NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

The NE Atlantic Marine Biological
Analytical Quality Control Scheme
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Fish Ring Test Bulletin

F-RT09

2015/2016

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Thomson Unicomarine Ltd.
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RING TEST DETAILS

Fish Ring Test #09

Type/Contents – General

Circulated – 04/12/2015

Completion Date – 05/02/2016

Number of Participating Laboratories – 15

Number of Results Received – 16*

*Multiple data entries per laboratory permitted

Table 1. Summary of taxonomic differences shown in identifications from participating laboratories for the ninth fish ring test: FRT_09.

Specimen	Genus	Species	Taxonomic errors for 16 returns	
			Genus	Species
FRT0901	*Liza*	*ramada*	2	5
FRT0902	*Merlangius*	*merlangus*	0	0
FRT0903	*Pleuronectes*	*platessa*	0	0
FRT0904	*Trachurus*	*trachurus*	0	0
FRT0905	*Solea*	*solea*	0	0
FRT0906	*Mullus*	*surmuletus*	0	2
FRT0907	*Chelidonichthys*	*lucerna*	3	3
FRT0908	*Zeus*	*faber*	0	0
FRT0909	*Sparus*	*aurata*	0	0
FRT0910	*Sprattus*	*sprattus*	0	0
FRT0911	*Clupea*	*harengus*	0	0
FRT0912	*Sardina*	*pilchardus*	4	4
FRT0913	*Hyperoplus*	*lanceolatus*	1	1
FRT0914	*Osmerus*	*eperlanus*	1	1
FRT0915	*Ammodytes*	*tobianus*	2	3
		Total differences	13	19
		Average differences /lab.	0.8	1.2

Synonyms and spelling errors are not included.

Table 2. Differences of identifications made by participating laboratories for the ninth fish ring test: FRT_09, sorted by participating laboratories. Names are given only where different from AQC identification.

	Taxon	LB2201	LB2209	LB2212	LB2213	LB2214
F_RT0901	*Liza ramada*	- -	*- aurata*	- -	- -	- -
F_RT0902	*Merlangius merlangus*	- -	- -	- -	- -	- -
F_RT0903	*Pleuronectes platessa*	- -	- -	*- [plattessa]*	- -	- -
F_RT0904	*Trachurus trachurus*	- -	- -	- -	- -	- -
F_RT0905	*Solea solea*	- -	- -	- -	- -	- -
F_RT0906	*Mullus surmuletus*	- -	- -	- -	- -	- -
F_RT0907	*Chelidonichthys lucerna*	*Eutrigla gurnardus*	*- [lucernus]*	*- [lucernus]*	*[Trigla] -*	- -
F_RT0908	*Zeus faber*	- -	- -	- -	- -	- -
F_RT0909	*Sparus aurata*	- -	- -	- -	- -	- -
F_RT0910	*Sprattus sprattus*	- -	- -	- -	- -	- -
F_RT0911	*Clupea harengus*	- -	- -	- -	- -	- -
F_RT0912	*Sardina pilchardus*	*Alosa fallax*	- -	- -	- -	- -
F_RT0913	*Hyperoplus lanceolatus*	- -	- -	- -	- -	- -
F_RT0914	*Osmerus eperlanus*	- -	- -	- -	- -	- -
F_RT0915	*Ammodytes tobianus*	- -	- -	- -	- -	- -

	Taxon	LB2216	LB2219	LB2220A	LB2220B	LB2221
F_RT0901	*Liza ramada*	- -	*Chelon labrosus*	*- aurata*	- -	- -
F_RT0902	*Merlangius merlangus*	- -	- -	- -	- -	- -
F_RT0903	*Pleuronectes platessa*	- -	- -	- -	- -	- -
F_RT0904	*Trachurus trachurus*	- -	- -	- -	- -	- -
F_RT0905	*Solea solea*	- -	- -	- -	- -	- -
F_RT0906	*Mullus surmuletus*	- -	- -	*- barbatus*	*- barbatus*	- -
F_RT0907	*Chelidonichthys lucerna*	- -	*- [lucernus]*	*- [lucernus]*	*- [lucernus]*	- -
F_RT0908	*Zeus faber*	- -	- -	- -	- -	- -
F_RT0909	*Sparus aurata*	- -	- -	- -	- -	- -
F_RT0910	*Sprattus sprattus*	- -	- -	- -	- -	- -
F_RT0911	*Clupea harengus*	- -	- -	- -	- -	- -
F_RT0912	*Sardina pilchardus*	- -	- -	- -	- -	*Alosa fallax*
F_RT0913	*Hyperoplus lanceolatus*	- -	- -	- -	- -	*Ammodytes tobianus*
F_RT0914	*Osmerus eperlanus*	- -	- -	- -	- -	*Mallotus villosus*
F_RT0915	*Ammodytes tobianus*	- -	- -	- -	- -	*Hyperoplus lanceolatus*

Names in [ ] are not counted as an error. [ ] indicate a synonym or a spelling error.
* indicates a spelling error in addition to a taxonomic error.

Table 2. Differences of identifications made by participating laboratories for the ninth fish ring test: FRT_09, sorted by participating laboratories. Names are given only where different from AQC identification.

	Taxon	LB2222	LB2224	LB2225A	LB2225B
F_RT0901	*Liza ramada*	*Non-participant*	- -	- -	- -
F_RT0902	*Merlangius merlangus*	*Non-participant*	- -	- -	- -
F_RT0903	*Pleuronectes platessa*	*Non-participant*	- -	- -	- -
F_RT0904	*Trachurus trachurus*	*Non-participant*	- -	- -	- -
F_RT0905	*Solea solea*	*Non-participant*	- -	- -	- -
F_RT0906	*Mullus surmuletus*	*Non-participant*	- -	- -	- -
F_RT0907	*Chelidonichthys lucerna*	*Non-participant*	- -	*Trigla piper*	*Trigla piper*
F_RT0908	*Zeus faber*	*Non-participant*	- -	- -	- -
F_RT0909	*Sparus aurata*	*Non-participant*	- -	- -	- -
F_RT0910	*Sprattus sprattus*	*Non-participant*	- -	- -	- -
F_RT0911	*Clupea harengus*	*Non-participant*	- -	- -	- -
F_RT0912	*Sardina pilchardus*	*Non-participant*	- -	*Alosa fallax*	- -
F_RT0913	*Hyperoplus lanceolatus*	*Non-participant*	- -	- -	*[Hyperplus]* -
F_RT0914	*Osmerus eperlanus*	*Non-participant*	- -	- -	- -
F_RT0915	*Ammodytes tobianus*	*Non-participant*	- -	*Gymnammodytes semisquamatus*	-*[Ammpdytes]* -

	Taxon	LB2226	LB2228	LB2229
F_RT0901	*Liza ramada*	- -	*Chelon labrosus*	- -
F_RT0902	*Merlangius merlangus*	- -	- *[merlangius)*	- -
F_RT0903	*Pleuronectes platessa*	- -	- -	- -
F_RT0904	*Trachurus trachurus*	- -	- -	- -
F_RT0905	*Solea solea*	- -	- -	- -
F_RT0906	*Mullus surmuletus*	- -	- -	- -
F_RT0907	*Chelidonichthys lucerna*	- -	- -	- -
F_RT0908	*Zeus faber*	- -	- -	- -
F_RT0909	*Sparus aurata*	- -	- -	- -
F_RT0910	*Sprattus sprattus*	- -	- -	- -
F_RT0911	*Clupea harengus*	- -	- -	- -
F_RT0912	*Sardina pilchardus*	- -	- -	*Alosa alosa*
F_RT0913	*Hyperoplus lanceolatus*	- -	- -	- -
F_RT0914	*Osmerus eperlanus*	- -	- -	- -
F_RT0915	*Ammodytes tobianus*	- -	- -	- -

Names in [ ] are not counted as an error. [ ] indicate a synonym or a spelling error.
* indicates a spelling error in addition to a taxonomic error.

Table 3. Differences of identifications made by participating laboratories for the ninth fish ring test: FRT_09, sorted by specimens. Names are given only where different from the AQC identification.

	F_RT0901	F_RT0902	F_RT0903	F_RT0904	F_RT0805	F_RT0906
Taxon	*Liza ramada*	*Merlangius merlangus*	*Pleuronectes platessa*	*Trachurus trachurus*	*Solea solea*	*Mullus surmuletus*
LB2201	- -	- -	- -	- -	- -	- -
LB2209	*Liza aurata*	- -	- -	- -	- -	- -
LB2212	- -	- -	- -	- -	- -	- -
LB2213	- -	- -	- -	- -	- -	- -
LB2214	- -	- -	- -	- -	- -	- -
LB2216	*Liza aurata*	- -	- -	- -	- -	- -
LB2219	*Chelon labrosus*	- -	- -	- -	- -	- -
LB2220A	*Liza aurata*	- -	- -	- -	- -	*Mullus barbatus*
LB2220B	- -	- -	- -	- -	- -	*Mullus barbatus*
LB2221	- -	- -	- -	- -	- -	- -
LB2222	- -	- -	- -	- -	- -	- -
LB2224	- -	- -	- -	- -	- -	- -
LB2225A	- -	- -	- -	- -	- -	- -
LB2225B	- -	- -	- -	- -	- -	- -
LB2226	- -	- -	- -	- -	- -	- -
LB2228	*Chelon labrosus*	- -	- -	- -	- -	- -
LB2229	- -	- -	- -	- -	- -	- -

Table 3. Differences of identifications made by participating laboratories for the ninth fish ring test: FRT_09, sorted by specimens. Names are given only where different from the AQC identification.

	F_RT0907	F_RT0908	F_RT0909	F_RT0910	F_RT0911	F_RT0912
Taxon	*Chelidonichthys lucerna*	*Zeus faber*	*Sparus aurata*	*Sprattus sprattus*	*Clupea harengus*	*Sardina pilchardus*
LB2201	*Eutriga gurnardus*	- -	- -	- -	- -	*Alosa fallax*
LB2209	- -	- -	- -	- -	- -	- -
LB2212	- -	- -	- -	- -	- -	- -
LB2213	- -	- -	- -	- -	- -	- -
LB2214	- -	- -	- -	- -	- -	- -
LB2216	- -	- -	- -	- -	- -	- -
LB2219	- -	- -	- -	- -	- -	- -
LB2220A	- -	- -	- -	- -	- -	- -
LB2220B	- -	- -	- -	- -	- -	- -
LB2221	- -	- -	- -	- -	- -	*Alosa fallax*
LB2222	- -	- -	- -	- -	- -	- -
LB2224	- -	- -	- -	- -	- -	- -
LB2225A	*Trigla piper*	- -	- -	- -	- -	*Alosa fallax*
LB2225B	*Trigla piper*	- -	- -	- -	- -	- -
LB2226	- -	- -	- -	- -	- -	- -
LB2228	- -	- -	- -	- -	- -	- -
LB2229	- -	- -	- -	- -	- -	- -

Table 3. Differences of identifications made by participating laboratories for the ninth fish ring test: FRT_09, sorted by specimens. Names are given only where different from the AQC identification.

	F_RT0913	F_RT0914	F_RT0915
Taxon	*Hyperoplus lanceolatus*	*Osmerus eperlanus*	*Ammodytes tobianus*
LB2201	- -	- -	- -
LB2209	- -	- -	*Ammodytes tobianus* / *marinus*
LB2212	- -	- -	- -
LB2213	- -	- -	- -
LB2214		- -	- -
LB2216	- -	- -	- -
LB2219	- -	- -	- -
LB2220A	- -	- -	- -
LB2220B	- -	- -	- -
LB2221	*Ammodytes tobianus*	*Mallotus villosus*	*Hyperoplus lanceolatus*
LB2222	- -	- -	- -
LB2224	- -	- -	- -
LB2225A	- -	- -	- -
LB2225B	- -	- -	- -
LB2226	- -	- -	- -
LB2228	- -	- -	- -
LB2229	- -	- -	- -

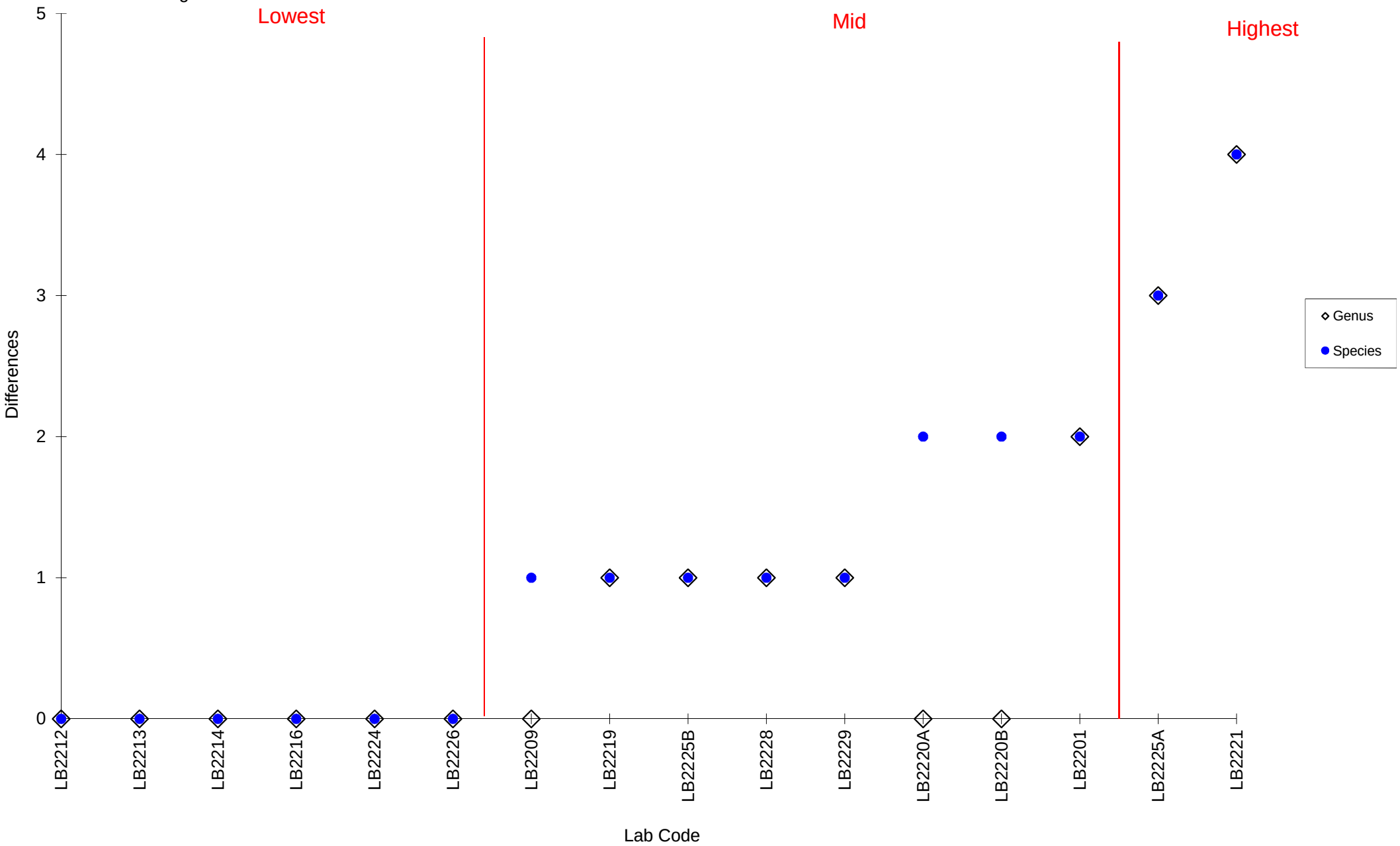
Table 4. Literature used by participants when identifying ring test specimens (F_RT09)

Specimen	F_RT														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Wheeler (1969)	*	*	*	*	*		*	*	*	*	*	*	*	*	*
Wheeler (1978)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Whitehead *et al.* (1984– 1986)	*														
Hayward & Ryland (1990)							*								
Kay & Dipper (2009)	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Maitland & Herdson (2009)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Henderson (2015)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Table 5. Literature used by TUM for identification of ring test specimens (F_RT09)

Specimen	**Literature cited**
F_RT0901	Maitland and Herdson 2009, Henderson 2015,
F_RT0902	Maitland and Herdson 2009
F_RT0903	Wheeler 1978, Maitland and Herdson 2009,
F_RT0904	Wheeler 1978
F_RT0905	Wheeler 1978
F_RT0906	Wheeler 1978
F_RT0907	Maitland and Herdson 2009
F_RT0908	Wheeler 1978
F_RT0909	Louisy 2015
F_RT0910	Maitland and Herdson 2009
F_RT0911	Maitland and Herdson 2009
F_RT0912	Wheeler 1978
F_RT0913	Henderson 2015
F_RT0914	Maitland and Herdson 2009
F_RT0915	Henderson 2015

Figure 1. The number of taxonomic differences from the AQC identification of specimens distributed in F_RT09 for each of the participating laboratories. Arranged in order of increasing number of differences.



Differences exclude Synonyms and spelling errors.

Fish ring tests: General information

The common names provided include those stated in FishBase (http://www.fishbase.org/search.php) first, followed by other commonly used names, where appropriate. An additional terminal character has been added to participating laboratory codes (upper case, sequential letters) to denote multiple data from that laboratory, *i.e.* two participants from laboratory 2201 would be coded as 'Lab 2201A' and 'Lab 2201B'. For details of your laboratory code, please contact your scheme representative or Thomson Unicomarine Ltd.

The following coding is used for photographs:

Lateral view of whole specimen	L
Dorsal view of whole of specimen	D
Ventral view of whole specimen	V
Lateral view of head	H

The habitats are defined as follows:

Pelagic: Occurs primarily in the water column

Demersal: Occurs on or near to the sea floor

Bentho-pelagic: Occurs both near the sea floor and in the water column

Substrata are defined as follows:

Mixed: Occurs on a variety of sediment types

Sand: Occurs primarily on sandy sediments

Rock: Occurs primarily on rocky grounds

Mud: Occurs primarily on muddy sediments

NA: No substratum is defined for pelagic species

Salinity regimes are defined as follows:

High: Occurs in fully marine habitats

Mixed: Occurs in fully marine and transitional waters

Reduced: Occurs primarily in estuarine and transitional waters

Depth regimes are defined as follows:

Shallow sublittoral: Occurs primarily in coastal waters <20 m deep, including intertidal habitats

Circalittoral: Occurs primarily in shelf seas to depths of 200 m

Deep-water: Occurs primarily in waters depths >200 m

Geographic origin refers to the region where the actual specimens were sourced from.

Ring test specimens: images and identifications (F_RT09)

F_RT0901 – *Liza ramada* (Thin-lipped grey mullet) (Figure 1a and 1b)

Figure 1a (F_RT0901) – *L*

Habitat: Benthopelagic
Substrate: Mixed
Salinity: Reduced
Depth: Shallow sublittoral
Geographic source: South-east England

Figure 1b (F_RT0901) – *H*

Two generic differences and five specific differences recorded.

Laboratories 2209, 2216 and 2220A identified as golden grey mullet *Liza aurata,* which has gold spots on the cheeks and gill cover and an all-over golden tint. Although the upper lip is narrower than that of the thick-lipped grey mullet *Chelon labrosus*, the teeth on this part of the lip are relatively large. *Liza ramada* possess bristle-like teeth on the upper lip edge. Preorbital bone is coarsely toothed and rounded, whereas in *L. aurata*, the preorbital bone is finely toothed and pointed. The anal fin of *L. aurata* is light in colour, whereas it is dusky in *L. ramada*.

Figure 1b shows the thin upper lip of *Liza ramada* and lack of gold spot on the operculum.

Laboratories 2219 and 2228 identified as *Chelon labrosus* which has a broad lip (depth is more than half the eye diameter) with the lower part with coarse papillae and closely packed small teeth. The preorbital bone is right-angled and is finely toothed.

F_RT0902 *Merlangius merlangus* (Whiting) (Figure 2)

Figure 2 (F_RT0902) – *L*

Habitat: Demersal

Substrate: Mixed

Salinity: Full

Depth: Circalittoral

Geographic source: France (Atlantic)

No differences recorded.

F_RT0903 – *Pleuronectes platessa* (Plaice) (Figure 3)

Figure 3 (F_RT0903) – L

Habitat: Demersal

Substrate: Mixed

Salinity: Full (mixed)

Depth: Shallow sublittoral and circalittoral

Geographic source: Wales

No differences recorded.

F_RT0904 – *Trachurus trachurus* (Atlantic horse mackerel / Scad) (Figure 4)

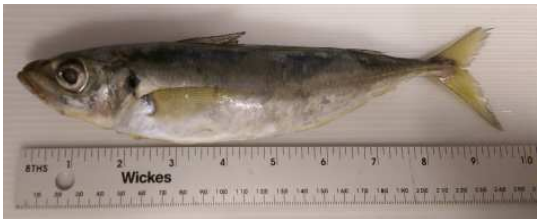


Figure 4 (F_RT0904) - L

Habitat: Pelagic

Substrate: NA

Salinity: Full (mixed)

Depth: Shallow sublittoral and circalittoral

Geographic source: South-west England

No differences recorded.

F_RT0905 – *Solea solea* (Common sole) (Figure 5)

Figure 5 (F_RT0905) – L

Habitat: Demersal
Substrate: Mixed
Salinity: Full (mixed)
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England

No differences recorded.

F_RT0906 – *Mullus surmuletus* (Striped red mullet) (Figure 6a and 6b)

Figure 6a (F_RT0906) – L

Figure 6b (F_RT0906) – H

Habitat: Demersal
Substrate: Mixed
Salinity: Full (mixed)
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England

Two specific differences recorded.

Laboratories 2220A and 2220B identified as *Mullus barbatus*, which lacks longitudinal stripes along the body.

Additionally, the snout is longer and less steeply profiled in *M. surmuletus* (Figure 6b) and the latter has two suborbital scales rather than three.

M. barbatus possess 31 to 35 scales along the lateral line, whereas *M. surmuletus* possess 33 - 37.

F_RT0907 – *Chelidonichthys lucerna* (Tub gurnard) (Figures 7a and 7b)

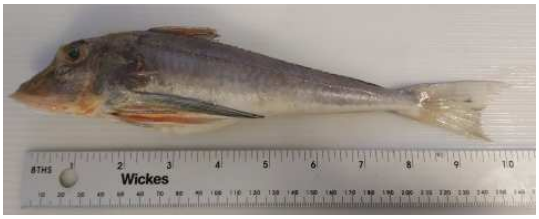


Figure 7a (F_RT0907) – L

Figure 7b (F_RT0907) - H

Habitat: Demersal
Substrate: Mixed
Salinity: Full (mixed)
Depth: Shallow sublittoral and circalittoral
Geographic source: Brixham

Three generic differences and three specific differences recorded.

Laboratory 2201 identified the specimen as *Eutrigla gurnardus* which has a different snout profile, bony scutes along the lateral line, a dark spot on the first dorsal fin and a larger eye.

C. lucerna possess two lobes that form the snout bearing small spines on the front edge. The pectoral fins (often brightly coloured) reach past the vent, and the lateral line scales are not enlarged or spiny.

Figure 7b shows a lateral view of the head, in which the smaller eye and the spines on the snout are visible.

Laboratories 2225A and 2225B identified as *Trigla piper* (seemingly confusing the common and scientific names of the Piper gurnard *Trigla lyra*), which has a different snout profile which is formed of two flattered plates with distinct and pronounced forward facing teeth. *T. lyra* also possess a very large spine immediately above the pectoral fin.

F_RT0908 – *Zeus faber* (John dory) (Figure 8)

Figure 8 (F_RT0908) – L

Habitat: Demersal
Substrate: Mixed
Salinity: Full
Depth: Shallow sublittoral and circalittoral
Geographic source: Wales

No differences recorded.

F_RT0909 – *Sparus aurata* (Gilthead sea-bream) (Figure 9)

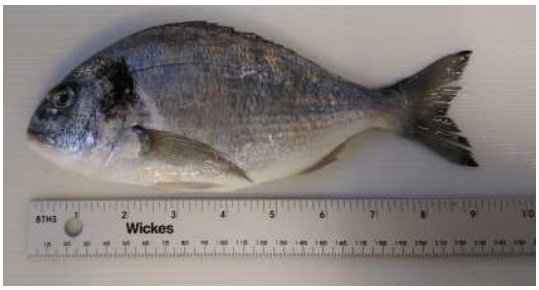


Figure 9 (F_RT0909) - L

Habitat: Demersal
Substrate: Mixed
Salinity: Full
Depth: Shallow sublittoral and circalittoral
Geographic source: Cornwall
Note: Visitor to some parts of British Isles

No differences recorded.

F_RT0910 – *Sprattus sprattus* (Sprat) (Figure 10)

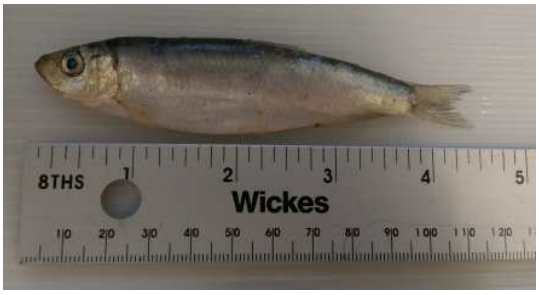


Figure 10 (F_RT0910) – L

Habitat: Pelagic
Substrate: NA
Salinity: Mixed
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England

No differences recorded.

F_RT0911 – *Clupea harengus* (Herring) (Figure 11)

Figure 11 (F_RT0911) – L

Habitat: Pelagic
Substrate: NA
Salinity: Mixed
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England

No differences recorded.

F_RT0912 – *Sardina pilchardus* (Pilchard / Sardine) (Figures 12a-b)

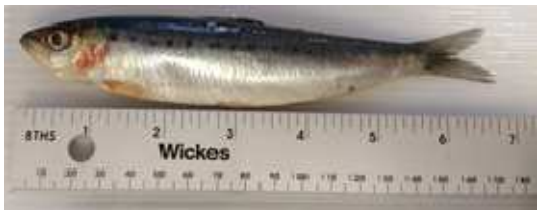


Figure 12a (F_RT0912) - L

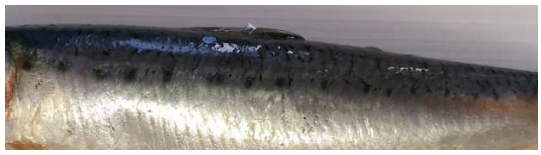


Figure 12b (F_RT0912) - L

Habitat: Pelagic
Substrate: NA
Salinity: Full
Depth: Shallow sublittoral and circalittoral
Geographic source: Spain

Four generic differences and four specific differences recorded.

Laboratories 2201, 2221 and 2225A identified as *Alosa fallax* which has a notch in the mid-line of the upper jaw, and has a more compressed body than *Sardina pilchardus*. This compressed body has sharp keels where the scales form distinct teeth. *Alosa fallax* does possess ridges on the gill covers, however, these are fainter than the more prominent ridges seen in *S. pilchardus*.

Dusky spots are typically pronounced in *S. pilchardus* (Figure 12b), but are not a diagnostic characteristic by themselves, as such spots can be present in *Alosa.* Laboratory 2229 identified as *Alosa alosa* which has similar features to *Alosa fallax* but usually has just a single spot behind the gill cover.

Gill rakers on the first gill arch would need to be analysed to differentiate *A. fallax* from *A. alosa*. The latter have 80 - 130 gill rakers, whereas *A.*

fallax have 46 - 60. It should be noted that these two species may hybridise.

Sardina pilchardus has a pelvic fin origin positioned behind the dorsal fin origin. It lacks a sharply scaled body and the last anal fin rays are elongate.

S. pilchardus has a dorsal ray count of 17– 18 and an anal fin ray count of 17– 18, whereas *A. fallax* has fin ray counts of 18– 21 and 19– 23 and *A. alosa* has fin ray counts of 18– 21 and 20– 26 respectively.

F_RT0913 – *Hyperoplus lanceolatus* (Greater sandeel) (Figure 13a-b)

Figure 13a (F_RT0913) – L

Figure 13b (F_RT0913) - H

Habitat: Benthopelagic
Substrate: Sand
Salinity: Full
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England
One generic and one specific difference recorded.

Laboratory 2221 identified as *Ammodytes tobianus* which has a fully protrusible upper jaw, lacks the bifid tooth structure in the roof of the mouth and lacks the dark spot on the snout. *A. tobianus* has a dorsal fin ray count of 49 – 58, whereas *H. lanceolatus* has a dorsal fin ray count of 52 – 61.

F_RT0914 – *Osmerus eperlanus* (Smelt) (Figure 14)

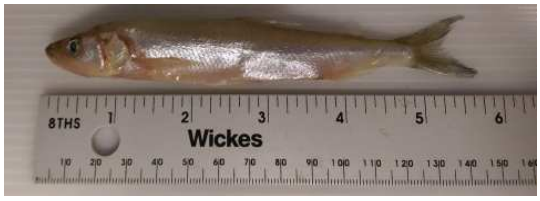


Figure 14 (F_RT0914) – L

Habitat: Benthopelagic
Substrate: Mixed
Salinity: Mixed
Depth: Shallow sublittoral
Geographic source: South-west England

One generic difference and one specific difference recorded.

Laboratory 2221 identified as *Mallotus villosus* which has an adipose fin which is low and long based rather than high and narrow based. The anal fins also differ, with *M. villosus* possessing an anal fin with a more rounded edge rather than the angular edge seen in *O. eperlanus*.

Additional note: *Osmerus eperlanus* also have a faint smell of cucumber when freshly caught.

F_RT0915 – *Ammodytes tobianus* (Lesser sandeel) (Figures 15a-b)

Figure 15a (F_RT0915) – L

Figure 15b (F_RT0915) – L

Habitat: Benthopelagic
Substrate: Sand
Salinity: Mixed
Depth: Shallow sublittoral and circalittoral
Geographic source: South-west England

Two generic differences and three specific differences recorded.

Laboratory 2209 identified as *Ammodytes tobianus* / *marinus,* and so had identified the genus correctly. *Ammodytes tobianus* possess scales at the base of the tail fin lobes and has a dorsal fin with 49– 58 fin rays, whilst *Ammodytes marinus* lack scales at the base of the tail lobes and has a dorsal fin with 55– 67 fin rays.

Laboratory 2221 identified the specimens as *Hyperoplus lanceolatus,* which does not have a protrusible jaw and possesses a large bifid tooth structure on the roof of the mouth and a black spot on the side of the snout. *A. tobianus* has a fully protrusible jaw and lacks a bifid tooth structure and spot on the snout, although the jaw can appear dark in colour.

Figure 15b shows the head of *A. tobianus.*

Laboratory 2225A identified the specimen as *Gymnammodytes semisquamatus* which has a scale-less anterior half of the body and dorsal and anal fins have wavy margins. The lateral lines have short canals branching above and below the main canal (typically two above for every three below).

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FishBase - http://www.fishbase.org/search.php

World Register of Marine Species - http://www.marinespecies.org/aphia.php?p=search

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Specimens

Laboratories are permitted to keep their specimens for inclusion in their in-house reference collections.
