

# NMBQCC

NE Atlantic Marine Biological Analytical Quality Control Scheme

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## Fish Reverse Ring Test Bulletin – FRRT13

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## MODULE / EXERCISE DETAILS

Module:	Fish Reverse Ring Test FRRT
Exercises:	FRRT13
Specimen Request Circulated:	8 <sup>th</sup> October 2021
Specimen Submission Deadline:	3 <sup>rd</sup> December 2021
Number of Subscribing Laboratories:	11
Number of Submissions Received:	8

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## Table 1 Summary specimens and data received from participating laboratories FRRT13

Number of specimens submitted: **117**

Number of species: **64**

Number of taxonomic errors (TE): **5**

Number of taxonomic discrepancies (TD; \*synonym, \*\*unaccepted, \*\*\*other): **14**

Number of problematic taxa submitted (†): **2???**

Class	Order	Family	Species	Common name	No. of spms	No. of TE	No. of TD		
Elasmobranchii	Carcharhiniformes	Scyliorhinidae	<i>Scyliorhinus canicula</i> (Linnaeus, 1758)	Lesser spotted dogfish	2				
		Pentanchidae	<i>Galeus melastomus</i> (Rafinesque, 1810)	Blackmouth catshark	1				
	Squaliformes	Etmopteridae	<i>Etmopterus spinax</i> (Linnaeus, 1758)	Velvet belly	1				
			<i>Raja brachyura</i> (Lafont, 1871)	Blonde ray	1				
	Rajiformes	Rajidae	<i>Raja clavata</i> (Linnaeus, 1758)	Thornback ray	2				
			<i>Raja microocellata</i> (Montagu, 1818)	Small-eyed ray	1				
			<i>Torpedo torpedo</i> (Linnaeus, 1758)	Common torpedo	1				
	Actinopterygii	Clupeiformes	Clupeidae	<i>Clupea harengus</i> (Linnaeus, 1758)	Herring	4			
				<i>Sardina pilchardus</i> (Walbaum, 1792)	Sardine, pilchard	1			
			Engraulidae	<i>Sprattus sprattus</i> (Linnaeus, 1758)	Sprat	6	2		
<i>Engraulis encrasicolus</i> (Linnaeus, 1758)				Anchovy	1				
<i>Gobio gobio</i> (Linnaeus, 1758)				Gudgeon	1				
Cypriniformes		Cyprinidae	<i>Osmerus eperlanus</i> (Linnaeus, 1758)	European smelt	1				
Osmeriformes		Osmeridae	<i>Ciliata mustela</i> (Linnaeus, 1758)	Five-bearded rockling	2				
			<i>Gadus morhua</i> (Linnaeus, 1758)	Cod	1				
Gadiformes		Lotidae	<i>Merlangius merlangus</i> (Linnaeus, 1758)	Whiting	6				
			<i>Pollachius pollachius</i> (Linnaeus, 1758)	Pollack	1				
			<i>Trisopterus luscus</i> (Linnaeus, 1758)	Pouting, bib	2				
			<i>Trisopterus minutus</i> (Linnaeus, 1758)	Poor cod	1				
			Merlucciidae	<i>Merluccius merluccius</i> (Linnaeus, 1758)	European hake	1			
			Syngnathiformes	Syngnathidae	<i>Syngnathus rostellatus</i> (Nilsson, 1855)	Lesser pipefish, Nilsson's pipefish	3		1
			Mugiliformes	Mugilidae	<i>Chelon auratus</i> (Risso, 1810)	Golden grey mullet	1		1
<i>Chelon ramada</i> (Risso, 1827)		Thinlip grey mullet			3	1	2		
Mullidae	<i>Mullus barbatus</i> (Linnaeus, 1758)	Red mullet			1				

		<i>Mullus surmuletus</i> (Linnaeus, 1758)	Striped red mullet, surmullet	3	2
Perciformes	Agonidae	<i>Agonus cataphractus</i> (Linnaeus, 1758)	Hooknose, pogge	2	
	Ammodytidae	<i>Ammodytes tobianus</i> (Linnaeus, 1758)	Lesser sandeel	1	
	Triglidae	<i>Chelidonichthys lucerna</i> (Linnaeus, 1758)	Tub gurnard	3	2
		<i>Eutrigla gurnardus</i> (Linnaeus, 1758)	Grey gurnard	2	
		<i>Ctenolabrus rupestris</i> (Linnaeus, 1758)	Goldsinny wrasse	1	
	Trachinidae	<i>Echiichthys vipera</i> (Cuvier, 1829)	Lesser weever	3	1
		<i>Trachinus draco</i> (Linnaeus, 1758)	Greater weever	1	
	Gasterosteidae	<i>Gasterosteus aculeatus</i> (Linnaeus, 1758)	Three-spined stickleback	1	
		<i>Spinachia spinachia</i> (Linnaeus, 1758)	Fifteen-spined stickleback	2	
	Sebastidae	<i>Helicolenus dactylopterus</i> (Delaroche, 1809)	Blue-mouth redfish, blackbelly rosefish	1	1*
	Percidae	<i>Perca fluviatilis</i> (Linnaeus, 1758)	Perch	1	
	Zoarcidae	<i>Zoarcetes viviparus</i> (Linnaeus, 1758)	Viviparous eelpout, viviparous blenny	1	
Eupercaria incertae sedis				2	
	Moronidae	<i>Dicentrarchus labrax</i> (Linnaeus, 1758)	Bass		
	Sparidae	<i>Diplodus annularis</i> (Linnaeus, 1758)	Annular seabream	1	
		<i>Diplodus vulgaris</i> (Geoffroy Saint-Hilaire, 1817)	Common two-banded seabream	1	
		<i>Pagellus erythrinus</i> (Linnaeus, 1758)	Common pandora	1	
		<i>Pagrus pagrus</i> (Linnaeus, 1758)	Couch's seabream, red porgy	3	
		<i>Spondyliosoma cantharus</i> (Linnaeus, 1758)	Black seabream	2	1
	Labridae	<i>Symphodus bailloni</i> (Valenciennes, 1839)	Baillon's wrasse	1	1
Pleuronectiformes	Bothidae	<i>Arnoglossus laterna</i> (Walbaum, 1792)	Scaldfish	4	
		<i>Arnoglossus thori</i> (Kyle, 1913)	Thor's scaldfish	1	
	Soleidae	<i>Buglossidium luteum</i> (Risso, 1810)	Solenette	2	
		<i>Pegusa lascaris</i> (Risso, 1810)	Sand sole	1	
		<i>Solea solea</i> (Linnaeus, 1758)	Common sole, Dover sole	4	
	Pleuronectidae	<i>Limanda limanda</i> (Linnaeus, 1758)	Dab	3	1
		<i>Platichthys flesus</i> (Linnaeus, 1758)	Flounder	4	
		<i>Pleuronectes platessa</i> (Linnaeus, 1758)	Plaice	3	
	Scophthalmidae	<i>Scophthalmus rhombus</i> (Linnaeus, 1758)	Brill	1	
Gobiiformes	Gobiidae	<i>Aphia minuta</i> (Risso, 1810)	Transparent goby	1	
		<i>Gobius paganellus</i> (Linnaeus, 1758)	Rock goby	1	

		<i>Lesueurigobius friesii</i> (Malm, 1874)	Fries's goby	1		
		<i>Pomatoschistus flavescens</i> (Fabricius, 1779)	Two-spotted goby	1		1
		<i>Pomatoschistus minutus</i> (Pallas, 1770)	Sand goby	4		
Atheriniformes	Atherinidae	<i>Atherina presbyter</i> (Cuvier, 1829)	Sand smelt	1		
Callionymiformes	Callionymidae	<i>Callionymus lyra</i> (Linnaeus, 1758)	Common dragonet	3	1	1
		<i>Callionymus maculatus</i> (Rafinesque, 1810)	Spotted dragonet	1		
Scombriformes	Scombridae	<i>Scomber colias</i> (Gmelin, 1789)	Atlantic chub mackerel	1		
Carangiformes	Carangidae	<i>Trachurus mediterraneus</i> (Steindachner, 1868)	Mediterranean horse mackerel	1		
		<i>Trachurus trachurus</i> (Linnaeus, 1758)	Atlantic horse mackerel, scad	1		

Species names according to World Register of Marine Species (WoRMS) and FishBase, accessed January 2022

## Taxonomic errors and problematic taxa

This section describes those submitted specimens that were found to have been identified incorrectly. There were no problematic taxa listed in the original submission. The key identification features to separate these and similar taxa are given.

**Table 2. Summary of taxonomic errors, discrepancies and problematic taxa FRRT13**

	Laboratory identification	APEM Ltd. identification
<b>Taxonomic errors</b>		
F2818	<i>Clupea harengus</i>	<i>Sprattus sprattus</i> (Linnaeus, 1758)
F2818	<i>Clupea harengus</i>	<i>Sprattus sprattus</i> (Linnaeus, 1758)
F2804	<i>Chelon labrosus</i>	<i>Chelon ramada</i> (Risso, 1827)
F2816	<i>Crenilabrus melops</i>	<i>Symphodus bailloni</i> (Valenciennes, 1839)
F2810	<i>Callionymidae reticulatus</i>	<i>Callionymus lyra</i> (Linnaeus, 1758)
<b>Taxonomic discrepancies (unaccepted synonyms)</b>		
F2816	<i>Gobiusculus flavescens</i>	<i>Pomatoschistus flavescens</i> (Fabricius, 1779)
F2816	<i>Liza aurata</i>	<i>Chelon auratus</i> (Risso, 1810)
F2810	<i>Liza ramado</i>	<i>Chelon ramada</i> (Risso, 1827)
F2816	<i>Liza ramada</i>	<i>Chelon ramada</i> (Risso, 1827)
<b>Taxonomic discrepancies (syn/spelling)</b>		
F2812	<i>Callionymidae lyra</i>	<i>Callionymus lyra</i> (Linnaeus, 1758)
F2812	<i>Echiichthys vipera</i>	<i>Echiichthys vipera</i> (Cuvier, 1829)
F2812	<i>Limda limda</i>	<i>Limanda limanda</i> (Linnaeus, 1758)
F2810	<i>Mullus surmeletus</i>	<i>Mullus surmuletus</i> (Linnaeus, 1758)
F2812	<i>Mullus surmeletus</i>	<i>Mullus surmuletus</i> (Linnaeus, 1758)
F2816	<i>Spondyliosoma canthrus</i>	<i>Spondyliosoma cantharus</i> (Linnaeus, 1758)
F2812	<i>Sygnathus rastellatus</i>	<i>Sygnathus rostellatus</i> (Nilsson, 1855)
<b>Taxonomic discrepancies (other)</b>		
F2805	Unidentified	<i>Helicolenus dactylopterus</i> (Delaroche, 1809)

## *Sprattus sprattus* (Linnaeus, 1758)

The origin of the dorsal fin in *Sprattus sprattus* is behind the base of the pelvic fins, whereas in *Clupea harengus* it is before the pelvic fins (Figure 1). This is not always clear, especially in smaller individuals. Submitted specimens had 11 toothed keel ridges between the pelvic fins and the vent. *Clupea harengus* has 13-17 keel ridges as well as a larger eye and deeper blue colour.

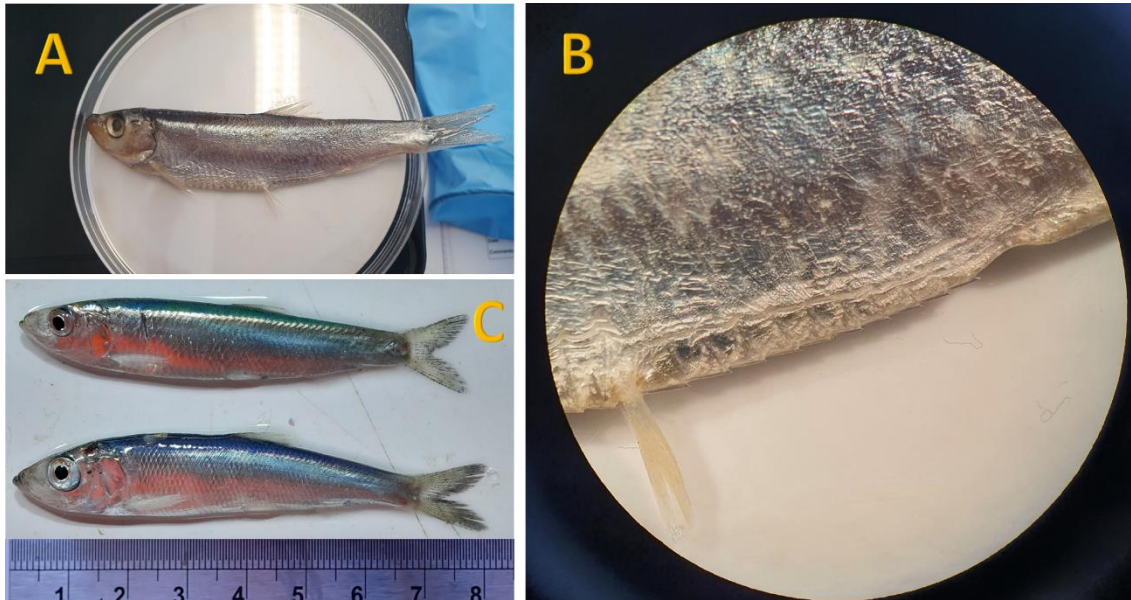


Figure 1. A + B - *Sprattus sprattus* submitted specimen with closeup of keel ridges. C - Specimens of *Sprattus sprattus* (top) and *Clupea harengus* (bottom) for comparison.

## *Chelon ramada* (Linnaeus, 1758)

Specimen has a narrow lip and rounded preorbital bone coarsely toothed, there is a comparatively wide midline space on the underside of the head (Figure 2. C + D). *Chelon labrosus* is quite similar but has a thick lip and the underside of lower jaw has a very narrow midline space; the pectoral fin when folded forward reaches beyond the pupil of the eye.



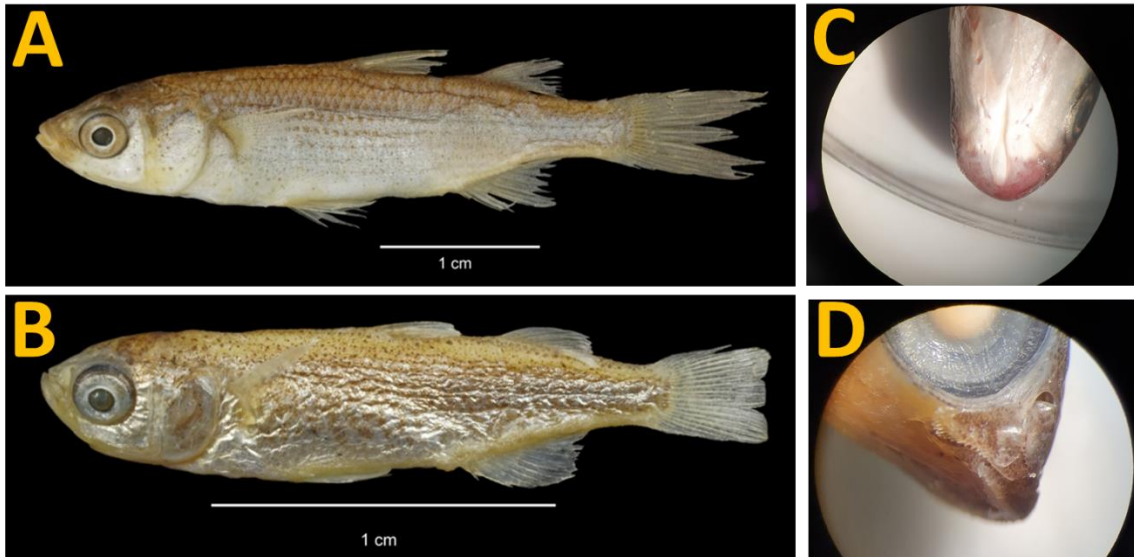
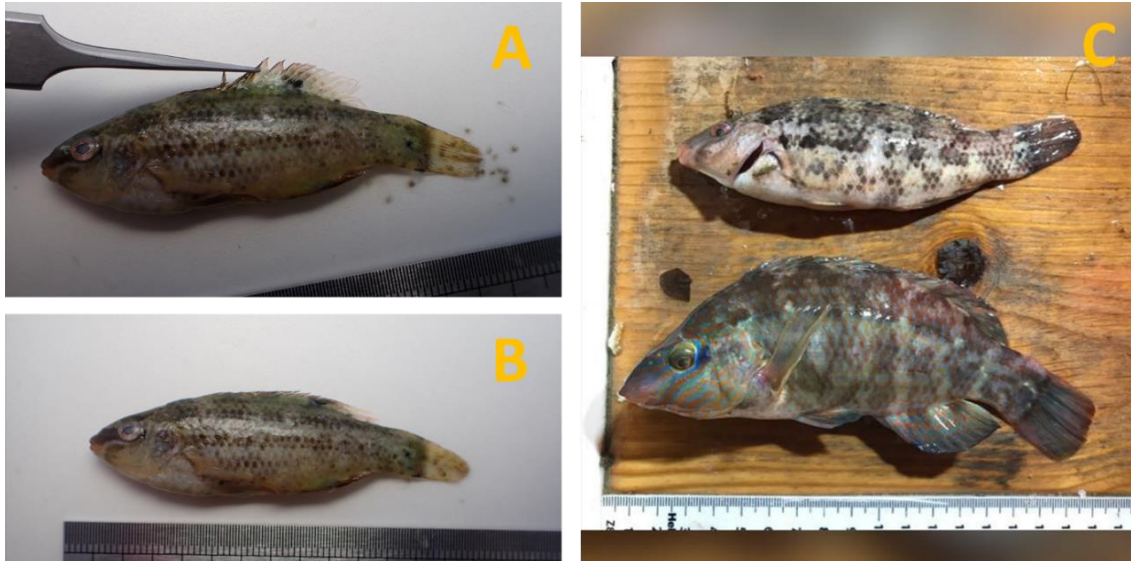


Figure 2. Specimens of *C. labrosus\** (A) and *C. ramada\** (B), closeup of *C. ramada* showing midline space (C) and pre-orbital bone (D). \*specimens from previous ring test.

### *Symphodus bailloni* (Valenciennes, 1839)

The specimen submitted has a spot on the base of the last fin rays and the rear and lower edges of the preoperculum serrated, these are characteristic of *S. bailloni*. There is also a spot on the tail (although this may or may not be present). The colouration around the mouth and the fins is pinkish. *C. melops* by contrast has distinctive blue colouration on the head and behind the eye (Figure 3c).



**Figure 3. Whole specimen of *Symphodus bailloni* (A-B) with dorsal fin colouration shown (A). C: Comparative specimens of *S. bailloni* (top) and *Crenilabrus melops* (bottom)**

### *Callionymus lyra* (Linnaeus, 1758)

*C. lyra* has four sharp spines on the preoperculum, the first one pointing forwards, the other three pointing backwards/upwards. By contrast *C. reticulatus* has only three spines on the preoperculum, all pointing back and upwards and has different colouration on the dorsal fin (Figure 4).

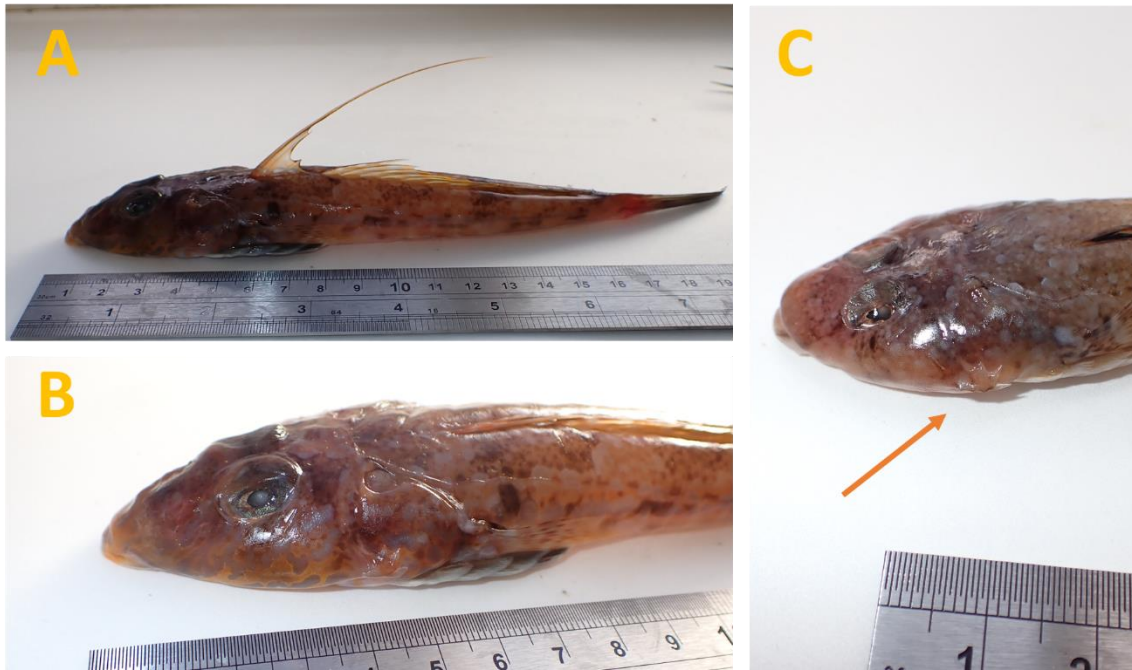


Figure 4. *Callionymus lyra* A+B, closeup of preopercular spines C

## Taxonomic discrepancies

This section provides further information on those submitted specimens for which other taxonomic irregularities (e.g. spelling mistakes, synonyms) were noted.

## Synonyms

The World Register of Marine Species (WoRMS) and FishBase, accessed January 2022, were used for currently valid species names. Three specimens were submitted with unaccepted synonyms; *Pomatoschistus flavescens* (Fabricius, 1779), *Chelon auratus* (Risso, 1810) and *Chelon ramada* (Risso, 1827), submitted as *Gobiusculus flavescens*, *Liza aurata* and *Liza ramado*, respectively.

## Authority errors

Only 15 specimen names were submitted with an authority. The authority and year were correct for those submitted. Authority errors are not counted as taxonomic discrepancies.

## Synonyms/spelling

Seven specimens (six species) were submitted with slight spelling errors or synonyms. One recorded the family name as the genus name.

## Other discrepancies

One specimen was submitted as unidentified. This was identified as *Helicolenus dactylopterus* (Delaroche, 1809). Characteristic features include mottled red and pink colouration with a large yellow eye. Inside the mouth is dark blue/black giving rise to its common name, blue-mouth redfish. There are 11-12 strong dorsal spines, the lower nine pectoral fin rays have the outer third of their length free of the fin membrane (Figure 5.).



Figure 5. *Helicolenus dactylopterus*

## Species of interest

This year we received a specimen from Cornwall of *Arnoglossus thori*. The specimen was in fair condition, it was still possible to make out its distinguishing features. Like other scaldfishes the first few fin rays of the dorsal fin are free of the fin membrane, however in *A. thori* the second fin ray is elongate with a dark fringe membrane, seen in Fig 6. (bottom left) with *A. lanterna* (bottom right) for comparison.



Figure 6. *Arnoglossus* species. *A. thori* - top & bottom left, *A. lanterna* - bottom right

## Acknowledgements

We would like to thank all participants for contributing a wide array of species to this year's ring test. It was particularly nice to get a variety of elasmobranch specimens and some from the Mediterranean.

## References

Fischer, W., Bauchot, M.-L. & Schneider. M. (Eds), 1987. Fiches FAO d'identification des espèces pour les besoins de la pêche. (Révision 1). Méditerranée et mer Noire (Zone de pêche 37).

Fricke, R., Eschmeyer, W. N. & van der Laan, R. (Eds), 2022. ESCHMEYER'S CATALOG OF FISHES: GENERA, SPECIES, REFERENCES.

(<http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>). Electronic version accessed 15 Feb 2022.

Froese, R. and Pauly, D. (Eds), 2022. FishBase. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org), version (02/2022).

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

Kay, P. & Dipper F., 2009. *A Field Guide to the Marine Fishes of Wales and adjacent waters*. Marine Wildlife, Llanfairfechan, 256 pp.

Maitland, P.S. & Henderson D., 2009. *Key to the Marine and Freshwater Fishes of Britain and Ireland*. Environment Agency, 480 pp.

Wheeler, A., 1969. *The fishes of the British Isles and North West Europe*. Macmillan, London, 380 pp.

Wheeler, A., 1978. *Key to the fishes of Northern Europe*. Warne, London, 380 pp.

## **APPENDIX**

FRRT13 individual summary reports for participating laboratories with specimen details as provided by participants and taxonomic errors, discrepancies and comments (updated) given by APEM

APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2804

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name)	APEM identification (if different)	Code / Comments
RRT13_F2804_01	<i>Pleuronectes platessa</i>		
RRT13_F2804_02	<i>Platichthys flesus</i>		
RRT13_F2804_03	<i>Scophthalmus rhombus</i>		
RRT13_F2804_04	<i>Solea solea</i>		
RRT13_F2804_05	<i>Pomatoschistus minutus</i>		
RRT13_F2804_06	<i>Gasterosteus aculeatus</i>		
RRT13_F2804_07	<i>Clupea harengus</i>		
RRT13_F2804_08	<i>Sprattus sprattus</i>		
RRT13_F2804_09	<i>Spinachia spinachia</i>		
RRT13_F2804_10	<i>Ammodytes tobianus</i>		
RRT13_F2804_11	<i>Gadus morhua</i>		
RRT13_F2804_12	<i>Syngnathus rostellatus</i>		
RRT13_F2804_13	<i>Gobio gobio</i>		
RRT13_F2804_14	<i>Dicentrarchus labrax</i>		
RRT13_F2804_15	<i>Chelon labrosus</i>	<i>Chelon ramada</i> (Risso, 1827), Thinlip grey mullet	TE - preorbital bone coarsely toothed and rounded. Underside of lower jaw with wide midline space. Pectoral fin does not reach eye



APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RRT13)

Return Deadline - 03/12/21

Laboratory Code - F2805

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2805_01	<i>Limanda limanda</i> , Dab		
RRT13_F2805_02	<i>Arnoglossus laterna</i> , Scaldfish		
RRT13_F2805_03	<i>Sprattus sprattus</i> , Sprat		
RRT13_F2805_04	<i>Buglossidium luteum</i> , Solenette		
RRT13_F2805_05	<i>Trisopterus minutus</i> , Poor Cod		
RRT13_F2805_06	<i>Chelidonichthys lucernus</i> , Tub Gurnard	<i>Chelidonichthys lucerna</i> (Linnaeus, 1758), Tub gurnard	TD - synonym
RRT13_F2805_07	<i>Trachurus trachurus</i> , Scad		
RRT13_F2805_08	<i>Eutrigla gurnardus</i> , Grey Gurnard		
RRT13_F2805_09	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2805_10	<i>Clupea harengus</i> , Herring		
RRT13_F2805_11	<i>Engraulis encrasicolus</i> , Anchovy		
RRT13_F2805_12	<i>Ctenolabrus rupestris</i> , Goldsinny		
RRT13_F2805_13	<i>Lesueurigobius friesii</i> , Fries Goby		
RRT13_F2805_14	<i>Echiichthys vipera</i> , Lesser Weever		
RRT13_F2805_15	Unidentified Unidentified, Unidentified	<i>Helicolenus dactylopterus</i> (Delaroche, 1809), Blue-mouth redfish, Blackbelly rosefish	TE - Bony ridge across the cheek below the eye, 11 strong dorsal fin spines, lower nine pectoral fin rays have the outer third of their length free of the fin membrane

APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2810

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2810_01	<i>Sprattus sprattus</i> , Sprat		
RRT13_F2810_02	<i>Clupea harengus</i> , Herring		
RRT13_F2810_03	<i>Gobius paganellus</i> , Rock Goby		
RRT13_F2810_04	<i>Liza ramado</i> , Thin Lip Grey Mullet	<i>Chelon ramada</i> (Risso, 1827), Thinlip grey mullet	TD - unaccepted synonym
RRT13_F2810_05	<i>Agonus cataphractus</i> , Hooknose (Pogge)		
RRT13_F2810_06	<i>Solea solea</i> , Common Sole		
RRT13_F2810_07	<i>Callionymidae reticulatus</i> , Reticulated Dragonet	<i>Callionymus lyra</i> (Linnaeus, 1758), Common Dragonet	TE - . Four sharp spines on the preoperculum, the first one pointing forwards, the other three pointing backwards or upwards
RRT13_F2810_08	<i>Platichthys flesus</i> , Flounder		
RRT13_F2810_09	<i>Ciliata mustela</i> , Five-Bearded Rockling		
RRT13_F2810_10	<i>Zoarces viviparus</i> , Viviparous Blenny		
RRT13_F2810_11	<i>Osmerus eperlanus</i> , European Smelt		
RRT13_F2810_12	<i>Perca fluviatilis</i> , Perch		
RRT13_F2810_13	<i>Trisopterus luscus</i> , Bib (Pouting)		
RRT13_F2810_14	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2810_15	<i>Mullus surmeletus</i> , Striped Red Mullet	<i>Mullus surmuletus</i> (Linnaeus, 1758), Striped red mullet	TD - spelling error

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2812

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2812_01	<i>Pleuronectes platessa</i> , Plaice		
RRT13_F2812_02	<i>Solea solea</i> , Dover Sole		
RRT13_F2812_03	<i>Mullus surmeletus</i> , Red Mullet	<i>Mullus surmuletus</i> (Linnaeus, 1758), Striped red mullet	TD - spelling error
RRT13_F2812_04	<i>Raja microocellata</i> , Small eyed Ray		
RRT13_F2812_05	<i>Chelidonichthys lucernus</i> , Tub Gurnard	<i>Chelidonichthys lucerna</i> (Linnaeus, 1758), Tub gurnard	TD - synonym/spelling error
RRT13_F2812_06	<i>Eutrigla gurnardus</i> , Grey Gurnard		
RRT13_F2812_07	<i>Limda limda</i> , Dab	<i>Limanda limanda</i> (Linnaeus, 1758), Dab	TD - spelling error
RRT13_F2812_08	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2812_09	<i>Pomatoschistus minutus</i> , Sand Goby		
RRT13_F2812_10	<i>Syngnathus rastellatus</i> , Lesser Pipefish	<i>Syngnathus rostellatus</i> (Nilsson, 1855), Lesser Pipefish, Nilsson's pipefish	TD - spelling error
RRT13_F2812_11	<i>Arnoglossus laterna</i> , Scaldfish		
RRT13_F2812_12	<i>Aphia minuta</i> , Transparent Goby		
RRT13_F2812_13	<i>Platichys flesus</i> , flounder		
RRT13_F2812_14	<i>Echiichthys vipera</i> , Lesser weaver		
RRT13_F2812_15	<i>Callionymidae lyra</i> , Common Dragonet	<i>Callionymus lyra</i> (Linnaeus, 1758), Common Dragonet	TD - spelling error, family name

APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2813

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2813_01	<i>Arnoglossus laterna</i> , Scaldfish		
RRT13_F2813_02	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2813_03	<i>Syngnathus rostellatus</i> , Lesser Pipefish		
RRT13_F2813_04	<i>Pomatoschistus minutus</i> , Sand Goby		
RRT13_F2813_05	<i>Buglossidium luteum</i> , Solenette		
RRT13_F2813_06	<i>Raja clavata</i> , Thornback Ray		
RRT13_F2813_07	<i>Limanda limanda</i> , Dab		
RRT13_F2813_08	<i>Pleuronectes platessa</i> , Plaice		
RRT13_F2813_09	<i>Trisopterus luscus</i> , Bib		
RRT13_F2813_10	<i>Echiichthys vipera</i> , Lesser Weaver		
RRT13_F2813_11	<i>Scyliorhinus canicula</i> , Common Dogfish		
RRT13_F2813_12	<i>Solea solea</i> , Common Sole		
RRT13_F2813_13	<i>Ciliata mustela</i> , Five-bearded rockling		
RRT13_F2813_14	<i>Platichthys flesus</i> , Flounder		
RRT13_F2813_15	<i>Agonus cataphractus</i> , Hooknose/Pogge		

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2816

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2816_01	<i>Gobiusculus flavescens</i> , Two spot goby	<i>Pomatoschistus flavescens</i> (Fabricius, 1779), Two-spotted goby	TD - unaccepted synonym
RRT13_F2816_02	<i>Crenilabrus melops</i> , Corkwing	<i>Symphodus bailloni</i> (Valenciennes, 1839), Baillon's wrasse	TE - dusky spot on the dorsal fin membrane on the base of the first soft rays, fins with pinkish trim
RRT13_F2816_03	<i>Spinachia spinachia</i> , Fifteen spined stickleback		
RRT13_F2816_04	<i>Sprattus sprattus</i> , Sprat		
RRT13_F2816_05	<i>Pollachius pollachius</i> , Pollack		
RRT13_F2816_06	<i>Liza aurata</i> , Golden grey mullet	<i>Chelon auratus</i> (Risso, 1810), Golden grey mullet	TD - unaccepted synonym
RRT13_F2816_07	<i>Spondyliosoma canthrus</i> , Black bream	<i>Spondyliosoma cantharus</i> (Linnaeus, 1758), Black sea bream	TD - spelling error
RRT13_F2816_08	<i>Atherina presbyter</i> , Sand smelt		
RRT13_F2816_09	<i>Dicentrarchus labrax</i> , Bass		
RRT13_F2816_10	<i>Liza ramada</i> , Thin lipped grey mullet	<i>Chelon ramada</i> (Risso, 1827), Thinlip grey mullet	TD - unaccepted synonym
RRT13_F2816_11	<i>Clupea harengus</i> , Herring		
RRT13_F2816_12	<i>Pomatoschistus minutus</i> , Sand goby		
RRT13_F2816_13	-	-	
RRT13_F2816_14	-	-	
RRT13_F2816_15	-	-	

APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2817

Key to codes:

TE - Taxonomic error

TD – Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2817_01	<i>Torpedo torpedo</i> , Common torpedo		
RRT13_F2817_02	<i>Sardina pilchardus</i> , Sardine		
RRT13_F2817_03	<i>Mullus barbatus</i> , Red mullet		
RRT13_F2817_04	<i>Trachurus mediterraneus</i> , Mediterranean horse mackerel		
RRT13_F2817_05	<i>Diplodus annularis</i> , Annular seabream		
RRT13_F2817_06	<i>Merluccius merluccius</i> , European hake		
RRT13_F2817_07	<i>Etmopterus spinax</i> , Velvet belly		
RRT13_F2817_08	<i>Scyliorhinus canicula</i> , Small-spotted catshark		
RRT13_F2817_09	<i>Pagellus erythrinus</i> , Common pandora		
RRT13_F2817_10	<i>Trachinus draco</i> , Greater weever		
RRT13_F2817_11	<i>Diplodus vulgaris</i> , Common two-banded seabream		
RRT13_F2817_12	<i>Scomber colias</i> , Chub mackerel		
RRT13_F2817_13	<i>Chelidonichthys lucerna</i> , Tub gurnard		
RRT13_F2817_14	<i>Galeus melastomus</i> , Blackmouth catshark		
RRT13_F2817_15	<i>Raja clavata</i> , Thornback ray		

APPENDIX: FRRT13 individual summary reports for participating laboratories

EXERCISE DETAILS

Fish Reverse Ring Test (F-RT13)

Return Deadline - 03/12/21

Laboratory Code - F2818

Key to codes:

TE - Taxonomic error

TD - Taxonomic discrepancy

\* - Problem taxa indicated

Specimen No.	Laboratory identification (scientific name; common name; length in mm)	APEM identification (if different)	Code / Comments
RRT13_F2818_01	<i>Spondyliosoma cantharus</i> , Black sea bream		
RRT13_F2818_02	<i>Pagrus pagrus</i> , Couch's bream		
RRT13_F2818_03	<i>Pagrus pagrus</i> , Couch's bream		
RRT13_F2818_04	<i>Pagrus pagrus</i> , Couch's bream		
RRT13_F2818_05	<i>Clupea harengus</i> , Herring	Sprattus sprattus (Linnaeus, 1758), Sprat	TE - 11-12 keel scales between the pelvic fins and the vent. The origin of the dorsal fin is behind the base of the pelvic fins
RRT13_F2818_06	<i>Arnoglossus thori</i> , Thor's scaldfish		
RRT13_F2818_07	<i>Arnoglossus laterna</i> , Scaldfish		
RRT13_F2818_08	<i>Clupea harengus</i> , Herring	Sprattus sprattus (Linnaeus, 1758), Sprat	TE - 11-12 keel scales between the pelvic fins and the vent. The origin of the dorsal fin is behind the base of the pelvic fins
RRT13_F2818_09	<i>Mullus surmuletus</i> , Striped red mullet		
RRT13_F2818_10	<i>Callionymus maculatus</i> , Spotted dragonet		
RRT13_F2818_11	<i>Pegusa lascaris</i> , Sand sole		
RRT13_F2818_12	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2818_13	<i>Raja brachyura</i> , Blonde ray		
RRT13_F2818_14	<i>Merlangius merlangus</i> , Whiting		
RRT13_F2818_15	<i>Callionymus lyra</i> , Common dragonet		