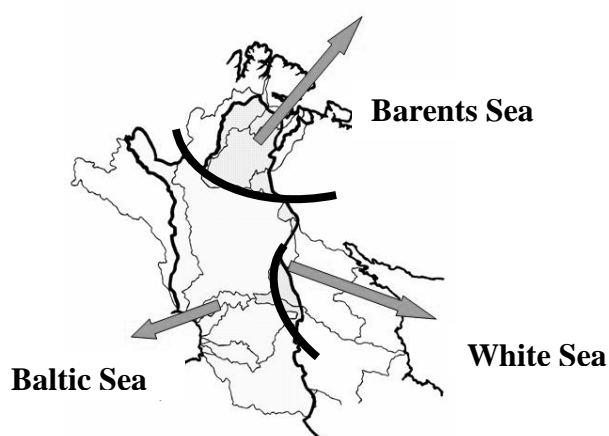


Figure 1: Three main water catchment areas in northern Finland.

The watersheds between the water catchment areas of the Barents Sea, White Sea and Baltic Sea are partly situated in the territory of Finland (see Fig. 1).

Finland thus forms an important monitoring area for *Gyrodactylus salaris*, which is regarded as an extremely dangerous parasite of the Atlantic form of *Salmo salar*, but harmless to the Baltic form and other fish species.

The corresponding report of the NASCO GSWG in 2004 included a historical summary of the monitoring in Finland. This report includes the results of the two last years only.

Monitoring of the situation in the catchment areas running into the Barents Sea

In accordance with an agreement between Norway and Finland, 150 wild salmon parr per river are to be sampled from the Rivers Teno (Tana in Norwegian) and Näätämö (Neiden in Norwegian) each year. Examination of the samples from a particular river is performed in Finland and Norway in alternating years. There is no fish farming activity in these watercourses.

The number of the examined salmon parr were as follows: in 2004, 175 in River Teno and 158 in River Näätämö; in 2005, 161 in River Teno and 145 in River Näätämö. *G. salaris* has not been found in these examinations. The results for the River Teno for 2005 are not yet available. Other species of the Genus *Gyrodactylus* than *G. salaris* have been found on salmon parr in River Teno: in 2004, two *Gyrodactylus* specimens (on two parr), which were

similar to species found on the sculpins (family *Cottidae*) in Norway, were found. One of the worms was *G. arquatus* on the basis of the sequence of the ribosomal RNA gene ITS.

Wild fish of the two other water catchment areas running into the Barents Sea were examined as follows: River Paats and Uutuan (River Munkelva in Norwegian), no examinations; River Tuuloma, 20 grayling in 2004, no examinations in 2005.

The two fish farms of the River Paats catchment area were examined with negative results in both years (number of fish examined: farm A, 182 salmon in 2004, 189 salmon in 2005; farm B 60 arctic charr in 2004, 81 arctic charr in 2005). In the rivers Uutuan and Tuuloma there is no fish farming activity on the territory of Finland.

Monitoring of the catchment areas running into the Baltic and White Seas

There is no regular official monitoring of *G. salaris* in these areas. On salmon *G. salaris* was found only on wild fish, in the river Tornio (border river between Finland and Sweden). A research team of the University of Oulu also found *G. salaris* in the wild land-locked salmon of Lake Kuittijärvet on the Russian side of the River Vienan Kem watercourse. Farmed salmon from 4 farms in 2004 and 4 farms in 2005 were examined with negative results.

Rainbow trout farms were quite often infected with *G. salaris* in both these catchment areas. In addition to *G. salaris* *G. lavareti* was also found, sometimes in mixed infection. The examinations of farmed rainbow trout were performed in connection with research or live fish export certification.

Measures to prevent the spread of the parasite

On the basis of Fisheries Act and Act on Animal Diseases a new statute was given by the Ministry of Agriculture and Forestry in 2005. It includes more exact requirements than the previous one of the disinfection of equipment, when fishing in the watercourses draining into the Barents Sea. The use of bait fish is forbidden.

Restrictions on movement of live fish and eggs

Transfer of live farmed and wild fish as well as undisinfected eggs from other parts of Finland to Rivers Teno, Näättämo, Paats, Uutuan and Tuuloma watercourses is forbidden.

Transfer of live farmed and wild fish as well as undisinfected eggs from River Paats, Uutuan and Tuuloma watercourses to River Teno and Näättämo is forbidden. The Teno-agreement between Finland and Norway also applies.

Baitfish, etc.

It is forbidden to transfer baitfish from other parts of Finland to the River Teno, Näättämo, Paats, Uutuan and Tuuloma watercourses, as well as to transfer them between these watercourses. The use of bait fish is forbidden in angling, ice-fishing and lurefishing.

Gutting of fish originating from other watercourses is forbidden, as well as introducing gutting waste to natural waters of River Teno, Näättämo, Paats, Uutuan and Tuuloma watercourses.

Disinfection of fishing equipment, boats, etc.

Boats, canoes, fishing equipment such as reel, rod, lure, net, boots and paddling trousers transferred from other parts of Finland must be dry or disinfected before their use in these watercourses.

Research programmes

- National Veterinary and Food Research Institute: epidemiology of *G. salaris* infection in the wild Baltic salmon River Tornio; problems of mixed *Gyrodactylus* infections for the screening of *G. salaris*; studies on the disinfection of *G. salaris*.
- University of Oulu, Department of Biology: molecular epidemiology and evolutionary biology of *G. salaris*.

Development and updating of publicity material

The Ministry of Agriculture and Forestry published a new information leaflet in Finnish, Samish, Swedish, English and Russian in 2005. The leaflet was distributed in connection with the selling of fishing licences and by veterinary authorities. The net page of the Ministry of Agriculture and Forestry has been updated.

EU – Sweden

Status report from Sweden concerning measures implemented to minimise the spread and threat of *G. salaris*

*Veterinary management of *G. salaris* in Sweden*

Region	Acts and regulations	Delivery	Management authority
West coast (Skagerrak and Kattegatt)	Annual control of <i>G. salaris</i> in fish farms by the National Veterinary Institute (NVI) using OIE standards (60 fish)	Reports to County Administrations, Swedish Board of Agriculture, Swedish National Board of Fisheries	County Administrations, Swedish National Board of Fisheries, Swedish Board of Agriculture
East coast	No restrictions concerning <i>G. salaris</i>		

*Stocking practices with special emphasis on *G. salaris* in Sweden*

Region	Acts and regulations	Management authority
West coast (Skagerrak and Kattegatt)	No permission of stocking salmonids in Rivers emptying into Skagerrak and Kattegatt with naturally reproducing salmon, in which <i>G. salaris</i> have not been found or the river being declared free from the parasite by the National Board of Fisheries	County Administrations
West coast (Skagerrak and Kattegatt)	Stocking of salmonids may be permitted above the second strict migration barrier.	County Administrations
West coast (Skagerrak and Kattegatt)	In the area above the second strict migration barrier, stocking only permitted if the fish are declared free from <i>G. salaris</i> (according to OIE standard) or coming from a fish farm in the same watershed	County Administrations
East coast	No restrictions concerning <i>G. salaris</i>	

All areas	No transfer of living fish from the sea to freshwaters above the first strict migration barrier	County Administrations
All areas	Stocked fish from farms free from proliferative diseases and holding status of stocking farm	County Administrations
All areas	Permission holder follow special regulations when proliferative disease are registered	National Board of Fisheries, Swedish Board of Agriculture
All areas	Fish tanks disinfected	County Administrations
All areas	Alteration of water only at approved establishments when transporting living fish	County Administrations

Aquaculture practices concerning G. salaris and other fish diseases in Sweden

Region	Acts and regulations	Delivery	Management authority
West coast (Skagerrak and Kattegatt)	Stocking of salmonids into fish farms from the outlet to the second migration barrier. Stocked fish must be declared free from <i>G. salaris</i> (according to OIE standards)		County Administrations at every single event
All areas	No permission for new fish farm establishments in freshwaters holding salmon stocks		County Administrations
All areas	Status of farm for stocking of fish	3 years of compulsory health control	Swedish Board of Agriculture
All areas	Status of farm for stocking of fish	3 annual controls at different seasons	Swedish Board of Agriculture
All areas	Status of farm for stocking of fish	Recruitment of fish into farms shall minimise transfer of fish diseases (parental stock, eggs, disinfection, risk analysis)	Swedish Board of Agriculture

Border crossing of living fish in Sweden

No regulations concerning <i>G. salaris</i>	Swedish Board of Agriculture

Information

The Swedish Board of Fisheries has produced posters and brochures now being distributed on the Swedish West coast and areas neighbouring Finland and Norway.

Actual Situation – Status of *G. salaris* 2005

- New regulations concerning *G.s.* in year 2003, in order to reduce the risk of spreading the parasite on the Swedish West coast. The new legislation is sharpen since stocking restrictions now are higher in rivers free from the parasite (from previous first to second barrier) and there are no possibilities of bathing fish before stocking in rivers free from *G.s.*
- Two new infected rivers in year 2003 and one in 2005 on the Swedish West coast. Now more than half of the salmon rivers are considered to contain the parasite. At present, 14 of 23 salmon rivers are infected, mostly the rivers at the southern part of the coast. No known stocking of salmonids in recently infected rivers. The parasite has been detected in two fish farms undergoing voluntary control of *G.s.* to be able to stock fish in rivers free from the parasite.

Monitoring of *G. salaris* in Sweden

The basic idea behind the monitoring of the parasite *G. salaris* in Sweden is that only **uninfected** rivers on the Swedish west coast are monitored regularly. The reason for this is that there are regulations for stocking fish in uninfected rivers. The parasite is only monitored in a few infected rivers (Table 1). At present (2005), 14 of 23 salmon rivers on the west coast are infected, mostly the rivers at the southern part of the coast. In other areas in Sweden, i.e. rivers emptying in to the Baltic, the parasite is considered endemic and is therefore not monitored. Since 2001 about one new infection is observed each year without any known stockings of fish in actual watersheds.

Table 1.

River (Fig. 1)	No. Fish, time of year, no. of sites
<i>Gyrodactylus salaris</i> not found	
Enningdalsälven	40, June, each year
Strömsån	20, end of May-June, 2 sites, every second year
Örekilsälven	40, June, 3-4 sites, each year
Bäveån	20, end of May-June, 2 sites, every second year
Arödsån	20, end of May-June, 2 sites, every second year
Bratteforsån	20, end of May-June, 2 sites, every second year
Anråse å	20, end of May-June, 2 sites, every second year
Kungsbackaån	40, June, 3-4 sites, each year
Rolfsån	40, June, 3-4 sites, each year
<i>Gyrodactylus salaris</i> found	
Säveån	40, June, 3-4 sites, each year
Ätran	40, 3-4 sites, Högvadsån 40, 4 sites, total of 80, autumn, each year
Stensån	40, autumn, 4 sites, each year
Löftaån	40, June, 3-4 sites, each year

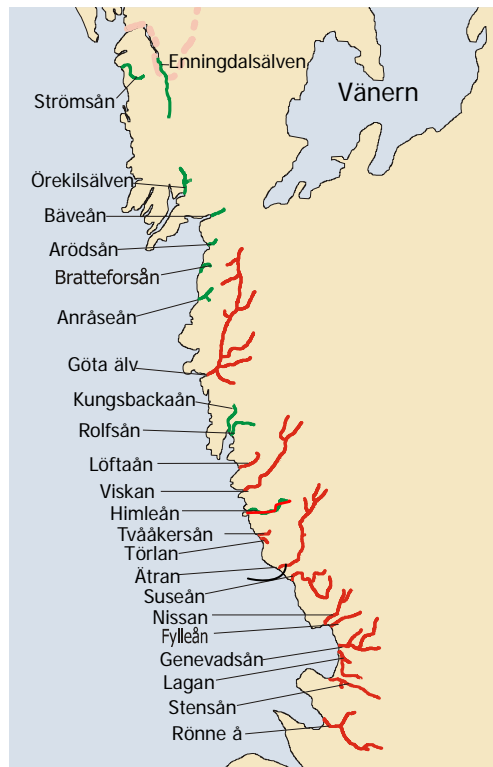


Fig. 1 Rivers monitored on the Swedish West Coast in the programme 2002-2005.

EU – UK (Scotland)

Implementation of the ‘road map’: monitoring, research and exchange of information

(a) Reports on monitoring programmes

Our monitoring for *Gyrodactylus salaris* in Scotland is continuing and none have been found.

During the last reporting period, 1 May 2004 to 30 April 2005, 83 fish farms were sampled and 2,468 salmonid fish examined. On 8 farms *Gyrodactylus* was found. These were all *G. derjavini*.

In the same period wild fish were sampled from twelve widely scattered locations and 360 salmonid fish examined. *Gyrodactylus* was found on two sites. Again these were all *G. derjavini*.

(b) Reports on measures to prevent the spread of the parasite

In Scotland we have set up a working group on *Gyrodactylus salaris* with the following terms of reference:

- Develop preventive measures at home and abroad to exclude *G. salaris* from Scotland.

- Produce a contingency plan to contain and where possible eradicate the parasite should it be introduced to Scotland.
- Identify the personnel who would form the skeleton of a control organisation and the preparation and training they require such as secondment in Norway.
- Consider other options for intervention including employment of the Norwegian company VESO and recommend accordingly.
- Where control is impractical, to make recommendations for measures to minimise the spread of *G. salaris* and mitigate its impact on freshwater fish and the wider economy.
- Identify and develop proposals for new statutory controls, including necessary powers for compulsory slaughter of wild fish, prohibiting abstraction of water during a river treatment, provision of alternative water supplies for watering livestock and movements of live fish.
- Identify research needs for the identification of *G. salaris*, containment and control measures such as determining the efficacy of disinfectants and investigation of the chemistry of Scottish rivers in preparation for the use of aluminium sulphate.
- Investigate with representatives of Scottish smolt producers the question of the industry providing gene bank facilities for use in restocking rotenone-treated rivers.

This working group is due to report by the end of March 2006.

To inform the working group and policy decision making we have commissioned an economic impact study should *Gyrodactylus salaris* be introduced into Scotland. This study is programmed to complete in time for inclusion in the working group report.

Our staff have visited Norway to learn from their experience of eradication of *Gyrodactylus salaris*. We have had a staff member trained in the USA in the use of chemicals for fisheries management and this week we have staff in England observing use of rotenone for removal of non-indigenous fish. We have also followed closely the issue of the availability of rotenone under the Biocidal Products Directive.

(c) Reports on research programmes (Ref: 7.3.4)

Our project “Molecular Markers for ecto-parasite resistance in Atlantic salmon” completes this month.

We expect our working group to make recommendations for research and with this project concluding anticipate that we shall have candidate projects to follow on.

(SF0263 Apr-01 to Mar-06 Molecular Markers for Ecto-parasite Resistance in Atlantic Salmon).

Summary objectives:

- (1) To advance scientific understanding of the genetic basis of resistance/susceptibility in the host-parasite relationship between Atlantic salmon and ectoparasites, including *Gyrodactylus salaris* and sea lice.

Key customer purpose:

To enable SEERAD to advise on management measures to address the impact of infestations of ecto-parasites.

* The following Defra-funded *Gyrodactylus* R&D is in progress in Scotland:

- FC 1175 Estimating transmission parameters of *Gyrodactylus*: a key requirement for contingency planning. (University of Stirling);
- FC 1177 Development of a risk evaluation system for the establishment of *Gyrodactylus salaris* in English and Welsh river systems. (University of Stirling)

***Gyrodactylus* sampling in Scotland from 1 May 2004 – 30 April 2005**

Farmed fish

No *G. salaris* were identified.

Total number of farms sampled [Number of Fish Sampled]	Number of farms positive for <i>Gyrodactylus</i> species	Species of <i>Gyrodactylus</i> identified
Atlantic salmon 53 (<i>Salmo salar</i>) [1619]	1	<i>G derjavini</i>
Rainbow trout 28 (<i>Oncorhynchus mykiss</i>) [794]	6	<i>G derjavini</i>
Brown/Sea trout 1 (<i>Salmo trutta</i>) [30]	1	<i>G derjavini</i>
Arctic Charr 1 (<i>Salvelinus alpinus</i>) [25]	0	
Total 83 farms sampled [2468]		

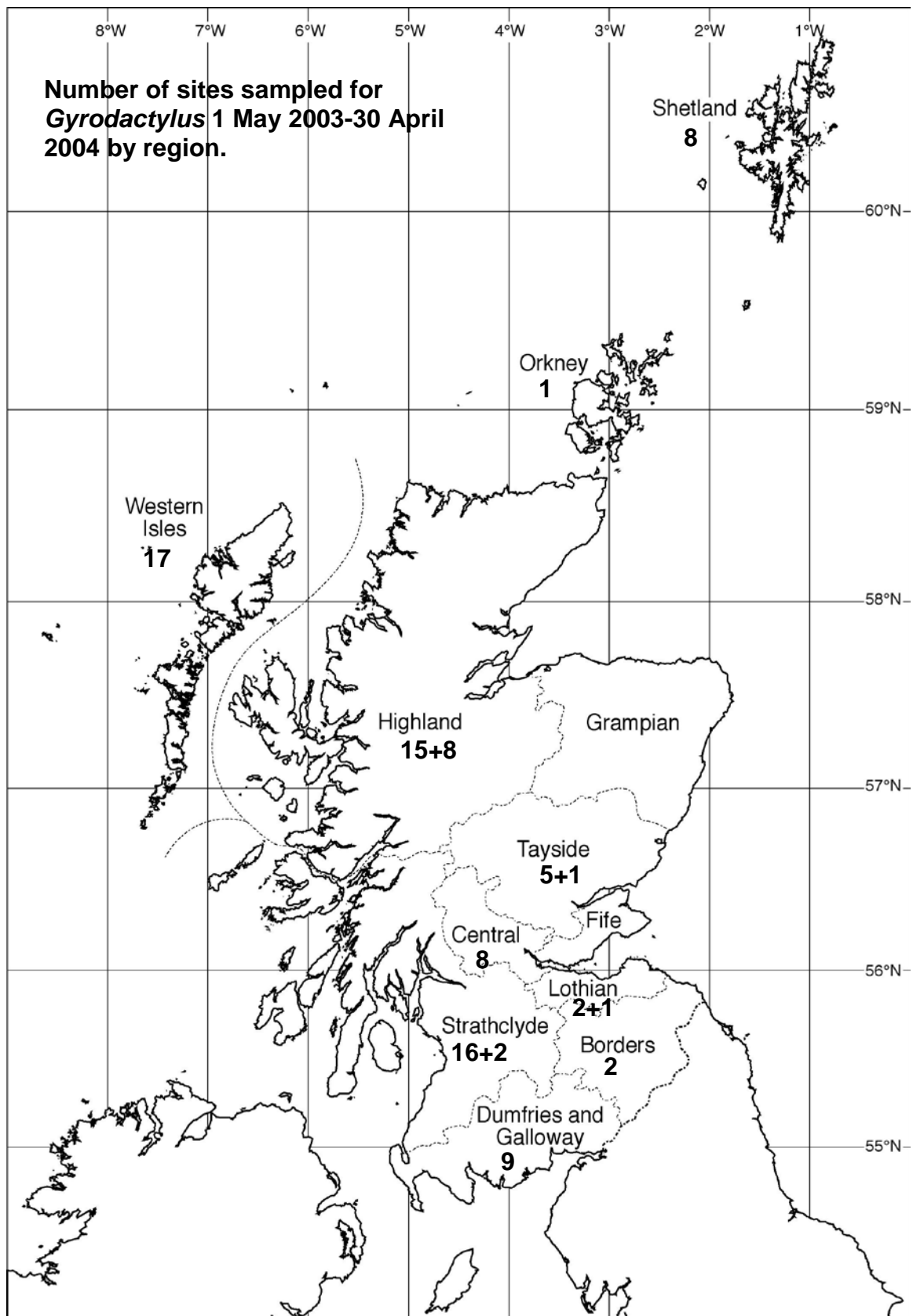
Wild fish

No *G. salaris* were identified.

Number of locations sampled	Number of wild fish examined	Number of wild fish sampling sites positive for <i>Gyrodactylus</i> species	Species of <i>Gyrodactylus</i> identified (number of fish)
12	360 salmonids	2 sites (30 fish each)	<i>G derjavini</i> (18)

Gyrodactylus sampling per region from farmed and wild fish

Region	Number of farms sampled	Number of wild fish locations sampled	Total number of cases positive for <i>Gyrodactylus</i> species
Highland	15	8	2 (1 wild)
Western Isles	17		
Dumfries & Galloway	9		1
Strathclyde	16	2	3 (1 wild)
Shetland	8		
Tayside	5	1	2
Orkney	1		
Lothian	2	1	
Grampian	0		
Borders	2		
Central	8		2



Iceland

Status report on fish health management in Iceland - with focus on *Gyrodactylus salaris*

The parasite *Gyrodactylus salaris* is compulsorily notifiable to the competent authority in Iceland and reports of suspected infections must be immediately investigated by the official services. Iceland has been declared free from Gyrodactylosis by the Competent Authority based on the following conditions (according to rules of the OIE Aquatic Animal Health Standards Commission): There has never been any observed occurrence of the disease for at least the past 25 years despite conditions that are conducive to its clinical expression and knowing that the basic biosecurity conditions have been met continuously during the same period of time.

Iceland has operated national legislation specifically designed to control fish diseases for approximately fifty years. The rapid expansion of aquaculture in most countries during the last decades has brought a changing pattern of fish disease and a corresponding increase in the risk of disease importation and spread. The Competent Authorities in Iceland responded to these changing risks by introducing *The Salmon, Trout and Char Fishing Act* in 1970, the law concerning the *Veterinary Officer for Fish Diseases* in 1985, the law concerning the *Official Fish Disease Laboratory* in 1986, the regulation concerning *Measures to Prevent and Control Diseases in Fish and Health Inspection of Fish Farms* in 1986 and the regulation on *Transport and Release of Salmonids and Protection against Diseases and Genetic Mixing of Salmon Stocks* in 1988. Together, these pieces of legislation, including recent amendments, provide Iceland with a comprehensive set of rules to protect its fish farming industry and wild fish stocks from the introduction and spread of diseases from other countries. However, the changing nature of European politics, and the general trend towards liberalisation of trade throughout the world, has meant that many of these longstanding national strongholds are being challenged. New international rules, established by such organisations as the EU, OIE and WTO, are intended not only to encourage international trade in live fish and their products, but should also provide an adequate level of protection against the introduction of diseases into individual countries (or defined zones) from elsewhere via such trade.

Since 1985 all fish farms in Iceland have been under obligatory and regular fish health surveillance, including salmonid farms producing wild salmonids for river enhancement. The surveillance structure is partly by regular “on site” health inspections, under the supervision of the Veterinary Officer for Fish Diseases, and partly by the laboratory work conducted at the Official Fish Disease Laboratory at Keldur in Reykjavík.

Gyrodactylosis is considered a List I disease in Iceland, identifying a transmissible disease which has the potential for a very serious and rapid spread and which is of serious socio-economic importance in the international trade of live fish, eggs and gametes. List I diseases will be treated with eradication procedures as these diseases are considered dangerous and exotic in Iceland. Necessary measures (in accordance with Icelandic “Contingency plan for List I fish diseases”) would be taken immediately and reports submitted to the EU and OIE.

In Iceland there are 9 hatcheries and smolt farms rearing wild salmonids from approximately 50 rivers around the country. These farms are all under official fish health surveillance. Each

river is under the control and scrutiny of the local River Association and if any suspicion of disease arises they are obligated to notify it directly to the Competent Authorities. No continuous surveillance targeting *Gyrodactylus salaris* has been undertaken in Iceland. Some periodic systematic surveys have, however, been undertaken where specialists have investigated wild salmonid species in rivers and lakes with a focus on *Gyrodactylus* sp. In both the 1970s and 1980s some parasites of the *Gyrodactylus* family were found, but none of the species *G. salaris*. In summer 2006 a new systematic survey is planned with a focus on *Gyrodactylus* and all detected sub-species will be defined in detail with our best analytical methods.

The fish health status in Icelandic natural waters as well as in aquaculture is in general very promising. The main reasons for that, in our opinion, are the geographical isolation of the country, strict import policy and effective fish health surveillance. Icelandic Authorities are aware of the potential risk of infectious agents such as *G. salaris* being introduced with the imports of used sport fishing equipment and products. As a preventive measure against spreading infectious diseases of freshwater species to Iceland from infected zones or jurisdictions, it has been prohibited since 1971 to import and use fishing equipment, which has been used while angling abroad, unless such equipment has been disinfected according to valid rules (see attached leaflet).



HELP US TO KEEP ICELANDIC RIVERS UNPOLLUTED AND HEALTHY

Disinfection of sport fishing equipment

As a preventive measure against spreading infectious diseases of freshwater fishes to Iceland from other countries, it is prohibited according to The Salmon, Trout and Char Fishing Act of 1970, chapter X, to use fishing equipment which has been used while angling abroad, unless such equipment has been disinfected according to valid rules.

A certificate of disinfection, issued by an official veterinary authority will be accepted, if presented on entering Iceland. The certificate should be clearly worded on officially headed paper with the appropriate stamp of approval and not older than 3 weeks.

Iceland has always been free of infectious fish diseases like IPN, VHS, IHN, UDN and ISA, caused by various virus, and also of parasitic disease like Gyrodactylosis, and therefore we will maintain a strict disinfection policy to try to keep this position. Your cooperation for a clean and healthy environment will secure a bright future for the wild Atlantic salmon and trout.

Guidelines for disinfection are as follows:

The equipment should be immersioned for 10 minutes in the disinfectant solution. Approved disinfectants are for example:

- | | | |
|----|------------------|---------------------------|
| 1. | Virkon-S | (1% solution) |
| 2. | Caustic soda | (0,2% solution) |
| 3. | Crystalline soda | (5% solution) |
| 4. | Setax | (0,3% solution) |
| 5. | Korsolin | (3% solution) |
| 6. | Formalin | (2% formaldehyd solution) |
| 7. | Phenol solution | (2-5% solution) |

The company "Fagræsting s/f" operates a fast disinfection service at Keflavík Int. Airport for the price of USD\$ 18 - 22 for each rod, including related accessories.

Respectfully;

Gísli Jónsson

Russian Federation

Measures implemented by the Russian Federation to minimize the threat posed by *G. salaris*

All measures taken by the Russian Federation to minimize the risk of the spread of parasite *G. salaris*, other parasites and diseases are based on the “Instruction on veterinary control of transfers of live fish, fertilized eggs, crustaceans and other aquatic organisms”, which has been effective in the Russian Federation since 1971. When aquatic organisms are imported into the Russian Federation from abroad the importer shall fulfill the “Veterinary requirements to import of live fish, fertilized eggs, crustaceans, mollusks, forage invertebrates and other aquatic organisms into the Russian Federation”, No. 13-8-01/1-17, approved by the Veterinary Department of the Agriculture Ministry of the Russian Federation on 23 December 1999. Besides, effective on the territory of the Russian Federation is the Instruction on measures to counteract *G. salaris*, approved by the Veterinary Department on 8 June 1998.

The Ministry of Agriculture of the Russian Federation issued the Order No. 173 in September 2005 adopting a “List of quarantine and particularly hazardous diseases of fish”, which included gyrodactylosis of salmonids. In accordance with existing Russian legislation the order was registered by the Ministry of Justice as a standard legal act of the Russian Federation. An annex to this order contains a List of diseases of freshwater fishes, which when diagnosed require urgent introduction of veterinary and sanitary measures aimed at preventing outbreaks of diseases and containing their spread as well as treating the diseases at fish culture facilities. More than a half of the diseases in the list are also on the list of fish diseases classified by the OIE International Committee as particularly hazardous (List B). According to OIE, movements of aquatic animals and fertilized eggs is the main channel whereby infectious diseases are spread in aquaculture. Adoption of this new standard legal act will help more effective implementation of measures to counteract epizooties at fish culture facilities in Russia in the future.

For the Murmansk Regional regulations for preventing the transmission and spread of *G. salaris*, other parasites and diseases have been developed and are effective in the Murmansk region, which is, in the first place, linked to the development of salmon farming there.

These regulations include:

- measures for control of the epizootic situation in areas, where aquaculture facilities are sited, and measures to prevent the spread of *G. salaris*, other parasites and diseases;
- measures for preventing escapes of fish during movement and handling of stocks at aquaculture units; development of contingency plans to be implemented in the event of accidents, which have led to significant escapes;
- mechanism for control of movement of fish at aquaculture units;
- possibility of moving an aquaculture unit to another site, if its non-compliance with any of veterinary and sanitary or biotechnological standards has been identified during operations;
- measures to minimize the risk of diseases in cultured fish and their transmission, which include vaccination of fish, use of optimal stocking densities, careful handling,

frequent inspection of fish, proper diet and feeding regimes, avoidance of unnecessary disturbance of fish, detailed health inspections, disinfection of transportation equipment, etc.

All aquaculture units have a list of prevailing infectious diseases and parasites, and the methods in practice for their control and prevention are detailed in an annual plan of veterinary/ sanitary and preventive measures established for each disease-free unit. At facilities with diseases, which require introduction of restrictions, plans of therapeutic/preventive and curative measures are established.

Under consideration currently is the question of establishing *wild salmon protection zones* for major salmon rivers in the region, developing requirements to siting of aquaculture units relative to the mouth of salmon rivers.

Movement of live fish into the Murmansk region from abroad has been forbidden following a direction by the Chief State Veterinary Inspector based on the collective decision with the Murmansk Regional Administration.

It should also be noted that all projects on salmon farming are subject to licensing; this is done on the basis of comprehensive evaluation of the proposed project, which includes as its mandatory part an assessment of risk of transmission of *G. salaris* and other diseases.

The Veterinary Service of the Murmansk region has developed a Program for veterinary and sanitary control of aquaculture facilities, which provides for regular (at least 4 times a year) veterinary and sanitary inspection of farms and ichthyopathological examination of reared fish.

To minimize the risk of spread of *G. salaris* via recreational fishery the Polar Research Institute and Murmansk Veterinary Laboratory developed and issued an informational leaflet, which included information on the parasite, possible ways of its transmission to rivers and established requirements to be fulfilled by anglers to avoid transmission of this monogenea with tackle.

In 1997 to eradicate *G. salaris* in Karelia a program was developed for treatment of infected rivers with rotenone; however, so far it has not been implemented because of lack of funds. Therefore, to reduce the risk of infection with parasites, juveniles of salmon are released at low temperatures under ice in the second half of April, when the parasite is not active. The juveniles are stocked as 2-year-olds in the downstream parts of the river. Most of them do not stay in the river for a long time, as they are released as pre-smolts and leave the river for the ocean the same year.

Monitoring programmes for *G. Salaris* in Northwest Russia

Atlantic salmon occurs in three regions in the northwest Russia: Murmansk and Archangel regions and Karelia. For the first time *G. salaris* was found in Russia in the mid-80s on juvenile freshwater salmon at Petrozavodsk hatchery, Karelia, which did not have any connection to the sea. In 1992 *G. salaris* was found in the Keret river (Karelia, White Sea basin), where it caused considerable damage to the salmon population. The parasite was transmitted into the river during stocking operations (Ieshko, Shulman, 1994; Shulman *et al.*, 2001).

There is a real risk of its further spread in the northwest Russia. First of all, because Archangel region and Karelia, through a network of rivers, lakes and canals are connected to the Baltic province, where *G. salaris* is a native species. Another risk for its potential spread is posed by the proximity of the Murmansk region to Norway, where *G. salaris* caused considerable damage to a number of wild Atlantic salmon populations. Therefore, with the development of recreational salmon fishery in the Murmansk region the threat of transmission of parasite with fishing tackle increases. Besides, there are a number of joint Russian-Finnish and Russian-Norwegian projects on farming of Atlantic salmon and rainbow trout launched recently in Karelia and Murmansk region, which represent a channel whereby *G. salaris* could accidentally be transmitted to Russia.

In Karelia, screening of salmon rivers for parasites was initiated in 1992 and has been conducted since then by the Institute of Biology, Karelian Branch of the Russian Academy of Sciences. In subsequent years other waters in Karelia were also included in this monitoring programme.

Annual parasitological studies of fish from the Keret river (Karelia) showed, in particular, that parasite numbers declined abruptly in 2002-2003 compared to 2001 when the infestation was at its peak. This happened against low abundance of salmon and high summer temperatures; it could, therefore, be hypothesized that conditions were in place which contributed to decreased abundance of the parasite.

The monitoring programme conducted on the Keret river has provided evidence that epizooty and massive infestation of juvenile fish is followed by a period of depression. Over two years no more than 20 parasites of *G. salaris* were found on 250 fish examined. In view of that the parasite *G. salaris* is a parasite specific to salmon only, it could logically be assumed that with critically low numbers of juvenile fish the population of this parasite is maintained at the expense of precocious males of *S. salar*, rather than other fish species. This is supported by the findings of the 2005 survey where, in the absence of juveniles, the parasite was found on precocious males. Therefore, in assessing the epizootic situation in those rivers, where *G. salaris* has been found, account should also be taken of whether precocious males are present in the river and what their numbers are.

In the Murmansk region, parasitological screening to identify the presence of *G. salaris* and the extent of its spread was initiated by the Polar Research Institute (Murmansk, Russia) in 1993. Since then five White Sea rivers (Kovda, Virma, Kanda, Lubche-Savino and Niva), located near the border with Karelia, were surveyed many times, as well as three rivers (Sallajoki, Kuolajoki and Tennijoki) in the basin of the Baltic Sea. Of the Barents Sea rivers on the Kola Peninsula, the monitoring programme included the Tuloma river with its headwaters in Finland, where *G. salaris* was registered in the water system of the neighbouring Inari lake. Results from the studies indicated that in the Murmansk region

index salmon rivers of the White Sea, Barents Sea and Baltic Sea basins do not contain *G. salaris*.

In addition to scientific monitoring the Murmansk Regional Veterinary Service has been carrying out a monitoring programme for *G. salaris* since 1996, inspecting annually, at a frequency of 4 times a year, juvenile salmonids at hatcheries and fish farms. *G. salaris* was not found.

In 2005 the following studies of juvenile Atlantic salmon were undertaken in Russia:

The White Sea basin rivers:

1. Nilma, Karelia: White Sea, 25.07.2005

66° 30' N, 33° 09' E

40 salmon *Salmo salar* and 3 trout *Salmo trutta* were examined. Species of *Gyrodactylus* genus were not found.

2. Pulonga, Karelia: White Sea, 27.07.2005

62 salmon *Salmo salar* were examined as well as *Gasterosteus aculeatus*, *Lota lota*, *Pungitius pungitius* and *Platichthys flesus*. Three salmon were infested with *Gyrodactylus*. One fish had 7 parasites, another two - 2 parasites each. The parasite was identified as *Gyrodactylus arcuatus*. Salmon stomachs contained many parasites of this species.

3. Keret, Karelia, Morskoi rapid: White Sea salmon, 27.07.2005

65° 16' N, 33° 33' E

21 salmon *Salmo salar* were examined as well as *Cottus poecilopus*. Three salmon were found to have the parasite *G. salaris*, 1, 6 and 10 parasites, respectively. The situation was dramatically different from that observed in 2001, when many fish were heavily infested and died.

4. Keret, Sukhoi rapid, Karelia: White Sea salmon, 27.07.2005

66° 11' N, 32° 54' E

Only one precocious male of *Salmo salar* was found to have 8 parasites of *G. salaris*.

5. Gridina, Karelia: White Sea salmon, 28.07.2005

65°54'46.71" N, 34°38'06.18" E

61 salmon *Salmo salar* were examined, as well as *Gasterosteus aculeatus* and *Lampetra* sp. This site was never covered by previous surveys. The sample contained salmon of different age (32 fish at age 0+, 27 at age 1+ and 2 precocious males at age 2+ and older). Species of the *Gyrodactylus* genus were not found.

6. Pongoma, Karelia: White Sea salmon, 29.07.2005

65° 17' 460 N, 34° 00' 915

66 salmon *Salmo salar* were examined as well as *Lota lota*, *Cottus poecilopus*. It was a second survey at this site; the first was undertaken in 1999, when *Gyrodactylus* was not found. The 2005 survey did not find *Gyrodactylus* either.

The Barents Sea basin rivers:

1. Kola, Murmansk Region: Barents Sea salmon, 29.07.2005

68° 25' N, 33° 20' E

66 salmon *Salmo salar* were examined as well as 5 *Salmo trutta*, *Lota lota*. The fourth survey on this river; previous survey in 1993, 1994 and 2004 did not find any *Gyrodactylus*. No *Gyrodactylus* was found in 2005 either.

2. Pak, Murmansk Region: Barents Sea salmon, 29.07.2005

68° 48' N, 32° 20' E

16 salmon *Salmo salar* were examined. It was a second survey on this river; the first in 1996 did not identify any *Gyrodactylus*. Species from *Gyrodactylus* genus were not found in 2005 either.

Norway

**Report from Norway on monitoring and measures taken to eradicate the parasite
*Gyrodactylus salaris***

Jarle Steinkjer, Directorate for Nature Management
Tor Atle Mo, National Veterinary Institute

Surveillance programme

The purpose of the surveillance programme is to trace any spread of *Gyrodactylus salaris* to previously uninfected river systems or fish farms. Resources are not being used to carry out surveillance in rivers and fish farms already infected, unless measures for eradication of the parasite have been carried out or other circumstances justify surveillance.

The Norwegian Food Safety Authority is responsible for sampling rivers and fish farms. The Regional Food Safety Authorities have, however, commissioned the respective County Environmental Departments and other institutions/companies to perform river sampling. The National Veterinary Institute in Oslo is recognized as the OIE reference laboratory for the disease, and is responsible for examination of samples as well as taxonomical studies if *Gyrodactylus* is detected.

In total, 3,833 fish specimens from 120 rivers were examined in 2005. *G. salaris* re-appeared in two rivers; Steinkjervassdraget and Figga, in Nord-Trøndelag County. Both rivers were treated with rotenone in 2001/2002. In total, 2,503 fish specimens from 81 fish farms were examined in 2005, and *G. salaris* was not found.

Eradication programme

In 2003-2004, a large rotenone treatment project was carried out in the Rana region. This project is the biggest treatment project in Norway so far. The Rana region is situated just south of the Arctic Circle. There were 6 *Gyrodactylus*-infected rivers in the Rana region but the rotenone treatment project involved 15 other rivers due to their location in close proximity to the infected rivers, or because their outlets were located in the natural route of migrating smolts from infected rivers.

The most comprehensive treatment involved more than 100 people and took 14 days to complete. The project included preservation of fish stocks, removal of dead fish and environmental monitoring. Logistics were the greatest challenge in this region; treatment had to occur within a narrow time frame to avoid reinfestation. Some of the tributaries were complex, and required barriers to prevent reinfestation. Five hydroelectric plants within the fjord system required special attention. Influence of seawater diluting and neutralizing rotenone was a concern; the tidal range of the River Røssåga was 10 km.

A rotenone treatment project was also carried out in the River Leirelva in the northern part of Norway in 2005. Immediate treatment of this river was necessary to prevent the parasite entering a large lake situated in this watercourse.

Several years of research have indicated that aluminium sulphate has a clear negative effect on ecto-parasites such as *G. salaris*. The effect is dependent on concentration, water pH and temperature. Experiments in the laboratory, as well as in the field, show that the parasite is substantially more sensitive to aluminium than salmon. In nearly all experiments that have been performed, aluminium eliminates *G. salaris* from the fish, but the acid-sensitive salmon apparently does not seem to be affected by the treatment. Based on these findings, it is possible that aluminium can be used as the main agent in the future treatments of *G. salaris*-infected rivers. The first attempt to eliminate the parasite using aluminium sulphate was in the River Batnfjordselva.

The aluminium treatment project in the River Batnfjordselva:

- The project was accomplished in 2004
- The main river and most of the tributaries were treated with aluminium sulphate
- Rotenone was used in the smallest tributaries, seeps, stagnant water, wells and other complex areas
- The monitoring programme has not so far detected the parasite after the treatment

In 2005, an eradication project in River Lærdalselva began. The main river and its largest tributaries were treated with aluminium sulphate. Rotenone was used in small quantities in more or less stagnant water and other complex areas connected to the river.

The aluminium treatment project in the River Lærdalselva:

- The first treatment was accomplished in April 2005 (only aluminium sulphate)
- The second treatment was accomplished in October 2005 (aluminium sulphate and rotenone)
- A final treatment will be carried out in April 2006 (aluminium sulphate and rotenone)

No parasites were detected after the treatment in October 2005.

Unfortunately, in 2005 the parasite was detected again in 2 rivers, which were treated with rotenone in 2001/2002. River Steinkjernelva and River Figga are situated innermost in the Trondheimsfjord, in the middle part of Norway. This fjord system is the most important area for Atlantic salmon in Norway. The eradication of the parasite from these rivers is given the highest priority.

Of the 45 infected rivers, chemical treatment has so far been carried out in a total of 34 rivers in Norway. In 15 of the treated rivers the parasite has been eradicated. Eleven rivers are still being monitored. Five years of monitoring after treatment is necessary to be sure that the treatment has been successful. In eight rivers the parasite has been registered again after chemical treatment.

In addition to the monitoring programme and remedial measures, preventive measures are being given high priority.

***Proposed Revisions to the
'Road Map' for Taking Forward the Recommendations from the Workshop
on Gyrodactylus salaris in the Commission Area***

‘Road Map’ for Implementing the Recommendations of the Workshop on *G. salaris*

Recommendations concerning opportunities to enhance cooperation on monitoring research and exchange of information				
Paragraph in Report	Recommendation	Proposed Action	Responsibility	Timeframe
7.2	Increase cooperation in both research and management among the NASCO Parties.	The North-East Atlantic Commission (NEAC) may wish to <u>should</u> retain an item on <i>G. salaris</i> on future agendas to facilitate reports by its Parties and their relevant jurisdictions and by the Working Group (see 7.3.3) on measures to prevent the further spread of the parasite and to eradicate it in areas where it has been introduced and on other aspects of this road map.	NEAC	From 2004 (input from Working Group in 2005)
7.3.1	Introduce standardised targeted monitoring methods in watercourses, lakes and in aquaculture.	a) The Oslo Workshop anticipated that standardised monitoring methods would be based on forthcoming OIE recommendations. These recommendations should be implemented by NEAC Parties and their relevant jurisdictions (see 7.5.1). b) The extent of harmonisation of monitoring methods, as detailed in the OIE Manual of Diagnostic Tests and Vaccines for Aquatic Animals and the Aquatic Animal Health Code and in the EC Directive, <u>should</u> might be explored by the Working Group (see 7.3.3).	a) NEAC Member Parties and their relevant jurisdictions b) Working Group	a) Following development of OIE recommendations b) From 2005
7.3.2	Map the present and natural distribution of <i>G. salaris</i> in the NEAC area and adjacent areas.	a) Existing monitoring programmes on salmonids in the wild and in culture environments undertaken by NEAC Member Parties and their relevant jurisdictions should be retained and expanded as necessary and as resources permit (see 7.4.6 and 7.5.1). Reports on these programmes should be provided to the Working Group (see 7.3.3). Mapping of <i>G. salaris</i> is also a recommendation in the Council’s Williamsburg Resolution and r Reports should continue to be made to the Council in the annual reporting by the Parties. b) Opportunities for obtaining information from countries which do not have wild Atlantic salmon should be explored (see 7.4.6).	a) NEAC Member Parties and their relevant jurisdictions b) Working Group to consider possible approaches	a) From 2004 b) From 2005
7.3.3	Maintain <u>Establish</u> an international Working Group.	The NEAC should establish <u>maintain</u> an international Working Group, the Draft Terms of Reference for which are contained in Annex 1.	NEAC	Agree ToRs in 2004. First meeting of the Working Group in 2005

Paragraph in Report	Recommendation	Proposed Action	Responsibility	Timeframe
7.3.4	NASCO should encourage request the Parties to conduct research in relation to <i>G. salaris</i> .	<p>a) The NEAC should recommend request that its Parties and their relevant jurisdictions undertake research, as resources permit, on:</p> <ul style="list-style-type: none"> - the natural distribution and genetics of <i>G. salaris</i>; - the effects of salmon genetics on sensitivity to <i>G. salaris</i>; - general biology and mechanisms of spread of the parasite; - effect of environmental parameters and ecology on the distribution of <i>G. salaris</i>. <p>b) NEAC Member Parties and their relevant jurisdictions should maintain and expand existing research programmes in accordance with these recommendations, as resources permit.</p> <p>c) The Working Group (see 7.3.3) should keep research requirements and monitoring needs under review and report to the Commission.</p>	<p>a) NEAC</p> <p>b) NEAC Member Parties and their relevant jurisdictions</p> <p>c) Working Group</p>	<p>a) From 2004 (research already ongoing)</p> <p>b) From 2004</p> <p>c) From 2005</p>
7.3.5	Publicity, information and cooperation with other authorities.	<p>a) The Parties could-should develop publicity material (on the dangers of the parasite and measures to prevent its spread) and strategies for the effective dissemination of this material (particularly with regard to targeting high risk groups for the spread of the parasite) and report back to the Commission each year. Existing material should be reviewed and updated as appropriate in the light of current knowledge.</p> <p>b) The Secretariat could develop, for consideration by NEAC, a standard text for an information leaflet, as it has done in relation to catch and release, for use by the Parties. This information could be made available to the public and on the Organization's website.</p> <p>c) A number of recommendations in this road map call for cooperation with OIE and the EC Commission. The responsibilities for taking forward this cooperation are detailed in the relevant sections of this road map.</p> <p>d) There is may be a need for improved coordination of research funded by the EU, national programmes and research undertaken at universities and other research facilities. This aspect might-should be considered by the Working Group.</p>	<p>a) NEAC Member Parties and their relevant jurisdictions</p> <p>b) Secretariat</p> <p>c) Various (as detailed elsewhere in road map)</p> <p>d) Working Group</p>	<p>a) From 2005 (some Parties have already developed such material)</p> <p>b) Report to NEAC in 2005</p> <p>c) Various (as detailed elsewhere in road map)</p> <p>d) From 2005</p>

Recommendations concerning the need for revisions to international guidelines and other measures to prevent the further spread of *G. salaris*

EU fish health legislation is currently under review. Directive 91/67 will be replaced in the next few years. A draft of the new Directive is currently with EU Member States for their consideration. The World Organisation for Animal Health (OIE) guidelines are reviewed annually. NASCO seeks to contribute recommendations for the control of G. salaris to the OIE, the European Community and the Russian Federation. The provisions of EC Directive 91/67 apply to Member States of the EU, members of the European Economic Area (EEA) and, under a bilateral agreement between the EU and the Faroe Islands, to the Faroe Islands. The recommendations below in relation to this Directive should be considered by the Russian Federation in considering the need for amendments to its disease legislation. Iceland, Norway, the Russian Federation and all EU Member States with Atlantic salmon interests are members of the OIE.

Paragraph in Report	Recommendation	Proposed Action	Responsibility	Timeframe
7.4.1	Article 1 of EC Directive 91/67 provides for measures for conservation of species and this should be retained in any replacement legislation.	a) NEAC Member Parties and their relevant jurisdictions to which EC Directive 91/67 applies should make representations to the Commission (DG SANCO) proposing that this provision be retained in any new legislation. b) The Secretariat might also be requested to make representations to the Commission (DG SANCO) on behalf of the NEAC.	a) NEAC Member Parties and their relevant jurisdictions b) NASCO Secretariat	a) From 2004 b) From 2004
7.4.2	<i>G. salaris</i> should be placed on list II in the new fish health directive since the parasite can cause severe ecological consequences and it is present in parts of the EU and other areas are free of it.	a) NEAC Member Parties and their relevant jurisdictions to which EC Directive 91/67 applies should make representations to the Commission (DG SANCO) proposing that this provision be included in any new legislation. b) The Secretariat might also be requested to make representations to the Commission (DG SANCO) on behalf of the NEAC.	a) NEAC Member Parties and their relevant jurisdictions b) NASCO Secretariat	a) From 2004 b) From 2004
7.4.3	Diagnosis of <i>G. salaris</i> by morphology should be confirmed by the use of molecular techniques.	NEAC Member Parties and their relevant jurisdictions should implement the molecular diagnostic techniques in the OIE Manual of Diagnostic Tests and Vaccines for Aquatic Animals, as resources permit (see 7.5.2).	NEAC Member Parties and their relevant jurisdictions	From 2004
7.4.4	The minimum approved zone size should be a river catchment; individual farms should not be given <i>G. salaris</i> -free status.	a) NEAC Member Parties and their relevant jurisdictions to which EC Directive 91/67 applies should make representations to the Commission (DG SANCO) proposing that this principle be included in any new legislation. Representations might also be made to OIE in relation to the Aquatic Animal Health Code. b) The Secretariat might also be requested to make representations on behalf of the NEAC.	a) NEAC Member Parties and their relevant jurisdictions b) NASCO Secretariat	a) From 2004 b) From 2004

Paragraph in Report	Recommendation	Proposed Action	Responsibility	Timeframe
7.4.5	Surveillance programmes should include all potential host species. On farms with both salmon and rainbow trout both populations should be tested. Since the expected prevalence is lower in rainbow trout higher sample sizes will be required for this species.	<p>a) NEAC Member Parties should maintain and, where appropriate, enhance existing monitoring programmes in accordance with this recommendation.</p> <p>b) NEAC Member Parties and their relevant jurisdictions should make representations to the OIE proposing these principles are incorporated in the Manual of Diagnostic Tests and Vaccines for Aquatic Animals.</p> <p>c) The Secretariat might also be requested to make representations to OIE on behalf of the NEAC.</p>	<p>a) NEAC Member Parties and their relevant jurisdictions</p> <p>b) NEAC Member Parties and their relevant jurisdictions</p> <p>c) NASCO Secretariat</p>	<p>a) From 2004</p> <p>b) From 2004</p> <p>c) From 2004</p>
7.4.6	The geographic distribution of <i>G. salaris</i> should be established with a view to minimising its spread to uninfected areas.	<p>a) Existing monitoring programmes on salmonids in the wild and in culture environments undertaken by NEAC Member Parties and their relevant jurisdictions should be retained and expanded as necessary and as resources permit (see 7.4.6 and 7.5.1). Reports on these programmes should be provided to the Working Group (see 7.3.3). Mapping of <i>G. salaris</i> is also a recommendation in the Council's Williamsburg Resolution and reports should continue to be made to the Council in the annual reporting by the Parties (see 7.3.2).</p> <p>b) The Working Group (see 7.3.3) should be asked to consider options for obtaining information from EU Member States and other countries which do not have wild Atlantic salmon stocks (see 7.3.2).</p>	<p>a) NEAC Member Parties and their relevant jurisdictions</p> <p>b) Working Group</p>	<p>a) From 2004 (monitoring ongoing)</p> <p>b) From 2005</p>
7.4.7	Criteria for diagnosis and establishing <i>G. salaris</i> -free zones should be based on international standards laid down by OIE.	NEAC Parties and their relevant jurisdictions should implement the diagnostic standards in the OIE Manual of Diagnostic Tests and Vaccines for Aquatic Animals.	NEAC Member Parties and their relevant jurisdictions	From 2004
7.4.8	Trade in live fish should only take place between zones of equal <i>G. salaris</i> status or from a higher to lower status zone.	<p>a) NEAC Member Parties and their relevant jurisdictions to which EC Directive 91/67 applies should make representations to the Commission (DG SANCO) proposing that this principle be included in any new legislation.</p> <p>b) The Secretariat might also be requested to make representations on behalf of NEAC.</p> <p>c) NEAC Parties and their relevant jurisdictions should implement this principle (see 7.5.3). This principle is also included in the Council's Williamsburg Resolution and reports on any deviations from this principle should continue to be made to the Council in the annual reporting by the Parties.</p>	<p>a) NEAC Member Parties and their relevant jurisdictions</p> <p>b) NASCO Secretariat</p> <p>c) NEAC Parties and their relevant jurisdictions</p>	<p>a) From 2004</p> <p>b) From 2004</p> <p>c) From 2004</p>

Paragraph in Report	Recommendation	Proposed Action	Responsibility	Timeframe
7.4.9	The guidelines on transportation of fish in the OIE Aquatic Animal Health Code should be implemented.	NEAC Member Parties and their relevant jurisdictions should implement these provisions through national and regional legislation (see 7.5.6).	NEAC Parties and their relevant jurisdictions	From 2004
7.4.10	Trade in gametes is preferable to trade in live fish.	<p>a) NEAC Member Parties and their relevant jurisdictions to which EC Directive 91/67 applies should make representations to the Commission (DG SANCO) proposing that this principle be included in any new legislation.</p> <p>b) The Secretariat might also be requested to make representations on behalf of the NEAC.</p> <p>c) NEAC Member Parties and their relevant jurisdictions should implement this principle (see 7.5.10) and record all live fish movements (see 7.5.14).</p>	<p>a) NEAC Member Parties and their relevant jurisdictions</p> <p>b) NASCO Secretariat</p> <p>c) NEAC Member Parties and their relevant jurisdictions</p>	<p>a) From 2004</p> <p>b) From 2004</p> <p>c) From 2004</p>
7.4.11	Countries with shared catchments should cooperate in the control and eradication of <i>G. salaris</i> .	NEAC Member Parties and their relevant jurisdictions with shared catchments should implement appropriate mechanisms for cooperation, including the establishment and strengthening of inter-country working groups (see 7.5.12).	NEAC Member Parties and their relevant jurisdictions	From 2004

Recommendations for strengthened national and regional legislation and measures to prevent the further spread of *G. salaris*

The new EU fish health directive will provide guidance on minimum measures for trade and disease control. The recommendations below are additional measures that NEAC Member Parties and their relevant jurisdictions should consider, from 2004, for the control of *G. salaris*.

Paragraph in Report	Recommendation
7.5.1	The geographic distribution of <i>G. salaris</i> should be established with a view to minimising its spread to uninfected areas (see 7.3.1, 7.3.2, 7.4.5, 7.4.6).
7.5.2	Within a country, criteria for diagnosis and establishing <i>G. salaris</i> -free zones should be based on international standards (see 7.4.3, 7.4.7).
7.5.3	Trade in live fish should only take place between zones of equal <i>G. salaris</i> status or from a higher to lower status zone (see 7.4.8).
7.5.4	Permission to stock fish into infected river catchments should be based on an assessment of the increased risk of transmission of the parasite to non-infected rivers (e.g. through migration and other routes).
7.5.5	In regions where the introduction of the parasite would lead to the extinction of Atlantic salmon population there should be no movement between river catchments of fish from infected farms.
7.5.6	Guidelines on the transportation of fish in the OIE Aquatic Animal Health Code (2003) should be implemented through national and regional legislation (see 7.4.9).
7.5.7	Countries should have contingency plans in place for treatment, containment or eradication. A legal base for use of rotenone and other treatment, containment and eradication measures should be put in place.
7.5.8	Where possible, routine breaks in production and disinfection on rainbow trout and salmon freshwater sites should be implemented as part of a control programme in infected areas.
7.5.9	There should be good containment to prevent escapees (see NASCO Guidelines on Containment of Farm Salmon, Annex 3 of Council document CNL(03)57).
7.5.10	Trade in gametes is preferable to trade in live fish (see 7.4.10).
7.5.11	Physical barriers to fish migration should be considered as a measure to minimise the risk of spread of <i>G. salaris</i> within a catchment and to uninfected catchments.
7.5.12	Countries with shared catchments should cooperate in the control and eradication of <i>G. salaris</i> and inter-country working groups for the control of <i>G. salaris</i> should be encouraged and strengthened (see 7.4.11).
7.5.13	Appropriate steps should be taken to minimise the spread of <i>G. salaris</i> through movement of anglers, boats, etc. by use of approved disinfection methods.
7.5.14	All movements of live fish should be recorded so that movements can be traced in the event of an outbreak of <i>G. salaris</i> (see 7.4.10).
7.5.15	The risk of <i>G. salaris</i> introduction through the processing of fish carcasses should be assessed and, where appropriate, mitigated through control of processing.
7.5.16	Countries should ensure that adequate resources are available for the implementation of measures to contain and eradicate <i>G. salaris</i> .

