NASCO	**Rivers Database Working Group** ***Report of the Meeting of the Rivers Database Working Group***	**CNL(22)12** **Agenda item: 4h**

Report of the Meeting of the Rivers Database Working Group

At its Annual Meeting in 2021, CNL(21)62, the Council agreed:

> *'that NASCO should retain a website-accessible Rivers Database; to caveat the Rivers Database with the appropriate disclaimers; and that the Secretariat should make the Rivers Database available in a map-based form on the website as soon as possible.'*

The Rivers Database is now available on the website: NASCO Rivers Database – NASCO.

The Council also agreed:

> *'to establish a Working Group to address the following high-level issues with respect to the Rivers Database, and to report back to the Annual Meeting in 2022:*
>
> - *its purpose – e.g. communications, rather than a decision tool;*
> - *its scope – e.g. stock status in rivers; including impact factors; concentrating on a few clearly-defined metrics;*
> - *its data and coverage – e.g. stringent agreed stock classification or 'read across' and the categories;*
> - *its display and provision of the data – e.g. html, GIS version, spreadsheet data provision;*
> - *frequency of updates – e.g. every five years to provide updates for the State of Salmon report; and*
> - *other decisions.'*

The Rivers Database Working Group met by video conference on 23 and 24 November and 2 December 2021. The report of the meeting is attached as Annex 1. The Working Group made 12 recommendations which are highlighted in blue in the report annexed below.

Decisions

Council may wish to consider the 12 recommendations and agree on how to proceed in the following areas:

- the purpose of the Rivers Database (recommendation 1);
- the scope of the Rivers Database and the metrics required (recommendations 2 and 3);
- the data needed relative to each metric (recommendations 4 and 5);
- how the Rivers Database should be displayed (recommendations 6 and 7);
- how data should be provided and inputted to the Rivers Database (recommendation 8);
- the frequency of updates of the Rivers Database (recommendation 9); and
- other recommendations relevant to the development and maintenance of the Rivers Database (recommendations 10, 11, 12).

Secretariat
Edinburgh
5 April 2022

Annex 1

RDWG(21)05

Report of the Meeting of the Rivers Database Working Group

By Video Conference

23 & 24 November and 2 December 2021

1. Opening of the Meeting

1.1 The Chair, Livia Goodbrand, Canada, opened the meeting and welcomed members of the Working Group. She thanked them for agreeing to undertake the work assigned to them.

1.2 The Chair reminded participants about the background to the establishment of the Working Group. She noted that the Council first established a database of salmon rivers in 1989. The NASCO Rivers Database was originally envisaged as a centrepiece of the NASCO website to make it relevant to visit, to provide information on Atlantic salmon stocks and to raise NASCO's profile.

1.3 In 2016, the Council adopted a stock classification system to be used in the Rivers Database as proposed by the Working Group on Stock Classification, CNL(16)11. Parties / jurisdictions were asked to update their data for the Rivers Database using the newly agreed stock categories by 31 December 2017. Some Parties / jurisdictions replied in December 2017 and early 2018; however, the Secretariat was still seeking updates until March 2019. These updates were to provide the basis for NASCO's first 'State of North Atlantic Salmon' report to be published in 2019 as NASCO's major output for the International Year of the Salmon. Much of the data that had been expected to be provided was not. However, some Parties / jurisdictions had hundreds of rivers to report on and, therefore, an extensive dataset to manage. In 2020, the Council agreed that the Secretary should work with Parties / jurisdictions to explore why providing the requested data proved so challenging. The outcome of this investigation is reported in 'The Future for the NASCO Rivers Database', CNL(21)13.

1.4 At its Annual Meeting in 2021, CNL(21)62, the Council agreed:

- that NASCO should retain a website-accessible Rivers Database; to caveat the Rivers Database with the appropriate disclaimers; and that the Secretariat should make the Rivers Database available in a map-based form on the website as soon as possible; and
- to establish a Working Group to address the following high-level issues with respect to the Rivers Database, and to report back to the Annual Meeting in 2022:
    - its purpose – e.g. communications, rather than a decision tool;
    - its scope – e.g. stock status in rivers; including impact factors; concentrating on a few clearly-defined metrics;
    - its data and coverage – e.g. stringent agreed stock classification or 'read across' and the categories;

- frequency of updates – e.g. every five years to provide updates for the State of Salmon report; and
- other decisions.

1.5 The Council also agreed that the Secretariat would contact Parties and NGOs to seek nominees for the Working Group. The Terms of Reference were agreed, inter-sessionally, by Council in September 2021.

1.6 A list of the members of the Working Group is contained in Annex 1.

2. Adoption of the Agenda

2.1 The Working Group adopted its Agenda, RDWG(21)03 (Annex 2).

3. Consideration of the Terms of Reference for the Development of Recommendations to the Council

3.1 The Terms of Reference for the Working Group were as follows.

3.2 The Rivers Database Working Group is charged with the following Terms of Reference:

1. To describe the purpose or purposes of the Rivers Database with a view to including this description on the NASCO website and provide guidance for future revisions;
2. With reference to document CNL(16)11, make a recommendation for the scope of the Rivers Database and determine a set of succinct and clearly defined metrics that are needed to meet the purpose(s) of the Rivers Database;
3. With reference to documents CNL(16)11 and CNL(21)13, recommend the minimum data needed relative to each metric, and any flexibility associated with providing those data. In developing these data needs, the Working Group should consider the current fields and current stock classification categories (Annex 3);
4. Develop recommendations as to how the Rivers Database should be displayed (for example mapped with html or GIS) on the NASCO website, and whether the data should be made available on the website in other formats (such as a spreadsheet) to allow them to be used, manipulated, and analysed by external stakeholders, Parties / jurisdictions, and others;
5. Develop recommendations as to how data should be provided and inputted to the Rivers Database, ensuring that updates may be made efficiently and effectively;
6. With reference to document CNL(16)11, make recommendations on the frequency of updates of the Rivers Database, including when it should next be updated; and
7. Make any other recommendations relevant to the development and maintenance of the Rivers Database.

3.3 The Working Group may wish to consider the following documents, in addition to any others it considers relevant, in carrying out its work:

- 'The Future for the NASCO Rivers Database', CNL(21)13, noting, in particular, that:
  - currently only 11% of rivers in the Rivers Database contain information on the main factors adversely affecting the salmon stock; and
  - 54% of the stock classification data is not based, currently, on the agreed stock

classification categories.

- 'Report of the Working Group on Stock Classification', CNL(16)11. To promote efficient working and avoid repetition, the current Working Group may wish to note the following conclusions from that Working Group:
  - that any new stock classification categories in the Rivers Database would need to lend themselves to use for public relations purposes on the NASCO website and to the development of a status report, i.e. they should be clear and not too numerous;
  - that the classification system for use in the Rivers Database should be relatively simple and amenable to display through the existing web-based maps, which are an important outreach tool for use by a broad target audience, and of value to NASCO delegates, researchers and others;
  - that four categories ('High', 'Moderate', 'Low', 'Not at Risk') be used, based upon the risks to the abundance and diversity of those stocks. These four categories of risk to the existing stocks would be assigned by the use of two scores: a 'CL Attainment Score' (CAS) and an 'Impacts Assessment Score' (IAS). The use of an IAS was intended to address the issues associated with a classification based only on attainment of CLs;
  - that the categories 'Lost', 'Artificially Maintained' and 'Unknown' in addition to the four 'at risk' categories should be used;
  - that it 'does not suggest that there be any effort to standardise the scoring among Parties / jurisdictions and the rationale for each score would not be specified in the Rivers Database, although it is possible that a Party / jurisdiction may receive enquiries about this';
  - suggested basing the stock indicators on the average CL attainment over the previous five-year period so that data were not influenced by either one anomalously high or low year of returns; and
  - that the Implementation Plans have a duration of five years and that five years would be an appropriate frequency for updating the Rivers Database.
- 'The Report of the ICES Advisory Committee', CNL(14)8.

4. The Purpose of the Rivers Database

4.1 The Chair noted that the Terms of Reference asked the Working Group '*to describe the purpose or purposes of the Rivers Database with a view to including this description on the NASCO website and provide guidance for future revisions.*'

4.2 Three presentations were made. First, the Assistant Secretary demonstrated the current Rivers Database and associated spreadsheet. Second, Stephen Gephard (USA) made a presentation on the Working Group on Stock Classification and its 2016 Report (Annex 4). Third, the Secretary provided information on the relevance of the Rivers Database to the production of the State of North Atlantic Salmon Report.

4.3 In addition, two members of the Rivers Database Working Group were also members of the ICES Working Group on North Atlantic Salmon (WGNAS). They provided information on the work of WGNAS and its relevance to the Rivers Database. This included that WGNAS reports on the number of rivers meeting their conservation limits (CL) by jurisdiction, the number of these rivers that have a CL assigned to them and

the number of these rivers that meet their CL. This is provided as a time series (See ICES 2021, p 180). The Working Group was also informed that there is no prescribed method of stock classification that jurisdictions must use in providing these data to ICES. Rather, jurisdictions use their own approach. It was noted that whilst there are some differences in the approaches used by different jurisdictions, all are based on scientific best practice and guidance from ICES and NASCO. Therefore, they are broadly consistent.

4.4 Following these presentations, the Working Group considered the purpose of the Rivers Database. There was clear consensus that it should be an outreach tool which should:

- educate the public about wild Atlantic salmon in an interactive, engaging format;
- be the official NASCO record of where stocks are and what state they are in; and
- support the production of future NASCO State of North Atlantic Salmon Reports.

4.5 There was also clear consensus that the Rivers Database should not:

- be a warehouse of data for scientists;
- attempt to hold comprehensive data about salmon populations, since this is done by Parties / jurisdictions; or
- duplicate the work and outputs of ICES.

4.6 In light of the discussion, the Working Group made the following recommendation.

Recommendation 1: The purpose of the NASCO Rivers Database should be to support a map-based overview of the state of Atlantic salmon populations across the North Atlantic for a public audience. Additionally, it acts as the official NASCO record of the state of river stocks and provides data that can be used in the production of NASCO's State of North Atlantic Salmon Reports.

5. The Scope of the Rivers Database and the Metrics Required

5.1 The Chair noted that the Terms of Reference asked the Working Group to '*make a recommendation for the scope of the Rivers Database and determine a set of succinct and clearly defined metrics that are needed to meet the purpose(s) of the Rivers Database.*'

5.2 The Working Group considered the metrics in the current Rivers Database (Annex 3). It recommended highly that GIS shapefiles be requested from Parties / jurisdictions, such that the whole salmon river could be displayed on the Rivers Database map rather than displaying a pin at the river mouth, as is currently the case. If this recommendation was accepted, the Working Group agreed that a number of metrics could be removed, as shown in the table below. If this recommendation was not accepted, the Working Group agreed that 'River Catchment Area' should remain. It was also agreed that some of the current metrics were still relevant and that some new metrics were needed to fulfil the purpose of the Rivers Database.

5.3 In light of the discussion, the Working Group made the following recommendation.

Recommendation 2: The metrics in the table below should be included in the Rivers Database.

METRICS TO BE RETAINED

River ID	A unique number for each river should be retained for administration, but not displayed
Party	NASCO Party to be retained and displayed
Country	Retained and displayed
Region / Province	Retained and displayed
River Name	Retained and displayed
Latitude	Retained (possible use of WGS84)
Longitude	Retained (possible use of WGS84)
Salmon Stock Category	Retained and displayed (see below)
Other information	Retained and displayed. Provision of information optional. This would allow information to be added such as details of any designations or protected area; special stock characteristics; total conservation requirement; main impact factors (although main impact factors could also be provided on a regional or national basis – see below). The Working Group agreed that this section should be structured under headings to help the audience access the information. Categories for this are suggested below. Links to further information on a river or stock.
METRICS TO BE ADDED (if using the ordinal approach set out below)	
GIS shapefiles requested from Parties to allow the whole salmon river to be displayed	
Year	The year(s) in which the stock status assessment was conducted
Trend	The change in the status of the stock over time (see below)
Stocking Intervention	Stocking has been used as a management tool for this population in the last five years. Yes / No

5.4 In light of the discussion, the Working Group made the following recommendation.

Recommendation 3: The metrics in the table below should be removed from the Rivers Database, as long as the whole salmon river could be displayed.

METRICS TO BE REMOVED	
LocationEastOrWest	Redundant
Latitude_Decimal	Redundant (can be determined from retained metric)
Longitude_Decimal	Redundant (can be determined from retained metric)
Catchment Area	But retained if the whole river cannot be displayed
Total River Length	Not needed given the public outreach purpose
Axial River Length	Not needed given the public outreach purpose
Accessible River Length	Not needed given the public outreach purpose
Mean Annual Flow	Not needed given the public outreach purpose
Main Impact Factors	Flexibility on whether this is provided for each river. If provided, included under 'Other information'. Information on impacts would also be sought at a regional or national level (see below).
Total Conservation Requirement	Flexibility on whether it is provided. If provided, included under 'Other information'
1 SW Conservation Requirement	Not needed given the public outreach purpose
MSW Conservation Requirement	Not needed given the public outreach purpose
Special Stock Characteristics	Flexibility on whether it is provided. If provided, included under 'Other information'

6. Data Needed Relative to Each Metric

6.1 The Chair noted that the Terms of Reference asked the Working Group to '*recommend the minimum data needed relative to each metric, and any flexibility associated with providing those data.*'

6.2 The Working Group agreed that, unless otherwise stated, the data required relative to each metric should remain the same as requested in 2017. The Working Group considered a number of metrics where the data required might change.

6.3 The Working Group discussed a number of options for the data that could be requested from Parties / jurisdictions for 'Salmon Stock Category'. Stephen Gephard (USA) explained the Stock Classification Score that had been developed by the Working Group on Stock Classification, CNL(16)11. The Working Group recognised that while a standardised 'NASCO stock classification system' may be desirable in some regards, it was not practical. It was noted that:

- 54% of the stock classification data in the current Rivers Database is not based on the agreed stock classification categories set out in CNL(16)11;
- the task of assigning the Stock Classification Score developed by the Working Group on Stock Classification, CNL(16)11, was large and complex for some Parties / jurisdictions;

- some Parties / jurisdictions had stated that the Stock Classification Score was problematic since the Rivers Database assessment of stock status could be inconsistent with published national assessments; and
- some Parties / jurisdictions were concerned about the subjectivity of the Stock Classification Score, particularly the Impacts Assessment Score.

6.4 In considering 'Salmon Stock Category', the Working Group noted that Parties / jurisdictions reported data to ICES annually. As set out above, this included how many salmon rivers the jurisdiction had, how many salmon rivers have CLs set, and how many salmon rivers meet their CLs. However, it was acknowledged that the general public may not understand CLs, and therefore, 'probability of attaining CLs' was not an appropriate description of stock classification for a public outreach tool and a simpler explanation would be required.

6.5 The Working Group also considered that it would be preferrable for both the NASCO tool and the assessments carried out in each Party / jurisdiction, to present the same information for a given river. It was noted that although national assessments were not fully consistent, the approaches are broadly standardised, using NASCO and ICES guidance. The Working Group decided that use of a translation of the domestic stock assessments was appropriate for a public outreach tool providing that information on assessment methods was made available. This would allow information on status of river stocks at the national and NASCO level to be harmonised, as far as possible.

6.6 The Working Group agreed that two Salmon Stock Categories should be retained from the current database: 'Unknown' and 'Lost'. It agreed that 'Artificially Maintained' should be replaced with a tick box for all rivers indicating whether 'Stocking has been used as a management tool for this population in the last five years'.

6.7 The Working Group agreed that there should be three 'risk categories', providing an ordinal indicator of the status of the salmon stock in each river. Each Party / jurisdiction would be free to use its own approach to categorising stocks – likely via a translation of its own assessment method. The Party / jurisdiction would be asked to provide information on how the stock classification methods used in their domestic assessments relate to the NASCO categories.

6.8 In light of the discussion, the Working Group made the following recommendation.

Recommendation 4: The following data should be used for the Stock Classification Category.

Salmon Stock Category	**Description for public**	**Description for Parties / jurisdictions**
Low	Risks to the population are considered to be low or absent	Rivers in which there are stocks of Atlantic salmon and risks to the abundance and / or diversity of the stocks are considered to be low or absent
Moderate	Risks to the population are considered to be moderate	Rivers in which there are stocks of Atlantic salmon and risks to the abundance and / or diversity of the stocks are considered to be moderate
High	Risks to the population	Rivers in which there are stocks of Atlantic salmon and risks to the

	are considered to be high	abundance and / or diversity of the stocks are considered to be high
Lost	Atlantic salmon no longer exist in this river	Rivers which are known to have previously had stocks of Atlantic salmon that currently have none
Unknown	There are known or believed to be Atlantic salmon. There are not enough data to assess their status or risk	Rivers in which there are known or believed to be stocks of Atlantic salmon. There are not enough data with which to assess their status or level of risk

6.9 The Working Group agreed that the Rivers Database should include some indication of the change in status of the salmon stock over time. It considered how this might best be achieved and noted that there is no standard interpretation of a trend. In order to keep this simple and avoid over burdening the Parties / jurisdictions, the Working Group agreed that the change in status over time should be indicated by showing the 'Salmon Stock Category' in different time periods, i.e. the category last time and the category this time.

6.10 The Working Group considered the data that should be requested for the 'Other information' metric. It was agreed that 'Other information' should be requested in a structured format and that data provision should be optional. If data were not provided, empty cells should be shown on the website, indicating that no information had been provided. The Working Group considered this approach to be flexible, open and transparent. The Working Group proposed the following structure for the 'Other information' metric:

- Summary of Significant Recovery and / or Management Actions: e.g. habitat restoration, stocking interventions, collaborative conservation or management strategies;
- Special Designations: designation under Party / jurisdiction legislation e.g. status under Endangered Species Act, Species at Risk designation, COSEWIC assessment, Special Areas of Conservation etc.;
- Specific Threats: e.g. threats that are unique or specific to the river, beyond those identified at regional level; and
- Total Conservation Requirement: value; achieved / not achieved; units.

6.11 It was noted that in the current database, the main impact factors were reported only for 11 % of the rivers. For the revised database, in addition to the metrics and data for each river, it was agreed that information on main impact factors should be requested at a regional or national level and displayed on the map in this way, rather than on a river-by-river basis (unless this information was provided as 'Other information'). Additionally, as set out above, Parties / jurisdictions would be asked to provide information on the methods used to arrive at the Stock Classification Category.

6.12 In light of the discussion and in summary, the Working Group made the following recommendation.

Recommendation 5: The following metrics and data should be used for the Rivers Database.

Metric	Data
River ID	Unique number for each river
Party	NASCO Party
Country	Country
Region / Province	Region or province
River Name	A river is named as the mainstem of the system of rivers and tributaries where it reaches the sea
Location Latitude	2 digits of degrees plus 2 digits of minutes, zero-padded where required e.g 0464, not 464. Possible use of WGS84
Location Longitude	2 digits of degrees plus 2 digits of minutes, zero-padded where required. Possible use of WGS84
Salmon Stock Category	Low / Moderate / High / Lost / Unknown / Stocking Intervention tick box Each Party / jurisdiction is free to use its own approach to categorising stocks – likely via a 'read across' from its own assessment method
Stocking Intervention	Stocking has been used as a management tool for this population in the last five years. Yes / No
Salmon Stock Category Trend	'Salmon Stock Category' in different time periods, i.e. the category last time and the category this time
Other Information	Provision of information would be optional: • Summary of Significant Recovery and / or Management Actions; • Special Designations; • Specific Threats; and • Total Conservation Requirement
Year	The year(s) in which the stock status assessment was conducted
Links	Links to further information on the specific river
Overarching information	
GIS shapefile requested from Parties / jurisdictions to display whole salmon river (requirements to be defined in consultation with web / GIS expert)	
Main impact factors adversely affecting salmon stocks at a regional or national level	
Information on the methods used to arrive at the Stock Classification Category	
Links to additional overarching information (optional)	

7. How the Rivers Database Should be Displayed

7.1 The Chair noted that the Terms of Reference asked the Working Group to '*develop*

recommendations as to how the Rivers Database should be displayed (for example mapped with html or GIS) on the NASCO website, and whether the data should be made available on the website in other formats (such as a spreadsheet) to allow them to be used, manipulated, and analysed by external stakeholders, Parties / jurisdictions, and others.'

7.2 Throughout their discussions, the Working Group considered how the Rivers Database should be displayed. They noted that a specialist would likely need to be contracted to develop the mapping for the website in order to meet the new requirements. Specialist knowledge would also be needed to enable the Rivers Database to be as searchable and accessible as possible.

7.3 In light of the discussion, the Working Group made the following recommendation.

Recommendation 6: The Rivers Database should be displayed online with the following features, where technically feasible:

a) a map-based display, showing the whole river, with the ability to turn off all but one set of river categories;

b) river names appear when cursor hovers over a river;

c) when the river is selected, full data are shown, as set out in the table above;

d) different layers are available for the stock classification categories in different years;

e) impacts adversely affecting salmon stocks are displayed at a regional level;

f) jurisdictional boundaries (nation, region) are shown and, when selected, region is identified and summary regional information is displayed, including impacts adversely affecting salmon stocks, management authorities, and links to websites;

g) a summary display of rivers within a region is available, e.g. number of rivers, number of rivers in each stock classification category, including in summary charts;

h) other NASCO information is mapped such as the NASCO convention area, Commission areas, etc;

i) there is capability to download maps and data in a useable format (e.g. .jpegs and .csv files);

j) the description of the Rivers Database should be caveated, for example, it should state the purpose of the database explicitly, how it is compiled, that it does not consider the size of stocks, and how it links to other sources of information on the status of stocks (e.g. ICES WGNAS reports, national conservation assessments);

k) Parties / jurisdictions should be recognised as the source and owners of the data;

l) it should be compatible on phones, tablets etc; and

m) it should be accessible – for example, takes into account colour blindness etc.

7.4 The Working Group considered whether the data in the Rivers Database should be made available on the website in other formats to allow it to be used, manipulated, and analysed by external stakeholders, Parties / jurisdictions, and others. It was acknowledged that the data would be publicly available when the Rivers Database was on the website, so making it easier to use and download was sensible. If one of the purposes of the Rivers Database is as an outreach tool for NASCO, downloads of data or images should have the NASCO logo attached. The Working Group also noted that

the Rivers Database contained summary data at the main river stem level and that this could be inconsistent with data available at a more detailed jurisdiction level.

7.5 In light of the discussion, the Working Group made the following recommendation.

Recommendation 7: Data from the Rivers Database should be available for export. This should come with a note explaining that it is summary data and that detailed support and data could be sought from the relevant authority that owns the data. Additionally, it should be possible to download a report / map / image via a query function on the Rivers Database, with the NASCO logo embedded. This could be included in presentations, projects etc. and would thereby increase NASCO's profile.

8. How Data Should be Provided and Inputted to the Rivers Database

8.1 The Chair noted that the Terms of Reference asked the Working Group to '*Develop recommendations as to how data should be provided and inputted to the Rivers Database, ensuring that updates may be made efficiently and effectively.*'

8.2 The Working Group considered the process of how data were provided and inputted to the Rivers Database in the most recent update between 2017 and 2019. This involved the Secretariat emailing Parties with a spreadsheet containing current data. The email explained the system and requested updates by a specified date. The Secretariat received, checked, corrected and amalgamated the data provided by the Parties to create a Rivers Database for all Parties in spreadsheet form. A web designer was contracted to develop the map-based Rivers Database for the website, in consultation with the Secretariat.

8.3 It was noted that, in previous iterations, it had been possible for Parties to update their own data within the Rivers Database. If this were possible again, it would allow Parties / jurisdictions to update the NASCO database at the same time as their own website was updated. Updating the NASCO Rivers Database could therefore be built into national processes.

8.4 In light of the discussion, the Working Group made the following recommendation.

Recommendation 8: Parties / jurisdictions should be able to input some data to the Rivers Database directly themselves, securely (if technically feasible) and potentially in draft (subject to technical advice), to be finalised by the Secretariat. Additionally, the Secretariat must also be able to input all data to the Rivers Database, including on behalf of Parties / jurisdictions who do not wish to do so themselves.

9. Frequency of Updates of the Rivers Database

9.1 The Chair noted that the Terms of Reference asked the Working Group to '*make recommendations on the frequency of updates of the Rivers Database, including when it should next be updated.*'

9.2 The Working Group on Stock Classification, CNL(16)11, had noted that Implementation Plans have a duration of five years and that five years would be an appropriate frequency for updating the Rivers Database. However, the current Working Group agreed that more frequent updates were important given its purpose as a public outreach tool. The Working Group noted that if the recommendations set out above were agreed, updates of the Rivers Database would not be onerous. Therefore, updates in line with national assessments and built into national processes should be feasible.

9.3 In light of the discussion, the Working Group made the following recommendation.

Recommendation 9:

a) the Secretariat should be requested to send an annual reminder to Parties / jurisdictions to update the stock classification category in the Rivers Database following their national salmon stock assessment. This may mean an annual update for some Parties / jurisdictions and less frequent updates for others;

b) a more thorough review of all metrics in the Rivers Database should be carried out every five years, giving Parties / jurisdictions the opportunity to change or update any information contained within the database; and

c) if the recommendations of the Working Group are accepted, the next full five-yearly review should take place once the initial design of the new Rivers Database platform is complete.

10. Other Recommendations Relevant to the Development and Maintenance of the Rivers Database

10.1 The Chair noted that the Terms of Reference asked the Working Group to '*make any other recommendations relevant to the development and maintenance of the Rivers Database.*'

10.2 A number of issues were considered. First, the Working Group considered the current title: 'The Rivers Database'. It noted that this did not describe the platform well and may not maximise website hits via search engines. In light of the discussion, the Working Group made the following recommendation.

Recommendation 10: The name of the Rivers Database should be changed to be a short, attractive, descriptive title that would be picked up by search engines. Whilst proposing that IT and Communications experts be consulted, it proposed a new title: 'The Wild Atlantic Salmon Atlas'.

10.3 Second, the Working Group agreed that the Rivers Database should be as accessible as possible. This included being accessible to non-English speakers and being an outreach tool for the public in all Parties and not only for those who speak English. In light of the discussion, the Working Group made the following recommendation.

Recommendation 11: The Rivers Database should be made available in the official languages of the NASCO Parties, and the Secretariat should work with the Parties to enable this.

10.4 Third, if the Council accepts the recommendations, such that a new platform for the Rivers Database is developed, the Working Group made the following recommendation.

Recommendation 12: That this Group is re-purposed to act as a Steering Committee for the development of the new Rivers Database.

11. Other Business

11.1 There was no other business.

12. Report of the Meeting

12.1 The Working Group agreed a report of its meeting.

13. Close of the Meeting

13.1 The Chair thanked the members of the Working Group for their work and closed the meeting.

Annex 1 of RDWG(21)05

List of Participants

Helge Dyrendal	Norwegian Environment Agency, Norway
Stephen Gephard	Fisheries Consultant, USA
Livia Goodbrand	Fisheries and Oceans Canada, Canada (Chair)
Janina Gray	Salmon and Trout Conservation, UK
Nora Hanson	Scottish Government, UK
John McCartney	Loughs Agency, European Union
Stuart Middlemas	Scottish Government, UK
Sergey Prusov	PINRO, Russian Federation
Emma Hatfield	NASCO Secretary
Wendy Kenyon	NASCO Assistant Secretary

RDWG(21)03

Meeting of the Rivers Database Working Group

By Video Conference

23 & 24 November and 2 December

Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Consideration of the Terms of Reference for the Development of Recommendations to the Council
4. The Purpose of the Rivers Database
5. The Scope of the Rivers Database and the Metrics Required
6. Data Needed Relative to Each Metric
7. How the Rivers Database Should be Displayed
8. How Data Should be Provided and Inputted to the Rivers Database
9. Frequency of Updates of the Rivers Database
10. Other Recommendations Relevant to the Development and Maintenance of the Rivers Database
11. Other Business
12. Report of the Meeting
13. Close of the Meeting

Fields Displayed and Description of Data in Each Field in the Current Rivers Database

Field Name	***Description***
River	A river is named as the main stem of the system of rivers and tributaries where it reaches the sea
Salmon Stock Category	Status of the salmon stock relative to conservation limits, or, where these have not been established, other reference points or indicators of abundance
Country	Country
Region / Province	Region or province
Latitude	2 digits of degrees plus 2 digits of minutes, zero-padded where required e.g. 0464, not 464
Longitude	2 digits of degrees plus 2 digits of minutes, zero-padded where required
Catchment Area	Square kilometres (km^2)
Total River Length	Kilometres (km)
Axial River Length	Kilometres (km)
Accessible River Length	Kilometres (km)
Mean Annual Flow	Cumecs (m^3s^{-1})
Main Impact Factors	A description of the main factors adversely affecting the salmon stock
Total Conservation Requirement	Total number of salmon
1 SW Conservation Requirement	Number of 1 sea-winter salmon
MSW Conservation Requirement	Number of multi-sea-winter salmon
Special Stock Characteristics	For example, run timing

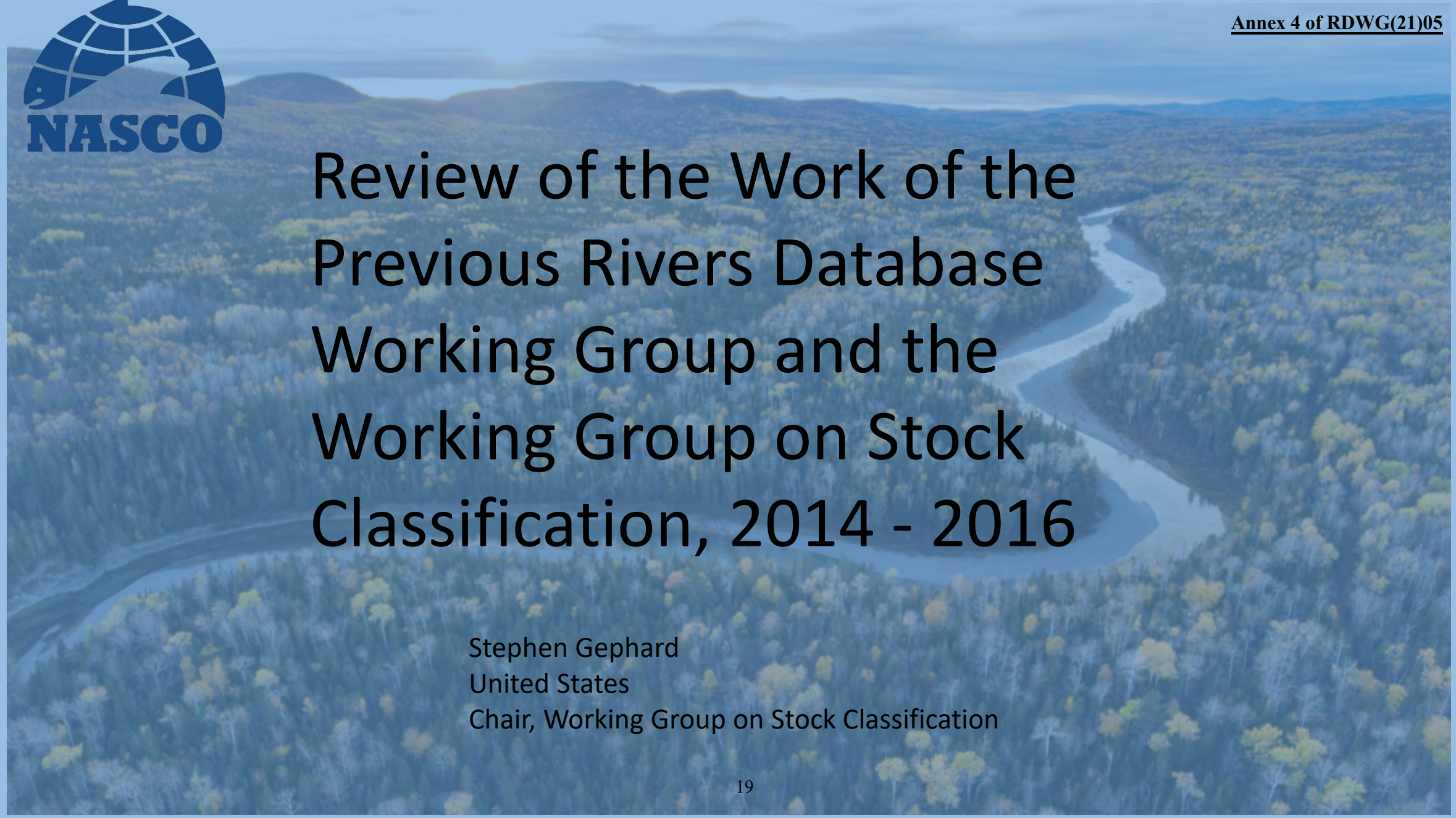
Other Information	For example, details of any designations; protected areas

Source: Adapted from 'Report of the Working Group on Stock Classification', CNL(16)11

The 2016 Stock Classification Score

Salmon Classification Category	***Description***	***Map Colour***
Not at Risk	Rivers in which there are stocks of Atlantic salmon with no risks to the abundance and / or diversity of the stocks	Green
Low Risk	Rivers in which there are stocks of Atlantic salmon and risks to the abundance and / or diversity of the stocks are considered to be low	Yellow
Moderate Risk	Rivers in which there are stocks of Atlantic salmon and risks to the abundance and / or diversity of the stocks are considered to be moderate	Orange
High Risk	Rivers in which there are stocks of Atlantic salmon and risks to the abundance and / or diversity of the stocks are considered to be high	Red
Artificially Sustained	Rivers which are known to have had stocks of Atlantic salmon which have been lost and in which the current stocks are only sustained through hatchery stocking	Grey
Lost	Rivers which are known to have previously had stocks of Atlantic salmon that currently have none	Black
Unknown	Rivers in which there are known to be stocks of Atlantic salmon but for which there is no information on which to assess their abundance.	Blue

Source: Report of the Working Group on Stock Classification, CNL(16)11



Review of the Work of the Previous Rivers Database Working Group and the Working Group on Stock Classification, 2014 - 2016

Stephen Gephard
United States
Chair, Working Group on Stock Classification

I. Data fields to be filled for each river in the database

II. Salmon Stock Category (revised Stock Re-Classification system)

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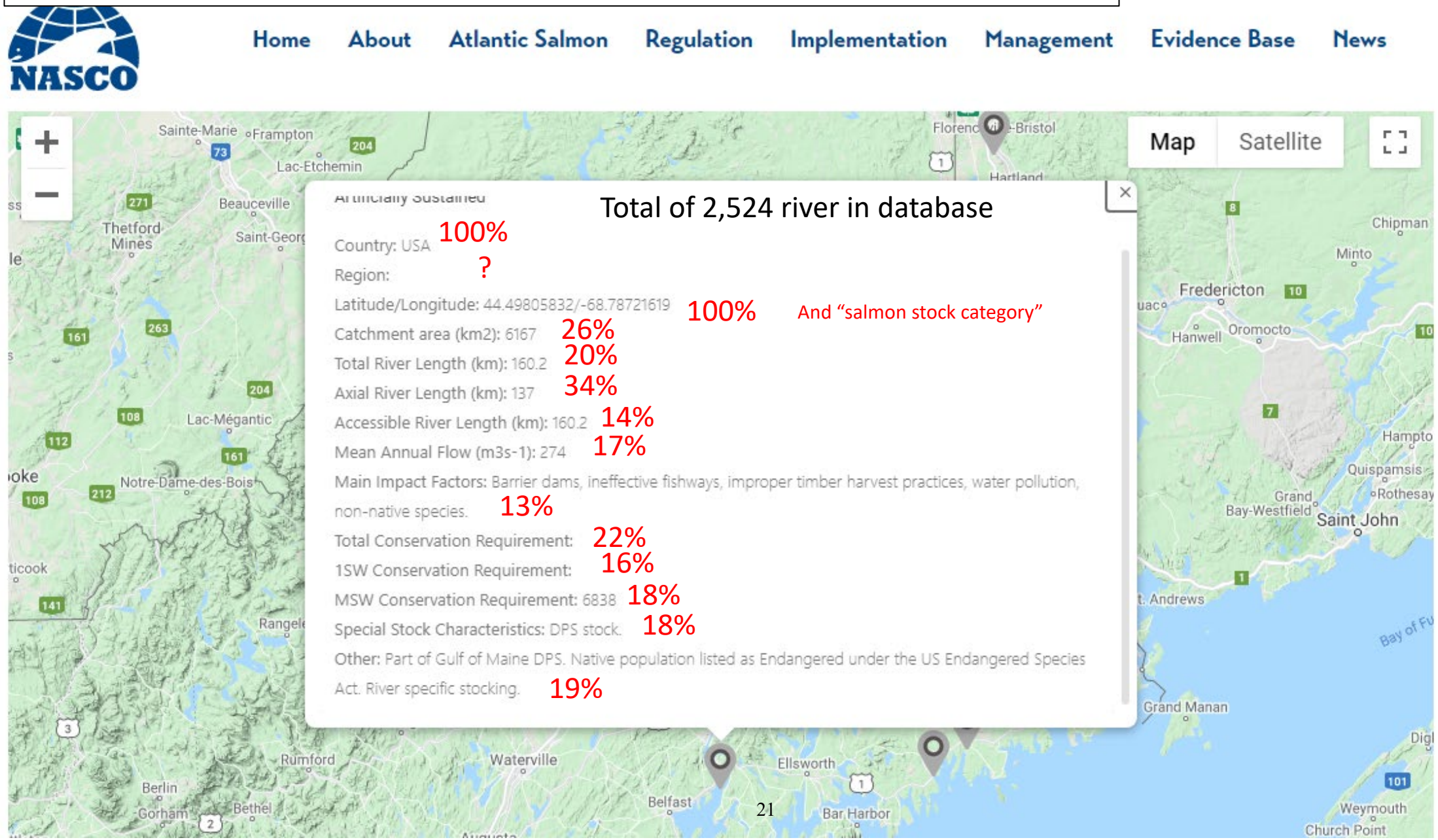

II. Salmon Stock Category (revised Stock Re-Classification system)

PURPOSE

- Work intended to support the refinement of the Rivers Database- interactive online map,
- As useful description of the Atlantic salmon rivers of the world needed a way to describe the status of the salmon populations in those rivers,
- The objective was to develop a standardized classification system to provide guidance to experts in each contribution country when providing descriptive information about the salmon in their rivers,
- A reporting system in which local experts used different ways to describe the status of the salmon populations would not be useful to anyone: professionals or the public at-large.

CHALLENGES

- At the time, the intent of the Rivers Database was to provide a lot of information on each river. To provide a kind of “one-stop shopping” for information on salmon rivers that would become the ultimate authority.

- It order to standardize and make it easier for local experts to enter data, drop-down boxes with a large number of possible responses (to click on) were provided. In some categories (such as “impacts”), the possibilities differed from country to country so many options were provided, making the exercise tedious. The same approach was taken with Stock Classification. There was a desire to provide classification categories to cover every possible scenario and be descriptive of the level of risk. This was difficult.

- There was a list of categories already in use for the Rivers Database but there was dissatisfaction with it and the Working Group was charged with reviewing it and attempting to improve it,

CHALLENGES (continued)

- Parties with a large number of salmon rivers, many remote, were resistant to many ideas due to the workload, stating that approaches that could be managed by parties with only a few salmon rivers would be a burden for them,

- The work of the Working Group was made difficult due to contrary views, a lack of easy consensus, and often sporadic participation by all members,

- The final report CNL(16)11 was agreed upon, but somewhat reluctantly by some members

DELIBERATIONS

- There was a list of seven Stock Classification categories already in use for the Rivers Database but there was dissatisfaction with it and the Working Group was charged with reviewing it and attempting to improve it,

- It was quickly decided to drop the category of “Not Present but Potential” because the focus should be on wild, native salmon, not the potential introduction of salmon into habitat in which the species never was found.

- The category of “Maintained” was changed to “Artificially Sustained” with a subtle change in meaning. Previously, “Maintained” was envisioned to include the rivers that were lost but where a formal restoration program was underway, such a the Connecticut (US), Penobscot (US), the Thames (UK), etc. “Artificially Sustained” was originally envisioned to include all rivers in which the stocking of hatchery fish was conducted to augment sea-returns, which increased the list considerably. A river like the Spey (UK), which had a natural sustained run of wild salmon but received hatchery stockings in an effort to increase return for the rod, was included. This was later revised to include only rivers that had lost its native run.

DELIBERATIONS (continued)

- It was easily agreed that the category of “lost” must be maintained. These are rivers that are known to have supported native salmon runs but there are no more salmon in these rivers.

- It was immediately recognized that there were many rivers in many countries for which this information did not exist, and the category “Unknown” must be maintained,

- Some Parties felt that if a country had many rivers of “unknown” status, it would reflect unfavorably upon them and the Working Group struggled with this category but ultimately chose to include it,

- This left the rivers for which there were still wild salmon.

DELIBERATIONS (continued)

- There was a desire to be more descriptive in terms of the risk posed to these populations. Which rivers were healthy and at no risk and which rivers were at risk of losing their salmon? Some way of describing this risk was desired.

- The Working Group was asked to consult with ICES.

- For the purposes of providing catch advice to NASCO, ICES categorises Atlantic salmon stock groups as being: at full reproductive capacity; at risk of suffering reduced reproductive capacity; or suffering reduced reproductive capacity. The suggestion that we adopt categories to align with that process was rejected.

- ICES also noted that rather than 're-invent the wheel', consideration should be given to adopting one of the species classifications currently in uses elsewhere, including those used by the Oslo and Paris Commission (OSPAR), the EU Habitats Directive, the Convention on the Conservation of European Wildlife and Natural Habitats and the IUCN Red Data Books/Lists and Categories. These were deemed not specific-enough to Atlantic salmon to be of value.

DELIBERATIONS (continued)

- There was energetic debate on whether or not to tie such a descriptive system to data and the degree to which a river was achieving its Conservation Limit (CL) was proposed. This debate consumed an enormous amount of time. Then, as in now, the debate revolved around what is the purpose of the Rivers Database and who is the intended audience.

- It was pointed out that a river with many salmon but was not achieving is CL should be in a different category than a river with many salmon but was achieving its CL.

DELIBERATIONS (continued)

- We debated taking into account the causes of lack of achieving the CL. Closure of a fishery, dams, and whether past degradations had left a lasting, deleterious genetic impact on the population that would continue to reduce the size of the population long after the degradation ceased. Frankly, we spent a lot of time arguing fine details.

- In an effort to address these concerns, a two-tier classification system was agreed upon: (1) an exercise in 'scoring' the rivers on their toward achieving the CL, or the **"CL Attainment Score (CAS)",** (2) another exercise in which level or severity of the impacts were scored, or the **"Impacts Assessment Score (IAS)".**

- These two scores would be considered together to assign the river into one of the four remaining stock classification categories.

Impacts Assessment Score (IAS)

Level of Impacts to the Run	Category Score
Heavily impacted	3
Moderately impacted	2
Lightly impacted	1
Not impacted	0

These scores are assigned by the host agency without strict guidelines but rather relying on best professional judgment. A river may receive a high IAS by having low to moderate impacts from more than one factor or having severe impact from one factor. Each agency can decide how to score its rivers, from its perspective. The biologists who score the rivers will be expected to keep records of their reasons for the score and scorecards to respond to inquiries but there is no intention that the detailed reasoning for each score would be imported into NASCO's Rivers Database.

CL Attainment Score (CAS)

Range of CL attainment	Risk Description	Category Score
<25%	High	3
25 – 75%	Moderate	2
75 – 100%	Low	1
>100%	None	0

It was understood that CLs will not be available for many rivers but this system *required* that a value be entered so for rivers without a calculated CL, biologists would have to use their best professional judgment to assign a range of CL attainment. The database could indicate which rivers had 'calculated' CLs and which had 'estimated' CLs.

Stock Classification Score (SCS)

These two scores are considered in the scoring table below:

CAS Score	IAS Score			
	0	1	2	3
3	3	4	5	6
2	2	3	4	5
1	1	2	3	4
0	0	1	2	3

The sum of the two scores determines the category in which a river is placed.
The colors helps with category assignment on the next page.

This score should say ≥3

Stock Classification Score	*Salmon Classification Category*	*Description*	*Map Colour*
0	Not at Risk	Rivers in which there are stocks of Atlantic salmon for which Stock Classification Scores of 0 have been assigned because there are no risks to the abundance and/or diversity of the stocks	Green
1	Low Risk	Rivers in which there are stocks of Atlantic salmon for which Stock Classification Scores of 1 have been assigned because risks to the abundance and/or diversity of the stocks are considered to be low	Yellow
2	Moderate Risk	Rivers in which there are stocks of Atlantic salmon for which Stock Classification Scores of 2 have been assigned because risks to the abundance and/or diversity of the stocks are considered to be moderate	Orange
3	High Risk	Rivers in which there are stocks of Atlantic salmon for which Stock Classification Scores of 3 have been assigned because risks to the abundance and/or diversity of the stocks are considered to be high	Red
N/A	Artificially Sustained	Rivers which are known to have had stocks of Atlantic salmon which have been lost and in which the current stocks are only sustained through hatchery stocking	Gray
N/A	Lost	Rivers which are known to have previously had stocks of Atlantic salmon that currently have none	Black
N/A	Unknown	Rivers in which there are known to be stocks of Atlantic salmon but for which there is no information on which to assess their abundance.	Blue

Re-consider these?

It seems likely that these categories may remain since they require little work on the part of the Parties and seem self-explanatory.

Stock Classification Score	*Salmon Classification Category*	*Description*	*Map Colour*
0	Not at Risk	Rivers in which there are stocks of Atlantic salmon for which Stock Classification Scores of 0 have been assigned because there are no risks to the abundance and/or diversity of the stocks	Green
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