# NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

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# Fish Ring Test Bulletin – FRT16

1st July 2024

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**MODULE / EXERCISE DETAILS**

| | |
|---|---|
| **Module:** | **Fish Ring Test (FRT)** |
| **Exercises:** | **FRT16** |
| **Specimens Circulated:** | **17th July 2023** |
| **Data Submission Deadline:** | **17th September 2023** |
| **Number of Subscribing Laboratories:** | **8** |
| **Number of Submissions Received:** | **12*** |

***multiple data entries per laboratory permitted**

# Contents

**Table 1. Summary of differences**

| Specimen | Genus | Species | Total differences for 12 returns | |
|---|---|---|---|---|
| | | | Genus | Species |
| F-RT1601 | *Solea* | *solea* | **3** | **3** |
| F-RT1602 | *Hippoglossoides* | *platessoides* | **0** | **0** |
| F-RT1603 | *Scomber* | *scombrus* | **0** | **0** |
| F-RT1604 | *Ammodytes* | *tobianus* | **0*** | **0*** |
| F-RT1605 | *Microstomus* | *kitt* | **4** | **4** |
| F-RT1606 | *Microchirus* | *variegatus* | **0** | **0** |
| F-RT1607 | *Sardina* | *pilchardus* | **6** | **6** |
| F-RT1608 | *Echiichthys* | *vipera* | **0** | **0** |
| F-RT1609 | *Arnoglossus* | *laterna* | **0** | **0** |
| F-RT1610 | *Engraulis* | *encrasicolus* | **0** | **0** |
| F-RT1611 | *Gasterosteus* | *aculeatus* | **0** | **0** |
| F-RT1612 | *Echiichthys* | *vipera* | **1** | **1** |
| F-RT1613 | *Pomatoschistus* | *microps* | **0** | **6** |
| F-RT1614 | *Pleuronectes* | *platessa* | **0** | **0** |
| F-RT1615 | *Platichthys* | *flesus* | **9** | **9** |
| | | **Total differences** | **23** | **29** |
| | | **Average differences /lab.** | **1.53** | **1.93** |

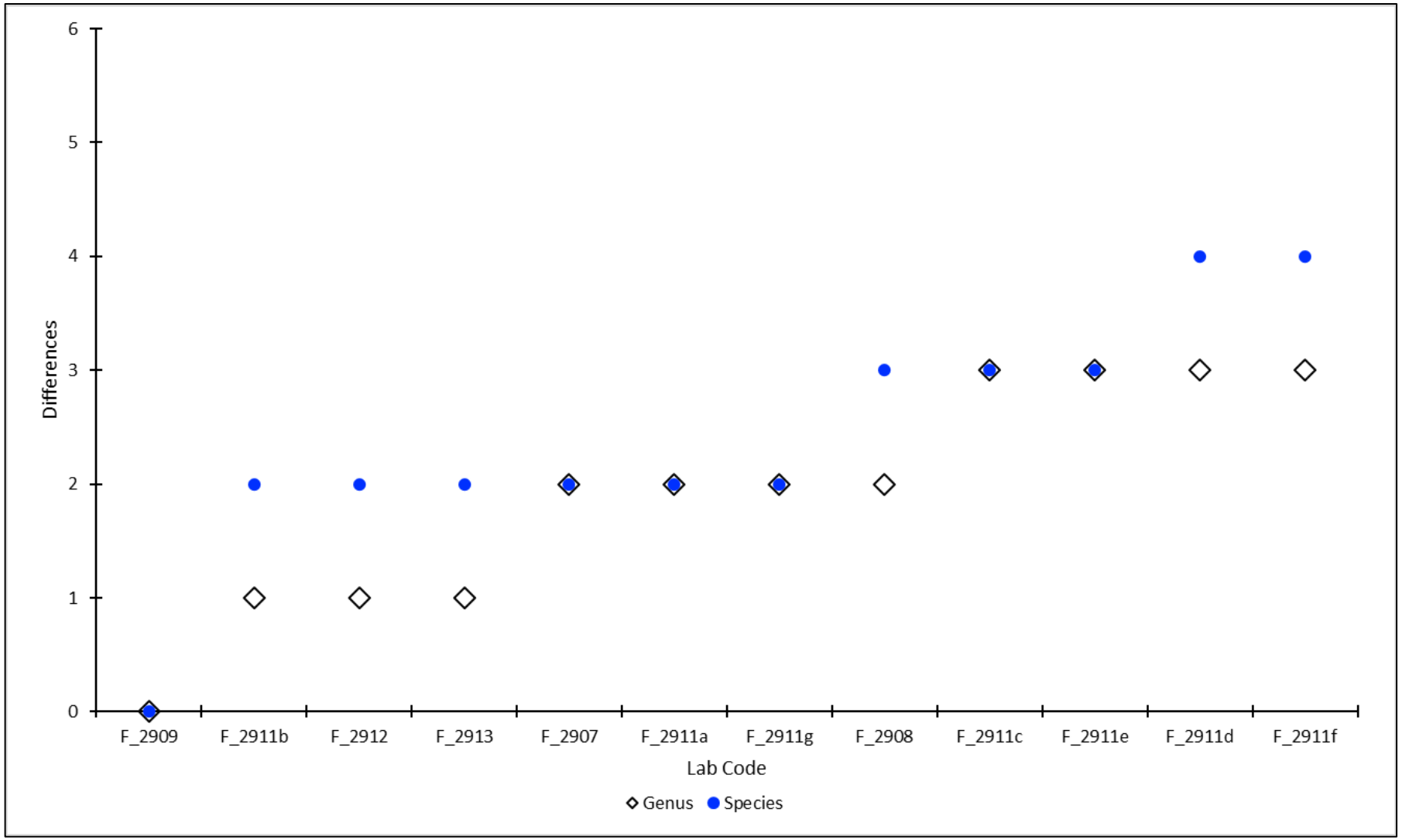


**Figure 1 The number of differences from the AQC identification of specimens distributed in FRT16 for each of the participating laboratories. Arranged in order of increasing number of differences by specific (blue filled circles) followed by generic (open diamond) errors**

**Table 2. The identification of specimens made by participating laboratories for FRT16 (arranged by specimen). Names are given only where different from the AQC identification.**

| | F-RT1601 | F-RT1602 | F-RT1603 | F-RT1604 | F-RT1605 | F-RT1606 | F-RT1607 | F-RT1608 |
|---|---|---|---|---|---|---|---|---|
| Taxon | *Solea solea* | *Hippoglossoides platessoides* | *Scomber scombrus* | *Ammodytes tobianus* | *Microstomus kitt* | *Microchirus variegatus* | *Sardina pilchardus* | *Echiichthys vipera* |
| F_2907 | - - | - - | - - | - - | - - | ** | *Clupea harengus* | - - |
| F_2908 | - - | - - | - - | *Hyperoplus lanceolatus** | - - | - - | *Alosa fallax* | - - |
| F_2909 | - - | - - | - - | *Hyperoplus immaculatus** | - - | - - | - - | - - |
| F_2911a | - - | - - | - - | *Hyperoplus lanceolatus** | - - | - - | *Clupea harengus* | - - |
| F_2911b | - - | - - | - - | *Hyperoplus lanceolatus** | [*Microstomys*] - | - - | - - | - - |
| F_2911c | *Pegusa Lascaris* | - [*plastessoides*] | - - | *Hyperoplus lanceolatus** | *Glyptocephalus cynoglossus* | - - | - - | - - |
| F_2911d | - - | - - | - - | *Hyperoplus lanceolatus** | *Pleuronectes platessa* | - - | *Clupea harengus* | - - |
| F_2911e | *Pegusa Lascaris* | - - | - - | *Hyperoplus lanceolatus** | *Glyptocephalus cynoglossus* | - - | - - | - - |
| F_2911f | *Pegusa lascaris* | - - | - - | *Hyperoplus lanceolatus** | *Glyptocephalus cynoglossus* | - - | - - | - - |
| F_2911g | - - | - - | - - | *Hyperoplus lanceolatus** | - - | - - | *Clupea harengus* | - - |
| F_2912 | - - | - - | - - | *Hyperoplus lanceolatus** | - - | - - | - - | - - |
| F_2913 | - - | - - | - - | *Hyperoplus lanceolatus** | - - | - - | *Sprattus sprattus* | - - |

*Mixture of species sent

**Specimen not sent

**Table 2 cont.**

| | F-RT1609 | F-RT1610 | F-RT1611 | F-RT1612 | F-RT1613 | F-RT1614 | F-RT1615 |
|---|---|---|---|---|---|---|---|
| Taxon | *Arnoglossus laterna* | *Engraulis encrasicolus* | *Gasterosteus aculeatus* | *Echiichthys vipera* | *Pomatoschistus microps* | *Pleuronectes platessa* | *Platichthys flesus* |
| F_2907 | - - | - - | - - | - - | - - | - - | Pleuronectidae |
| F_2908 | - - | - - | - - | *Trachinus draco* | *- minutus* | - - | - - |
| F_2909 | - - | - - | - - | - - | - - | - - | - - |
| F_2911a | - - | - - | - - | - - | - - | - - | Pleuronectidae |
| F_2911b | - - | - - | - - | - - | *- minutus* | - - | Not identified |
| F_2911c | - - | - - | - - | - - | - - | - - | Not identified |
| F_2911d | - - | - - | - - | - - | *- minutus* | - - | Not identified |
| F_2911e | - - | - - | - - | - - | - - | - - | Not identified |
| F_2911f | - - | - - | - - | - - | - - | - - | Pleuronectiformes- |
| F_2911g | - - | - - | - - | - - | - - | - - | Not identified |
| F_2912 | - - | - - | - - | - - | *- minutus* | - - | *Pleuronectes platessa* |
| F_2913 | - - | - - | - - | - - | *- minutus* | - - | - - |

## Specimen images and detailed breakdown of identifications

Participating laboratories were asked to identify to species level the 15 specimens that were supplied with images and the basic habitat and geographic details from where they were collected. Participants could also submit notes on their identifications, confidence level and details of literature used.

FRT16 was not a targeted ring test and most species included are commonly caught in routine monitoring surveys. Some specimens were relatively small but could still be expected to be caught using standard monitoring methods (e.g. seine netting).

LabCodes are abbreviated in this report to exclude the Scheme year, i.e. F_2901 = Lab 01. An additional terminal character has been added to the LabCode (small case sequential letters) to differentiate multiple data entries from the same laboratory, *i.e*. two participants from laboratory 01 would be coded as Lab 01a and Lab 01b. For details of your LabCode please contact your Scheme representative or APEM Ltd.

Figured FRT specimens are selected from the circulation series as typical of the size and condition range circulated. Due to difficulties sourcing sufficient specimens for distribution, some representative specimen images from previous ring tests have been used. Where possible, figured specimens of other species have been selected to be of similar size as the FRT specimen with which they have been compared.

**F-RT1601 – *Solea solea* (Linnaeus, 1758)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 17 – 21 cm.

Three generic and specific differences were recorded. Labs 11c, 11e and 11f identified the specimen as *Pegusa lascaris*, which has a similar body shape to *S. solea,* but with a distinctive rosette-like organ on the underside of the head, which is almost as large as the eyes (Figure 3). Labs 11c and 11e also erroneously capitalised the species name of *P. lascaris* as *P. Lascaris*. Species names should not be capitalised.


**Figure 2. *Solea solea***


**Figure 3. *Pegusa lascaris* (Specimen images from FRRT26)**

**F-RT1602 – *Hippoglossoides platessoides* (Fabricius, 1780)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 16 – 20 cm.

No generic or specific identification differences.

Lab 11c misspelt the specific name as *H. plastessoides*.

**Figure 4.** ***Hippoglossoides platessoides***

**F-RT1603 – *Scomber scombrus* Linnaeus, 1758**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 19 – 23 cm.

No generic or specific differences.

**Figure 5.** ***Scomber scombrus***

**F-RT1604 – *Ammodytes tobianus* Linnaeus, 1758**

Substratum: Mixed. Salinity: Harbour. Depth: Continental shelf of British Isles. Geography: Western Channel and Celtic Sea. Condition: Good. Size: 6 – 17 cm.

Identification of specimen 04 was contested and following re-examination of the batch of specimens it appears a mixture of species were distributed in error. Therefore, none of the results for this specimen were considered taxonomic errors. Lab 07 identified the specimen as *Ammodytes tobianus*, whilst labs 08, 11a, 11b, 11c, 11d, 11e, 11f, 11g, 12 and 13 identified the specimen as *Hyperoplus lanceolatus*. The genera *Ammodytes* and *Hyperoplus* can be separated by the protrusible jaw structure and relatively shorter snout length (approximately 1.9x eye diameter) in *Ammodytes* (Figure 6), whereas *Hyperoplus* lacks the protrusible jaw structure and has a snout length approximately 2.7x the eye diameter (Figure 7). *Hyperoplus* also have a bifid vomerine tooth inside the roof of the mouth (see Figure 7 inset), which is not present in *Ammodytes*. Lab 09 identified the specimen as *Hyperoplus immaculatus*, which is very similar in shape to *H. lanceolatus*, but has a darker snout and therefore lacks the black spot between the eye and the nostril.


**Figure 6. *Ammodytes tobianus* with inset showing structure of jaws and relationship between eye diameter (blue arrow) and snout length (red arrow)**


**Figure 7. *Hyperoplus lanceolatus* with insets showing structure of jaws, relationship between eye diameter (blue arrow) and snout length (red arrow) and bifid vomerine tooth**

**F-RT1605 – *Microstomus kitt* (Walbaum, 1792)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Western Channel and Celtic Sea. Condition: Good. Size: 16 – 20 cm.

Four generic and specific differences were recorded. Labs 11c, 11e and 11f identified the specimen as *Glyptocephalus cynoglossus*, which has a an almost straight lateral line and narrower body (width approximately 1/3 of length; see Figure 9), whereas *M. kitt* has a slight curve to the lateral line above the pectoral fin and a deeper body (width approximately half of length; Figure 8). *G. cynoglossus* also has a greater number of dorsal and anal fin rays (D: 97-115, A: 85-90) than *M. kitt* (D: 85-97, A: 69-76). Lab 11d identified the specimen as *Pleuronectes platessa*, which has a row of four to seven bony knobs running along the head from behind the eyes to the lateral line (see specimen FRT1614 14, Figure 22). *P. platessa* also has lower numbers of dorsal and anal fin rays (D: 65-79, A: 48-59) than *M. kitt*.

Lab 11b misspelt the generic name as *Microstomys*.

**Figure 8. *Microstomus kitt* (specimen from previous fish ring test (F)RT3308)**

**Figure 9. *Glyptocephalus cynoglossus* (specimen from previous fish ring test FRT1515)**

**F-RT1606 – *Microchirus variegatus* (Donovan, 1808)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 14 – 19 cm.

No generic or specific differences. Lab 07 reported that they did not receive a specimen 06.

**Figure 10. *Microchirus variegatus* (image modified from previous fish ring test RT1510)**

**F-RT1607 - *Sardina pilchardus* (Walbaum, 1792)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 9 – 11 cm.

Six generic and specific differences. Labs 07, 11a, 11d and 11g identified the specimen as *Clupea harengus* and Lab 13 identified the specimen as *Sprattus sprattus*, both of which are more laterally flattened in cross section, have smaller scales and lack the radiating ridges on the gill cover (Figure 12).

Lab 08 identified the specimen as *Alosa fallax*, which has a notch in the middle of the upper jaw, a black spot behind the operculum and a row of dark spots along the flank and is deeper bodied than *S. pilchardus* (Figure 13).


**Figure 11. *Sardina pilchardus***

**Figure 12. Specimens of *Sprattus sprattus* (top) and *Clupea harengus* (bottom)(specimens from FRRT13)**

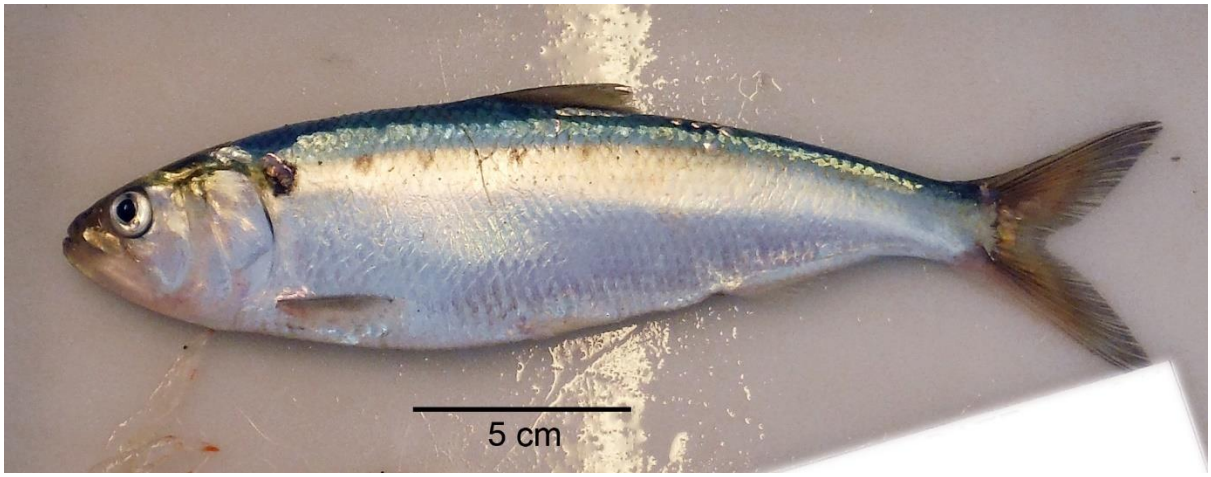


**Figure 13. *Alosa fallax* (larger specimen from the Bristol Channel)**

**F-RT1608 – *Echiichthys vipera* (Cuvier, 1829)**

Substratum: Mixed. Salinity: Harbour. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 3 – 6 cm.

Two specimens of *E. vipera* of differing sizes were included in the FRT (the larger 13 – 17 cm specimen was F-RT1612). No generic or specific differences were recorded for the smaller (3 – 6 cm size class).

**Figure 14. *Echiichthys vipera***

**F-RT1609 – *Arnoglossus laterna* (Walbaum, 1792)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 10 – 14 cm.

No generic or specific differences.


**Figure 15. *Arnoglossus laterna***

**F-RT1610 – *Engraulis encrasicolus* (Linnaeus, 1758)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 12 – 15 cm.

No generic or specific differences.


**Figure 16. *Engraulis encrasicolus***

**F-RT1611 - *Gasterosteus aculeatus* Linnaeus, 1758**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 15 – 30 mm.

No generic or specific differences.

**Figure 17. *Gasterosteus aculeatus***

**F-RT1612 – *Echiichthys vipera* (Cuvier, 1829)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 13 – 17 cm.

Two specimens of *E. vipera* of differing sizes were included in the FRT (the smaller 3 – 6 cm specimen was F-RT1608). One generic and specific difference were recorded for the larger (13 – 17 cm) size class. Lab 08 identified the specimen as *Trachinus draco*, which has a longer and shallower body and short spines in front of and above the eye, which are not present in *E. vipera* (Figure 19). *T. draco* also has a greater number of fin rays in the second dorsal fin (29-32) and second anal fin (28-34) compared to *E. vipera*, which has 21-24 and 24-26, respectively.

**Figure 18. *Echiichthys vipera***

**Figure 19. *Trachinus draco* (Specimen from previous fish reverse ring test FRRT12)**

**F-RT1613 – *Pomatoschistus microps* (Krøyer, 1838)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 2 – 5 cm.

No generic and five specific differences recorded. Labs 08, 11b, 11d, 12 and 13 identified the specimen as *Pomatoschistus minutus* (Figure 21), which has smaller scales (58–70 in lateral series, compared to 39-52 in *P. microps*), a branchiostegal membrane that attaches to the anterior half of the isthmus (Figure 22, right) rather than the posterior of the isthmus as in *P. microps* (Figure 22, left) and villi on the anterior membrane of the pelvic fin, which are not present in *P. microps*.

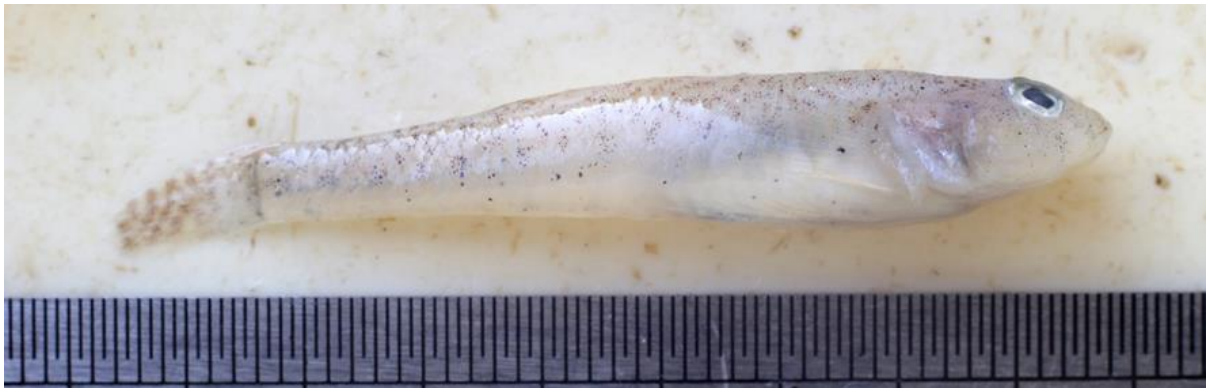

**Figure 20. *Pomatoschistus microps* (Image from previous ring test FRT1403)**

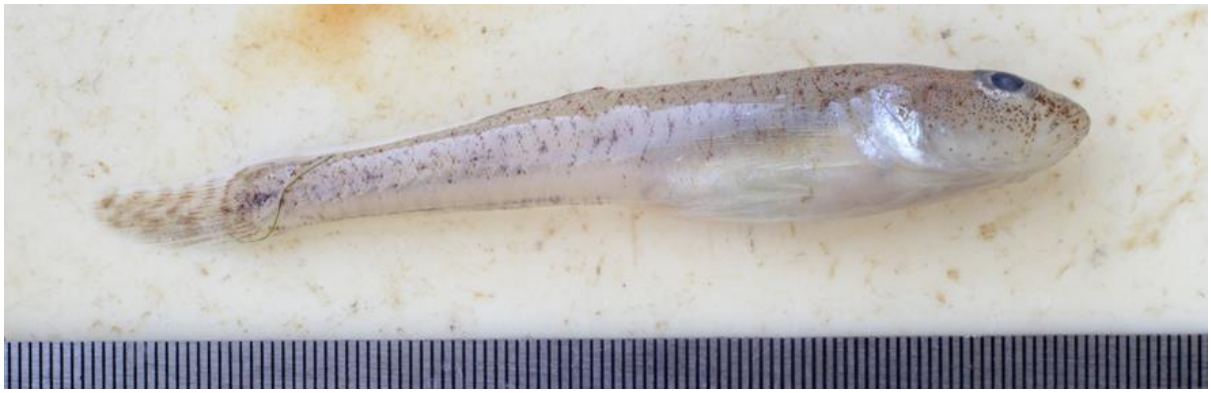

**Figure 21. *Pomatoschistus minutus* (Image from previous ring test FRT1404)**

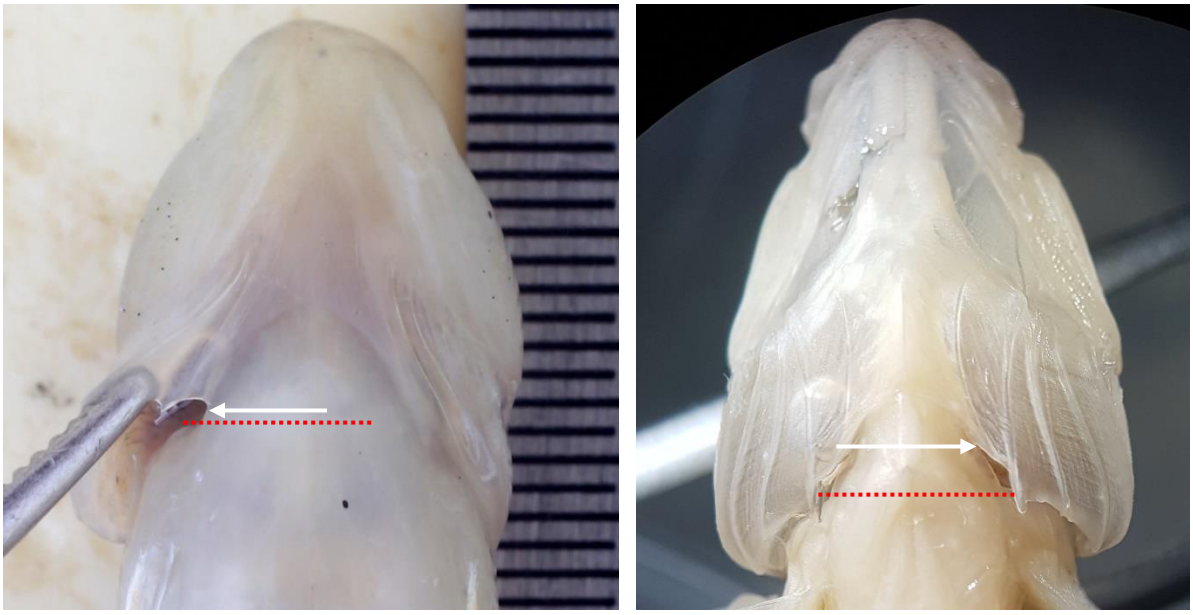

**Figure 22.** ***Pomatoschistus microps*** **(left) and** ***Pomatoschistus minutus*** **(right); position of branchiostegal membrane attachment arrowed, posterior end of isthmus indicated in red (Images from previous fish ring test FRT1403).**

**F-RT1614 –** ***Pleuronectes platessa*** **Linnaeus, 1758**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 9 – 17 cm.

No generic or specific differences recorded.

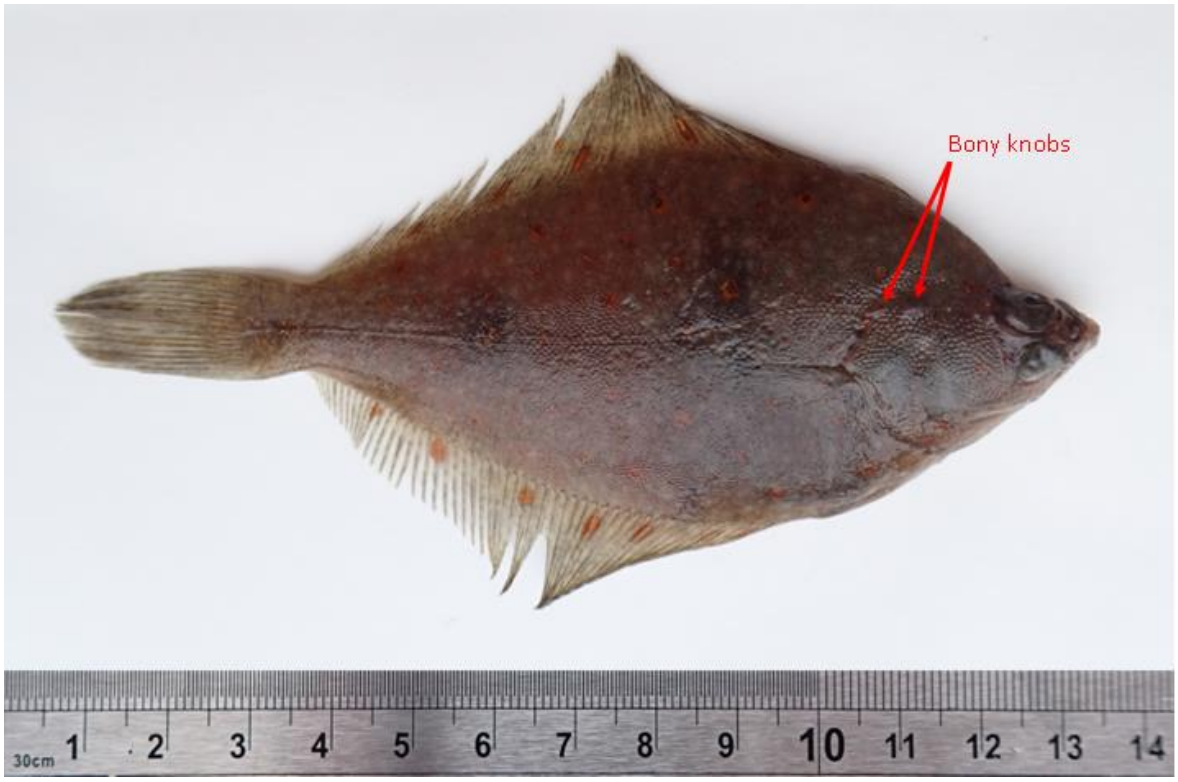


**Figure 23.** ***Pleuronectes platessa*** **(image from previous ring test FRT1508)**

**F-RT1615 – *Platichthys flesus* (Linnaeus, 1758)**

Substratum: Mixed. Salinity: High. Depth: Continental shelf of British Isles. Geography: Irish Sea and Bristol Channel. Condition: Good. Size: 0.5 – 1 cm.

Nine generic and specific differences recorded. Lab 12 identified the specimen as *Pleuronectes platessa*, which has a higher number of anal (48-59) and caudal fin rays (19-22) than *P. flesus*, which has 35-46 and 18 respectively. *P. flesus* (Figure 23) also has a relatively longer caudal penduncle (length > height) compared to *P. platessa* (length ≤ height; Figure 24).

Labs 07 and 11a left the identification of the specimen at the family Pleuronectidae and lab 11f left the identification at the order Pleuronectiformes. Labs 11b, 11c, 11d and 11e did not attempt identification of the specimen, commenting that the specimens were below the size of fish they would usually catch or identify.

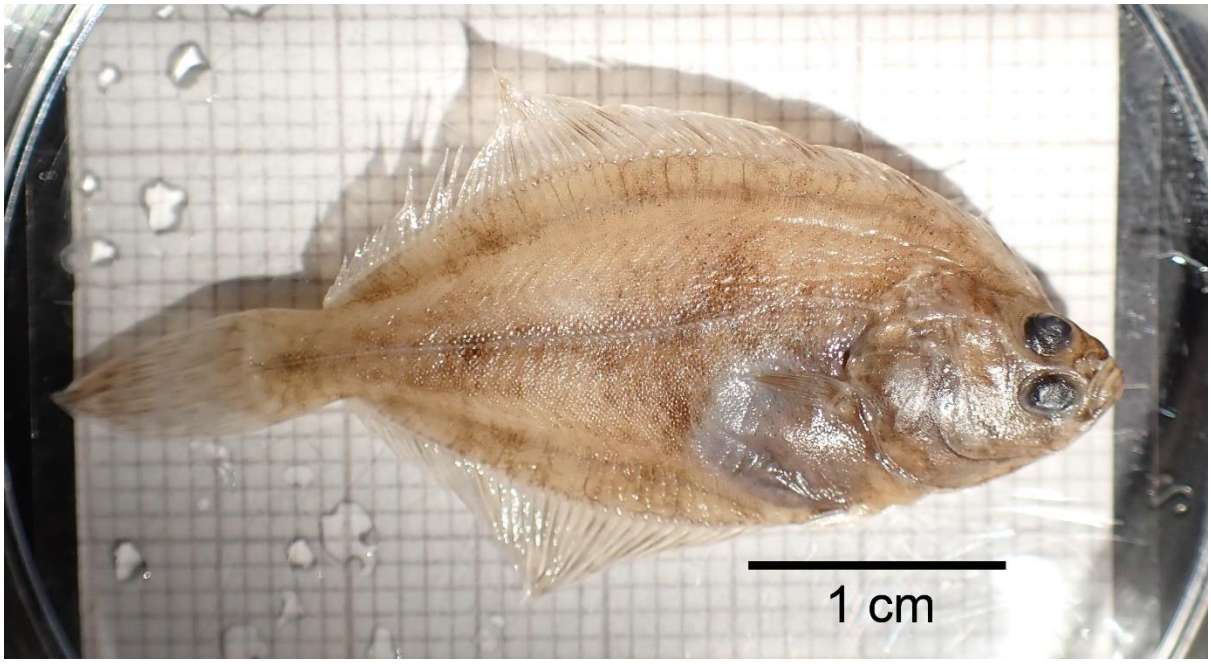


**Figure 24. *Platichthys flesus***


**Figure 25. *Pleuronectes platessa* (specimen from previous ring test FRT1314)**

## Taxonomic discrepancies and confidence level

### Synonyms

The World Register of Marine Species (WoRMS) and FishBase were used for currently valid species names. All participants submitted currently valid scientific names. Participants are asked to identify each specimen to species level and return results forms with species names, uncertain identifications can be indicated through use of the confidence level column.

### Authority errors

Of the 175 entries, none of the specimen names were submitted with an authority.

### Confidence level

Confidence of identification was given for 117 entries (from 175 answers submitted). For those given, 96% were confident with species identification, 1% genus 2% family and 1% order. Most confidence levels given were accurate (87%).

## Literature cited for FRT16 identification

Maitland & Herdson, 2009 - Key to the Marine and Freshwater Fishes of Britain and Ireland was the only literature cited by a single participant.

## Taxonomic and identification policy problems highlighted by this FRT

There were relatively few taxonomic errors for the specimens circulated. Nine out of 15 specimens were identified by all participants correctly. The juvenile flounder, *Platichthys flesus* (F-RT1615) seemed to cause the most trouble for participants, with one lab leaving the identification at order level, two labs at family level and four not attempting identification of the specimen at all.

The clupeid *Sardina pilchardus* proved to be the second most problematic, with six incorrect identifications. Important diagnostic features include cross-sectional body shape, scale size and presence or absence of radiating ridges on the gill cover. Five participants indicated that specimen 07 was damaged or not in good condition. Four of these participants were from a single lab that had multiple submissions, it may be the case that specimens were thawed, handled and refrozen multiple times leading to poor condition.

## References


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Henderson, P., 2015. *Identification Guide to the Inshore Fish of the British Isles*. Pisces Conservation Limited, Pennington, 321 pp.

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