



# NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

[www.nmbaqcs.org](http://www.nmbaqcs.org)

## Fish Component Ring Test Protocol

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**March 2021**



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## Contents

1. Objective.....	3
2. Protocol.....	3
3. Preparation.....	4
4. Fish Ring Test Interim Reports.....	5
5. Fish Ring Test Bulletin Reports.....	5
6. Timescale.....	6
7. Previous Fish Ring Test Bulletins.....	6

## 1. Objective

The aims of the Fish Ring Test (F-RT) exercise are:

- to examine the consistency in the identification of species;
- to highlight identification problems and literature updates for particular taxonomic groups or juvenile stages;
- to familiarise participants with species that they may not have encountered previously;
- to provide specimens that can be incorporated into participants own reference collections and/or used as training material.

The ring test is a training exercise and the results are not used to assess the performance of a laboratory. The bulletin includes a graph with categories of 'low', 'mid' and 'high', according to numbers of identification differences but this is provided only for interest and to show degrees of variation. The Fish Ring Test is created, circulated, assessed and reported by the scheme component's contractor (currently APEM Ltd.). Any significant issues raised are reviewed by the component contract manager, on behalf of the NMBAQC committee.

## 2. Protocol

Each participant receives samples of 15 un-named specimens in individually labelled bags or pots, numbered 1-15. Each of the 15 un-named specimens circulated (e.g. Specimen 1) will be the same species for all participants, ideally all from the same initial catch. Each individual specimen circulated will be of equivalent condition and size for all participants. Specimens of some species may be small and damaged, to reflect real sample material collected using standard techniques, but this will be equal between laboratories and stated in the specimen details. The specimens circulated may include duplicate examples of the same species at different growth stages.

Problem taxa highlighted by other Scheme exercises may be prepared as targeted ring tests to address identification difficulties or literature issues.

Notes on sampling gear, salinity, collection area and any other pertinent information will be provided on a 'Habitat Notes' sheet.

Participants are asked to identify each specimen to species level and return results forms with species names. They should indicate uncertain identifications through use of the confidence level

column, not through identification to higher taxonomic levels. The confidence levels indicate the taxonomic level to which a specimen would have been identified by the participant had it been present in one of their samples. Participants may also list literature or guides that they used (if non-standard) in another column on the form. Participating laboratories may submit up to ten separate data sets for each exercise, enabling entries from several individual analysts per participating laboratory. All data should be submitted electronically to [nmbaqc@apemltd.co.uk](mailto:nmbaqc@apemltd.co.uk).

Participant identifications are compared with the original NMBAQC identifications. Differences are noted at genus and species levels to give two totals for each participant (taxonomic errors). Synonyms and mis-spellings are also noted but not counted as differences (taxonomic discrepancies). For example, if *Chelon ramada* were to be circulated, a participant's identification of '*Liza ramada*' would be corrected but not included in the list of differences; an identification of '*Chelon auratus*' would count as one species level difference (the genus being correct); an identification of '*Sparus aurata*' would count as one species level difference and one genus level difference.

The reports (ring test interim reports and bulletins) include a sheet listing all the species distributed, the participant's identifications and any differences between the two. A summary of the total number of differences for each species circulation for all participants is also given, so that each participant can see if they were alone in making a particular 'incorrect' identification or whether other participants also had difficulty. The bulletin also provides detailed reasons, including images of F-RT specimens, as well as of specimens of other species recorded by participants (where available); lists up to date literature are also included, where relevant. Ring test bulletins are published on the Scheme's website for reference.

### 3. Preparation

- all specimens will be sent frozen or in **70% Industrial Denatured Alcohol (IDA)** in individual sealed bags (frozen) or pots;
- all specimens will be labelled with each participant's Laboratory Code, the exercise number (e.g. F-RT13), the specimen number and the exercise deadline;
- digital images of each specimen will be provided to aid identification;
- an electronic form will be provided on which participants should supply their identifications;
- an electronic habitat notes sheet will be provided to each participant to aid identification.

#### **4. Fish Ring Test Interim Reports**

Fish Ring Test Interim Reports are produced separately for each participant. They will include the participant's original data submission, and the habitat notes provided by the contractor. NMBAQC identifications will be included in a table alongside the participant's original identification data (OD). Agreed identifications will contain a dash in the appropriate OD cell; edited identifications will have the participants identification noted. The table will also include the numbers of Genus and Species differences for the whole exercise (all participants).

Participants are encouraged to discuss reasons for their identifications, against NMBAQC identifications, if they believe the contractor's identifications to have been erroneous. These will be further investigated. If necessary, third party expert opinion will be sought and corrected identifications discussed in the final F-RT Bulletin.

#### **5. Fish Ring Test Bulletin Reports**

The Fish Ring Test bulletin will contain a list of specimens provided along with the total number of differences in genus and species identifications for each species circulation. A chart (Figure 1) categorizing (anonymous) participants as low, mid or high, according to numbers of species then genus identification differences will be included (for interest only), along with tables indicating differences per participant. Table 1 has results arranged with specimens as columns; Table 2 with participants as columns.

The main part of the bulletin is a breakdown of each species circulation sent. Images of one specimen from each species circulation will be included, alongside images of any different species named by participants for each circulation, where available; where possible, these will be of specimens of the same size as the F-RT species circulation. A discussion will be included for each species circulation to summarise reasons for the name used by NMBAQC, compared to participants' alternatives, and to note out of date nomenclature and spelling errors. Relevant identification literature will be cited to help aid future species identifications.

Any taxonomic or identification policy problems highlighted by the species circulated or comments raised by participants will be discussed (F-RT11 onwards). Where possible, detailed notes on the

diagnostic features used for problematic groups will be included with accompanying images (F-RT11 onwards).

Fish Ring Test bulletins are designed as a reference document for taxonomic identifications, particularly with problem taxa.

## 6. Timescale

Participants should send their results to [nmbaqc@apemltd.co.uk](mailto:nmbaqc@apemltd.co.uk), via the electronic sheet provided by the deadline supplied with the circulation (generally about two months after circulation of specimens).

Interim reporting should be completed within three weeks of the results deadline. The Fish Ring Test bulletin should be issued within two months of the interim report.

Queries regarding Fish Ring Test identifications provided in the interim reports must be submitted to [nmbaqc@apemltd.co.uk](mailto:nmbaqc@apemltd.co.uk) within one week of issue of the report. It might be required that participants send problem specimens back before issue of the Fish Ring Test Bulletin, to enable resolution of identification discrepancies. Any queries submitted later than one week after the issue of interim reports may cause a serious delay to the production of the Fish Ring Test bulletin.

Specimens should be incorporated into participants own reference collection as an aid to future identifications and use as training material.

If a participant requires an extension to the timescale, they should contact [nmbaqc@apemltd.co.uk](mailto:nmbaqc@apemltd.co.uk) as soon as possible.

## 7. Previous Fish Ring Test Bulletins

[F-RT01](#) (previously RTB#28)

[F-RT02](#) (previously RTB#31)

[F-RT03](#) (previously RTB#33)

[F-RT04](#)

[F-RT05](#)

[F-RT06](#)

[F-RT07](#)

[F-RT08](#)

[F-RT09](#)

[F-RT10](#)

[F-RT11](#)

[F-RT12](#)

[F-RT13](#)