



## NEA(16)6

### *The parasite Gyrodactylus salaris*

#### **Introduction**

1. At its Thirty-Second (2015) Annual Meeting, the North-East Atlantic Commission (NEAC) asked that the Secretary prepare a background document on the Commission's 'Road Map' on, and the reporting arrangements in place relating to, the parasite *G. salaris*.

#### **Background**

##### *The parasite*

2. The parasite *Gyrodactylus salaris* is a small (0.5mm in length) parasitic flatworm (monogenea) that attaches to the skin, gills and fins of its fish hosts by means of hooks that can result in serious physical damage. Mortality of salmon parr in Norwegian rivers infected by the parasite is as high as 98%. It is viviparous (live bearing) and can multiply rapidly. A single parasite can start an epizootic. *G. salaris* is a freshwater species, but can live in brackish water for a limited period of time. It occurs naturally in some Baltic areas of Finland, Sweden and Russia where some Atlantic salmon populations tolerate the parasite. The Atlantic salmon is the parasite's preferred host, but it can survive and reproduce on several other species of salmonid including rainbow trout, Arctic char, grayling and brown trout. The parasite is also found on farmed rainbow trout but it has a much lower impact and is capable of going undetected. Iceland, the UK and Ireland are the only areas known to be free of the parasite. Some European countries have an undetermined status for the parasite and it is likely that the parasite is present in more countries than is presently known.

##### *The situation in Norway*

3. *G. salaris* was introduced into Norway in 1975 as a result of the importation of infected salmon smolts from the Baltic region. It has subsequently spread to 49 watercourses, mainly by stocking from infected hatcheries and migration of fish from infected rivers to neighbouring rivers draining into the same fjord systems in areas with low salinity. The parasite has also been spread by movements of Atlantic salmon and Rainbow trout related to fish farming. In infected rivers the salmon stocks have been decimated and *G. salaris* is considered to be one of the major threats to salmon in Norway. Enormous efforts have been put into eradicating the parasite in Norway, including treating infected watercourses with rotenone and acid aluminium (sometimes requiring the construction of barriers to reduce the area to be treated and the use of gene banks) and surveillance and monitoring programmes. Information provided by Norway in 2007 indicated that

the total cost of the eradication programme would be NOK373 - 630 million (approximately 30 - 50 million GBP). However, the annual socio-economic loss caused by the parasite was estimated to be NOK200 - 250 million (approximately £20million).

#### *The situation in Sweden*

4. *G. salaris* was first found in salmon rivers on the west coast of Sweden in 1989 and has subsequently spread from the southern region to rivers in the middle of the west coast. By 2006, 14 out of 23 salmon rivers had been infected, with the last infected river being discovered in 2005. However, in 2015 a new river became infected taking the total to 15 rivers. There are indications that the parasite has resulted in reduced parr abundance in some salmon rivers. However, the Swedish west coast salmon populations appear to have experienced a less severe impact than Norwegian salmon populations and the number of parasites per salmon appears to decline with time. Nonetheless, the Swedish authorities consider *G. salaris* to be a serious threat to remaining uninfected stocks and measures have been implemented to prevent the further spread of the parasite, including prohibiting stocking salmonid fish in the catchments of uninfected rivers.

#### *The situation in Finland*

5. The parasite has been recorded in some watercourses and fish farms in northern Finland but not the two main Atlantic salmon rivers in the region, the Tenjoki and Näämäjoki.

#### *The situation in the Russian Federation*

6. *G. salaris* was detected in the Keret River (Karelia) in 1992, where it caused considerable damage to salmon stocks. The parasite was introduced into the river through aquaculture activities. An annual monitoring programme was introduced in 1993 for a number of salmon rivers in the Karelian Republic and in the Murmansk region as there are concerns that it could spread to the Murmansk region, prompting some recreational fishing companies to introduce voluntary disinfection programmes.

### **NASCO Agreements**

#### *The 'Williamsburg' Resolution, CNL(06)48*

7. In response to the serious threat posed by *G. salaris*, NASCO has developed a number of agreements and taken various steps to allow for cooperation and information exchange on the parasite. Under the Williamsburg Resolution, it is stated that each Party shall take measures to minimise the risk of disease and parasite transmission between all aquaculture activities, introductions and transfers, and wild salmon stocks (Article 5). Furthermore, where significant adverse impacts on wild salmon stocks are identified, the Parties should initiate corrective measures without delay and these should be designed to achieve their purpose promptly. Mitigation measures can include activities to safeguard against potential future impacts (e.g. contingency planning, gene banks). The Resolution also states that mapping of the presence of serious diseases and parasites should be used to establish epidemiological zones (either with or without specific pathogens) and that management measures within these zones should include monitoring to confirm the disease status of a zone and eradication. *G. salaris* is listed

as a disease/parasite for which these zones should be established. Movements of live salmonids and their eggs from a zone where any of the specified diseases is present to a zone free of these diseases should not be permitted. However, movements of salmonid eggs may be permitted where there is minimal risk of transmission of the specified diseases or parasite.

*Strategic Approach for NASCO's 'Next Steps', CNL(05)49*

8. Following a review of NASCO's work conducted in 2004/2005, the Council adopted a Strategic Approach for NASCO's 'Next Steps' which identified six primary challenges facing NASCO in the management and conservation of wild Atlantic salmon. These included the parasite *G. salaris*. For each of these challenges, goals and key issues for NASCO and its Parties were identified. The goal relating to *G. salaris* is to prevent the further spread of this parasite and to eradicate it from infected areas, working with stakeholders, where appropriate. The key issues in relation to *G. salaris* are to:
  - minimise the threat posed by *G. salaris* to Atlantic salmon;
  - enhance cooperation on monitoring, research and dissemination of information regarding *G. salaris*, with special regard to the lack of knowledge on distribution and ecology of the parasite; and
  - strengthen international, national and regional legislation and guidelines to prevent the further spread of *G. salaris*.

*North-East Atlantic Commission 'Road Map', NEA(06)9*

9. In 2004, in recognition of the serious threat posed by *G. salaris*, the NEAC organised a Workshop hosted by Norway to discuss:
  - the need to minimise the threat posed by *G. salaris* to Atlantic salmon, particularly in the Fennoscandic region, with particular attention on preventing the spread of the parasite in border regions between countries and transboundary watercourses;
  - the need to enhance cooperation on monitoring, research and dissemination of information on *G. salaris*, with special regard to the lack of knowledge on the distribution and ecology of the parasite;
  - the need to strengthen national and regional legislation to prevent further spreading of *G. salaris*; and
  - the need to consider revisions to the international guidelines relevant to preventing the further spread of *G. salaris* in the Commission area.
10. The Workshop developed a large number of recommendations and, following further work, these were collated into a 'Road Map' outlining responsibilities and timeframe for action. This 'Road Map' is attached as Annex 1. It includes recommendations concerning:
  - opportunities to enhance cooperation on monitoring, research and exchange of information;
  - the need for revisions to international guidelines and other measures to prevent the further spread of the parasite; and

- strengthening of national and regional legislation and measures to prevent the spread of the parasite.
11. The Workshop concluded that greater cooperation on both research and management is needed among NASCO Parties and other organisations (representatives of NASCO's accredited NGOs, the World Organisation for Animal Health (OIE), the International Baltic Sea Fishery Commission (IBSFC) and ICES attended some of the *G. salaris* meetings referred to in this section). It considered that this type of cooperation is crucial with respect to effective measures to prevent the further spread of the parasite and to eradicate it when it has been introduced and recommended that a Commission Working Group on *G. salaris* be established and maintained. As an example of the measures contained in the 'Road Map', it is recommended that all NEAC Parties/jurisdictions should have contingency plans for the treatment, containment or eradication of the parasite (and guidelines on what these plans should contain were developed) and a legal base for containment and eradication measures should be in place. There are also recommendations on research, including studies into the distribution and genetics of *G. salaris*, on publicity to increase awareness of the threats posed by the parasite and on standardised, targeted monitoring in accordance with international recommendations.
  12. In recognition of the very serious damage that has been caused to the wild Atlantic salmon by the parasite and the need for enhanced cooperation to prevent its further spread and eradication in areas in which it has been introduced, the NEAC agreed to establish an international Working Group with Terms of Reference which included:
    - providing a forum for exchange of information among the Parties and their relevant jurisdictions on research on, and monitoring and control programmes for, the parasite; and
    - developing 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.
  13. Meetings of the Working Group were held in both 2006 and 2007 and reports made to the NEAC. In 2008, the Commission decided not to convene further meetings of the Working Group but to retain an item on its agenda to allow developments in relation to the parasite to be monitored. There is, therefore, an opportunity to report to the Commission on any new information relating to this parasite but there is limited time available and the reports from many Parties/jurisdictions have not been comprehensive in terms of the elements in the 'Road Map'. In recent years these reports have been given verbally and mostly by Norway.

#### *Implementation Plans and Annual Progress Reports*

14. There is also reporting to the Council through Implementation Plans (IPs). Under the first cycle of Implementation Plans, Parties/jurisdictions were requested to provide information in relation to impacts of aquaculture, introductions and transfers and transgenics and several provided some information on *G. salaris*. In the second round of IPs (2013 - 2018) information is sought on the measures in place to prevent the introduction or further spread of *G. salaris*. Several NEAC Parties/jurisdictions (EU - Finland, EU - Sweden, EU - UK (England and Wales), EU - UK (Scotland), Norway and the Russian Federation) specifically identified *G. salaris* as a threat/challenge to

wild salmon management and conservation and, as a consequence, have included an action to address this with progress reported annually through their APRs. Other jurisdictions may have identified introductions and transfers as a threat/challenge but did not specifically refer to *G. salaris*. Where Implementation Plans do not contain an Action on *G. salaris* no annual progress report will be made.

### Summary

15. The NEAC has recognised the serious nature of the parasite *G. salaris* and the threat it poses to wild salmon stocks. It has developed a 'Road Map' with a large number of recommendations relating to monitoring, research, exchange of information and the need for revisions to international guidelines and other measures to prevent the further spread of the parasite. There have been no meetings of the NEAC *G. salaris* Working Group since 2007 and as a consequence no systematic exchange of information or review of progress on the elements in the 'Road Map' for almost ten years. While the NEAC has retained an item on its agenda entitled '*Risk of Transmission of Gyrodactylus salaris in the Commission Area*' there is little time available at the Annual Meetings of the Commission to give this important topic detailed consideration. There is a question related to *G. salaris* in the 2013 - 2018 IPs but only those Parties/jurisdictions that have included an action related to *G. salaris* in their IP would provide an Annual Progress Report on actions related to this parasite.
  
16. The Commission is asked to decide if it considers that existing reporting arrangements are adequate or if it would wish to facilitate a more detailed exchange of information by reconvening its Working Group for a meeting prior to the 2017 Annual Meeting. If it was felt that a meeting would be appropriate the Working Group might be asked to review developments since 2007 concerning the parasite *G. salaris* in relation to monitoring and research and the measures being taken to control the spread of the parasite and its eradication from infected rivers and to advise on the need for any revisions to the 'Road Map'.

Secretary  
Edinburgh  
9 May 2016

NEA(06)9

*'Road Map' for Implementing the Recommendations of the Workshop on G. salaris (revised June 2006)*

<b>Recommendations concerning opportunities to enhance cooperation on monitoring research and exchange of information</b>				
<b>Paragraph in Report</b>	<b>Recommendation</b>	<b>Proposed Action</b>	<b>Responsibility</b>	<b>Timeframe</b>
7.2	Increase cooperation in both research and management among the NASCO Parties.	The North-East Atlantic Commission (NEAC) should 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 for Aquatic Animals and the Aquatic Animal Health Code and in the EC Directive, should 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). 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 an international Working Group.	The NEAC should maintain 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 request the Parties to conduct research in relation to <i>G. salaris</i> .	<p>a) The NEAC should request that its Parties and their relevant jurisdictions undertake research, as resources permit, on:</p> <ul style="list-style-type: none"> <li>- the natural distribution and genetics of <i>G. salaris</i>;</li> <li>- the effects of salmon genetics on sensitivity to <i>G. salaris</i>;</li> <li>- general biology and mechanisms of spread of the parasite;</li> <li>- effect of environmental parameters and ecology on the distribution of <i>G. salaris</i>.</li> </ul> <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 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 a need for improved coordination of research funded by the EU, national programmes and research undertaken at universities and other research facilities. This aspect 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.*

<b>Paragraph in Report</b>	<b>Recommendation</b>	<b>Proposed Action</b>	<b>Responsibility</b>	<b>Timeframe</b>
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 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>

<b>Paragraph in Report</b>	<b>Recommendation</b>	<b>Proposed Action</b>	<b>Responsibility</b>	<b>Timeframe</b>
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> .

***Terms of Reference for a Working Group on Gyrodactylus salaris in the North-East Atlantic Commission Area***

The North-East Atlantic Commission (NEAC), recognising the very serious damage that has been caused to the wild Atlantic salmon by the parasite *Gyrodactylus salaris* and the need for enhanced cooperation to prevent its further spread and eradication in areas in which it has been introduced, agrees to establish an international Working Group with the following Terms of Reference:

- 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. Such measures would include, but would not be limited to, contingency plans and methods of eradication in the wild (e.g. barriers, chemical treatment) and at aquaculture facilities;
- to develop recommendations for workshops and seminars to facilitate improved exchange of information (including input from 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.

The Working Group should meet initially on an annual basis under Norwegian Chairmanship. The Working Group will comprise representatives of the Member Parties of the North-East Atlantic Commission. Representatives of the USA and Canada may also participate in the meeting. A representative of the World Organization for Animal Health (OIE) should be invited to participate in an observer capacity in the work of the Group. The Secretariat will provide administrative support to the Working Group. The Working Group will report to the Commission at its Annual Meetings.