

**The National Marine Biological
Analytical Quality Control Scheme**

Ring Test Bulletin – RTB#31

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RING TEST DETAILS

Ring Test #31

Type/Contents – Targeted; ‘Fish’

Circulated – 19/02/2007

Completion Date – 27/04/2007

Number of Participating Laboratories – 14*

Number of Results Received – 32*

*Note that multiple data returns from each laboratory/area was partially trialled for this exercise.

Summary of differences

Specimen	Genus	Species	Total differences for (32) laboratories	
			Genus	Species
RT3101	<i>Echiichthys</i>	<i>vipera</i>	1	1
RT3102	<i>Dicentrarchus</i>	<i>labrax</i>	1	1
RT3103	<i>Platichthys</i>	<i>flesus</i>	7	7
RT3104	<i>Sprattus</i>	<i>sprattus</i>	1	1
RT3105	<i>Gaidropsarus</i>	<i>mediterraneus</i>	20	22
RT3106	<i>Mullus</i>	<i>surmuletus</i>	0	1
RT3107	<i>Zeus</i>	<i>faber</i>	0	0
RT3108	<i>Limanda</i>	<i>limanda</i>	3	3
RT3109	<i>Scyliorhinus</i>	<i>canicula</i>	0	0
RT3110	<i>Trachurus</i>	<i>trachurus</i>	5	5
RT3111	<i>Scomber</i>	<i>scombrus</i>	0	0
RT3112	<i>Callionymus</i>	<i>lyra</i>	1	3
RT3113	<i>Agonus</i>	<i>cataphractus</i>	1	1
RT3114	<i>Trisopterus</i>	<i>minutus</i>	0	12
RT3115	<i>Merlangius</i>	<i>merlangus</i>	0	0
RT3116	<i>Raja</i>	<i>montagui</i>	1	13
RT3117	<i>Aspitrigla</i>	<i>cuculus</i>	5	5
RT3118	<i>Eutrigla</i>	<i>gurnardus</i>	5	5
RT3119	<i>Syngnathus</i>	<i>rostellatus</i>	3	8
RT3120	<i>Ammodytes</i>	<i>marinus</i>	11	25
RT3121	<i>Clupea</i>	<i>harengus</i>	1	1
RT3122	<i>Osmerus</i>	<i>eperlanus</i>	6	6
RT3123	<i>Arnoglossus</i>	<i>laterna</i>	18	18
RT3124	<i>Lophius</i>	<i>piscatorius</i>	1	1
RT3125	<i>Ammodytes</i>	<i>tobianus</i>	17	18
Total differences			108	157
Average differences /lab.			3.4	4.9

Table 1. The identification of the fauna made by participating laboratories for RT31. Names are given only where different from the AQC identification.

LabCode	RT3101 <i>Echichthys vipera</i>	RT3102 <i>Dicentrarchus labrax</i>	RT3103 <i>Platichthys flesus</i>	RT3104 <i>Sprattus sprattus</i>	RT3105 <i>Gaidropsarus mediterraneus</i>	RT3106 <i>Mullus surmuletus</i>	RT3107 <i>Zeus faber</i>
LB1302a	--	--	--	--	--	--	--
LB1303a	--	--	--	- [sprattus]	--	--	--
LB1303b	--	--	--	- [sprattus]	--	--	--
LB1305a	--	--	--	--	--	--	--
LB1306a	--	[Dicentrarchus] -	[Platichthys] -	--	--	--	--
LB1307a	--	--	Pleuronectes platessa	--	Ciliata mustela	--	--
LB1310a	[Echichthys] -	--	--	--	--	- barbatus	--
LB1312a	--	--	--	--	Ciliata mustela	--	--
LB1312b	--	--	--	--	Ciliata mustela	--	--
LB1312c	--	[Dicentrarchus] -	[Platichthys] -	--	Hyperoplus immaculatus	--	--
LB1312d	[Trachinus] -	--	Pleuronectes platessa	--	Clupeid -	--	--
LB1312e	--	--	--	--	Rockling/burbot/ling? -	--	--
LB1313a	--	[Dicentrarchus] -	[Pleuronectes] -	--	Enchelyopus cimbrius	--	--
LB1313b	--	--	Pleuronectes platessa	--	Rhinonemus cimbrius	--	--
LB1313c	--	[Dicentrarchus] -	[Pleuronectes] -	--	Enchelyopus cimbrius	--	--
LB1313d	--	--	Pleuronectes platessa	--	Enchelyopus cimbrius	--	--
LB1313e	--	--	Pleuronectes platessa	--	Enchelyopus cimbrius	--	--
LB1313f	--	--	[Pleuronectes] -	--	Enchelyopus cimbrius	--	--
LB1313g	--	--	Pleuronectes platessa	--	Enchelyopus cimbrius	--	--
LB1313h	--	--	[Pleuronectes] [lessus]	--	- sp.	--	--
LB1314a	--	--	--	--	Ciliata mustela	--	--
LB1314b	--	--	--	--	Phcis blennoides	--	--
LB1314c	--	--	--	--	Ciliata mustela	--	--
LB1314d	--	Pollachius virens	--	--	Phycis blennoides	--	--
LB1315a	Trachinus draco	--	--	--	- vulgaris	--	--
LB1316a	[Trachinus] -	[Dicentrarchus] -	--	--	--	--	--
LB1323a	--	--	[Pleuronectes] -	--	--	--	--
LB1323b	--	--	[Pleuronectes] -	--	--	--	--
LB1325a	--	--	Pleuronectes platessa	Clupea herringus	Molva molva	--	--
LB1325b	[Trachinus] -	--	--	--	Atherina presbyter	--	--
LB1325c	[Trachinus] -	--	--	--	Atherina presbyter	--	--
LB1326a	[Trachinus] -	--	--	--	[Gaidropsaurus] -	--	--

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LabCode	RT3108 <i>Limanda limanda</i>	RT3109 <i>Scyliorhinus canicula</i>	RT3110 <i>Trachurus trachurus</i>	RT3111 <i>Scomber scombrus</i>	RT3112 <i>Callionymus lyra</i>	RT3113 <i>Agonus cataphractus</i>	RT3114 <i>Trisopterus minutus</i>
LB1302a	--	--	--	--	--	--	--
LB1303a	--	--	- [trachus]	--	--	--	--
LB1303b	--	--	- [trachus]	--	--	--	- luscus
LB1305a	--	--	--	--	--	--	--
LB1306a	Microstomus kitt	- [caniculus]	--	--	--	--	- luscus
LB1307a	--	--	--	--	--	--	--
LB1310a	--	--	Pollachius pollachius	--	--	--	--
LB1312a	--	- [caniculus]	--	- [scomber]	--	--	- luscens
LB1312b	--	- [caniculus]	--	[Scomer] -	--	--	- luscus
LB1312c	Pleuronectes platessa	- [caniculus]	Pollachius virens	--	--	--	--
LB1312d	--	[Schliorhinus] -	- [tracurus]	- [scomberus]	--	--	- sp.
LB1312e	--	--	--	--	--	--	- luscus
LB1313a	--	--	--	--	--	--	--
LB1313b	--	--	--	--	--	--	- luscus
LB1313c	--	--	--	--	--	--	--
LB1313d	--	--	--	--	--	--	- luscus
LB1313e	--	--	Trispterus luscus	--	--	--	--
LB1313f	--	--	Trisopterus luscus	--	--	--	--
LB1313g	--	[Scyliorhinus] -	--	--	--	--	- luscus
LB1313h	--	- [caniculus]	--	--	--	--	--
LB1314a	--	[Syllorhinus] [canulus]	--	--	[Callionymus] -	--	--
LB1314b	--	--	--	--	--	--	--
LB1314c	--	--	--	--	--	--	--
LB1314d	--	- [caniculus]	--	--	--	--	--
LB1315a	--	- [caniculus]	--	--	--	--	--
LB1316a	--	[Scyliorhinus] [caniculus]	--	--	--	--	--
LB1323a	--	--	--	--	- reticulatus	--	- luscus
LB1323b	--	--	--	--	--	--	- luscus
LB1325a	Solea solea	- [canicula]	--	--	--	--	--
LB1325b	--	[Scyliorhinus] [caniculus]	--	--	[Callionmus] -	--	--
LB1325c	--	[Scyliorhinus] [caniculus]	Alosa sp.	--	Scorpaena sp.	Scorpaena scofa	--
LB1326a	--	- [caniculus]	--	--	- reticulatus	--	- luscus

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LabCode	RT3115	RT3116	RT3117	RT3118	RT3119	RT3120	RT3121
	<i>Merlangius merlangus</i>	<i>Raja montagui</i>	<i>Aspitrigla cuculus</i>	<i>Eutrigla gurnardus</i>	<i>Syngnathus rostellatus</i>	<i>Ammodytes marinus</i>	<i>Clupea harengus</i>
LB1302a	--	--	--	--	--	--	--
LB1303a	--	- clavata	--	--	--	--	--
LB1303b	--	- radiata	--	--	--	Hyperoplus immaculatus	--
LB1305a	--	- brachyura	--	--	--	--	--
LB1306a	--	--	--	--	- [rostellus]	--	--
LB1307a	--	Raja [Rostrotaraja] alba	--	--	--	Hyperoplus lanceolatus	--
LB1310a	--	--	--	--	--	Hyperoplus immaculatus	--
LB1312a	--	- ?	--	--	--	- ?	--
LB1312b	--	--	--	--	--	- tobianus	--
LB1312c	--	--	Trigla lucerna	--	[Synganthus] typhle	- tobianus	--
LB1312d	- [merlangius]	- clavata	Triglididae -	Triglididae -	Signathodiidae -	Ammodytidae -	--
LB1312e	--	--	--	--	--	Hyperoplus ?	--
LB1313a	--	--	--	--	--	- tobianus	--
LB1313b	--	--	--	--	--	- tobianus	--
LB1313c	--	--	--	--	--	- tobianus	--
LB1313d	[Merlangus] -	--	Eutrigla gurnardus	Aspitrigla cuculus	--	Ammodytidae -	--
LB1313e	--	--	--	--	--	- tobianus	--
LB1313f	--	--	--	--	--	- tobianus	--
LB1313g	--	- [montaguui]	Trigla lucerna	Aspitrigla cuculus	--	- tobianus	--
LB1313h	--	- [montaguui]	--	--	--	- tobianus	--
LB1314a	--	- clavata	[Astrigla] -	--	--	- tobianus	--
LB1314b	--	--	--	--	--	--	--
LB1314c	--	- brachyura	--	[Eutriglia] -	--	Hyperoplus lanceolatus	- [herengus]
LB1314d	--	- brachyura	--	--	--	Hyperoplus immaculatus	--
LB1315a	--	- clauata	--	--	- acus	Hyperoplus immaculatus	--
LB1316a	--	--	--	--	--	- tobianus	--
LB1323a	--	--	--	--	- acus	- tobianus	--
LB1323b	--	--	--	--	- acus	Hyperoplus lanceolatus	--
LB1325a	--	--	Trigla lucerna	Aspitrigla cuculus	Nerophis lumbriciformis	- tobianus	--
LB1325b	--	- clavata	--	Trigla lucerna	--	Lumpenus lamirataeformis	[Culpea] -
LB1325c	--	- brachyura	--	--	Enterulus aqueorus	- tobianus	[Culpea] -
LB1326a	--	- clavata	--	--	- acus	--	Sardina pilchardus

Table 1. The identification of the fauna made by participating laboratories for RT31. Names are given only where different from the AQC identification.

LabCode	RT3122		RT3123		RT3124		RT3125	
	<i>Osmerus eperlanus</i>		<i>Arnoglossus laterna</i>		<i>Lophius piscatorius</i>		<i>Ammodytes tobianus</i>	
LB1302a	--	--	--	--	--	--	--	--
LB1303a	--	--	--	--	--	--	--	Hyperoplus lanceolatus
LB1303b	--	--	--	--	--	--	--	Hyperoplus lanceolatus
LB1305a	--	--	--	--	--	--	--	--
LB1306a	--	--	Lepidorhombus whiffiagonis	--	--	--	--	--
LB1307a	--	--	--	--	--	--	--	--
LB1310a	--	--	Lepidorhombus whiffiagonis	--	--	--	--	--
LB1312a	--	--	--	--	--	--	--	--
LB1312b	--	--	--	--	--	--	--	Hyperoplus lanceolatus
LB1312c	--	--	--	--	--	--	--	Hyperoplus lanceolatus
LB1312d	--	- [eperlanus?]	Lepidorhombus whiffiagonis	--	--	--	--	Hyperoplus lanceolatus
LB1312e	--	--	Lepidorhombus whiffiagonis	--	--	--	--	Ammodytidae -
LB1313a	--	Atherina presbyter	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313b	--	--	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313c	--	Atherina presbyter	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313d	--	--	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313e	--	Atherina presbyter	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313f	--	Atherina presbyter	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313g	--	--	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1313h	--	Atherina presbyter	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1314a	--	--	--	--	--	--	--	- marinus
LB1314b	--	- [eperlandus]	Lepidorhombus whiffiagonis	--	--	--	--	--
LB1314c	--	--	Lepidorhombus whiffiagonis	--	--	--	--	--
LB1314d	--	Alosa fallax	Lepidorhombus whiffiagonis	--	--	--	--	Hyperoplus lanceolatus
LB1315a	--	--	Microstomus kitt	--	--	--	--	Hyperoplus lanceolatus
LB1316a	--	--	- [lanterna]	--	--	--	--	--
LB1323a	--	--	[Arnoglossus] -	--	--	--	--	--
LB1323b	--	--	--	--	--	--	--	--
LB1325a	--	--	--	--	Squatina squatina	--	--	Gymanammodytes circeirelus
LB1325b	--	--	Solea solea	--	--	--	--	--
LB1325c	--	--	Solea solea	--	--	--	--	Hyperoplus lanceolatus
LB1326a	--	--	--	--	--	--	--	--

Table 2. Literature and resources cited by participating laboratories for RT31 (presence of RT31 taxa in major citations listed).

LabCode	Literature Cited for RT31 Identification (errors corrected)
LB1302a	Wheeler 1969 & Whitehead et al. 1989
LB1303a	Wheeler 1978 & Muus and Dahlstrom 1974
LB1303b	Wheeler 1978 & Muus and Dahlstrom 1974
LB1305a	-
LB1306a	Wheeler 1969 & Whitehead (UNESCO) 1984
LB1307a	Wheeler
LB1310a	Haywood and Ryland 1995 & Whitehead (UNESCO) 1984
LB1312a	Haywood and Ryland 1995
LB1312b	Haywood and Ryland 1990
LB1312c	Haywood and Ryland 1990
LB1312d	None
LB1312e	Wheeler 1978
LB1313a	Wheeler 1992, Campbell 2004 & http://web.ukonline.co.uk/aquarium
LB1313b	Wheeler 1992, Campbell 2004 & http://web.ukonline.co.uk/aquarium
LB1313c	Wheeler 1992, Campbell 2004 & http://web.ukonline.co.uk/aquarium
LB1313d	Wheeler 1992, Campbell 1996(Hamlyn), Miller and Loates 1997 (Collins) & http://web.ukonline.co.uk/aquarium
LB1313e	Wheeler 1992 & http://web.ukonline.co.uk/aquarium
LB1313f	Wheeler 1992 & http://web.ukonline.co.uk/aquarium
LB1313g	Wheeler 1992
LB1313h	Haywood and Ryland
LB1314a	Haywood and Ryland 1995
LB1314b	Haywood and Ryland, Muus and Dahlstrom 1974 & Wheeler
LB1314c	Wheeler 1978
LB1314d	Wheeler
LB1315a	Muus and Dahlstrom 1974 & Wells 1959
LB1316a	Wheeler 1969
LB1323a	Wheeler 1978
LB1323b	Wheeler
LB1325a	http://web.ukonline.co.uk/aquarium & Fish Base
LB1325b	-
LB1325c	-
LB1326a	Wheeler 1969 & 1992

RT31 Taxon	Presence in literature/resource					
	http://web.ukonline.co.uk/aquarium	Haywood & Ryland 1990	Haywood & Ryland 1995	Muus and Dahlstrom 1974	Wheeler 1969	Wheeler 1978
<i>Echiichthys vipera</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	synonym	synonym	<input checked="" type="checkbox"/>
<i>Dicentrarchus labrax</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Platichthys flesus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	synonym	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Sprattus sprattus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Gaidropsarus mediterraneus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Mullus surmuletus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Zeus faber</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Limanda limanda</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Scyliorhinus canicula</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	synonym	synonym	<input checked="" type="checkbox"/>
<i>Trachurus trachurus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Scomber scombrus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Callionymus lyra</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Agonus cataphractus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Trisopterus minutus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Merlangius merlangus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Raja montagui</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	key only	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Aspitrigla cuculus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Eutrigla gurnardus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Syngnathus rostellatus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Ammodytes marinus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	notes only	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Clupea harengus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Osmerus eperlanus</i>	listed only	notes only	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Arnoglossus laterna</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Lophius piscatorius</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Ammodytes tobianus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Specimen Images and Detailed Breakdown of Identifications

The common names provided include that stated in FishBase (<http://www.fishbase.org/search.php>) first followed by other commonly used names, where appropriate.

(Figure view codes: A=anterior; P=posterior; L=lateral; D=dorsal; V=ventral)

RT3101 – *Echiichthys vipera* (Lesser Weever) (Figure 1a)

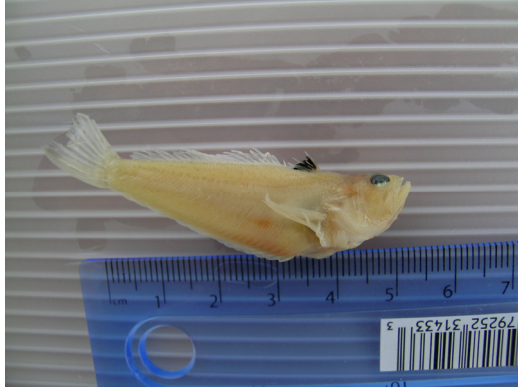


Figure 1a (RT3101) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: East Anglia. Condition: Good, Length 5.5-7cm.

One generic and one specific difference: Lab 1315a identified as *Trachinus draco* (which has a much less flattened head with short spines in front of and above each eye).

Labs 1312d, 1316a, 1325b, 1325c and 1326a recorded the synonym *Trachinus vipera*. Lab 1310a incorrectly spelt the genus.

RT3102 – *Dicentrarchus labrax* (European Seabass, Bass) (Figure 2a)



Figure 2a (RT3102) - L

Substratum: Mixed. Salinity: High. Depth: Circalittoral. Geography: East Anglia. Condition: Good, Length 9-10cm.

One generic and one specific difference: Lab 1314d identified as *Pollachius virens* (which has three dorsal fins, a barbel on the lower jaw and lacks teeth on the pre-operculum).

Labs 1306a, 1312c, 1313a, 1313c and 1316a incorrectly spelt the genus.

RT3103 – *Platichthys flesus* (Flounder) (Figure 3a)



Figure 3a (RT3103) – L (right - eyed side)

Substratum: Mixed. Salinity: High. Depth: Circalittoral. Geography: W. Scotland. Condition: Good, Length 8-9cm.

Seven generic and seven specific differences: Labs 1307a, 1312d, 1313b, 1313d, 1313e, 1313g and 1325a identified as *Pleuronectes platessa* (which lacks short spines between the fin ray bases of the dorsal and anal fins).

Labs 1313a, 1313c, 1313f, 1313h, 1323a and 1323b recorded the synonym *Pleuronectes flesus*. Labs 1306a and 1312c incorrectly spelt the genus; Lab 1313h incorrectly spelt the species.

RT3104 – *Sprattus sprattus* (European Sprat, Sprat) (Figure 4a)

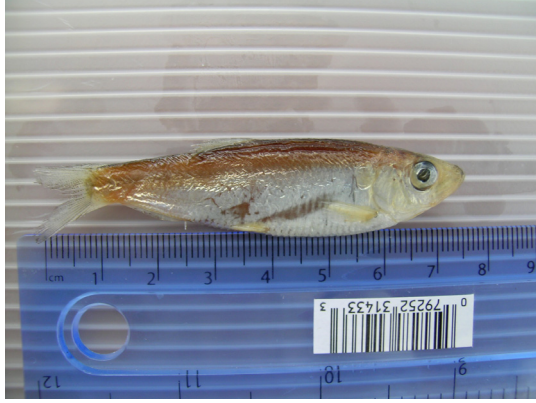


Figure 4a (RT3104) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: East Anglia. Condition: Fair/Good, Length 6-7.5cm.

One generic and one specific difference: Lab 1325a identified as *Clupea herringus* (*sic.*) (which lacks a distinct line of spiny scales along the ventral apex and has the dorsal fin originating in front of the pelvic fin base, see Figure 21a).

Labs 1303a and 1303b incorrectly spelt the species.

Lab 1314a transposed the names of specimens 04 & 05.

RT3105 – *Gaidaropsarus mediterraneus* (Shore Rockling) (Figure 5a)

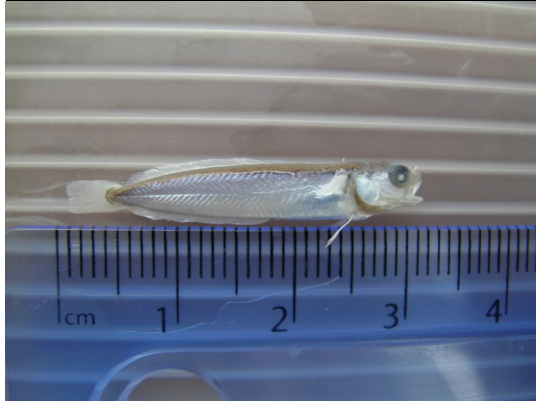


Figure 5a (RT3105) - L

Substratum: Mixed. Salinity: Full. Depth: Intertidal. Geography: N. Ireland. Condition: Good, Length 3cm.

Twenty generic and twenty-two specific differences: Labs 1307a, 1312a, 1312b, 1314a and 1314c identified as *Ciliata mustela* (which has five barbels); Labs 1313a, 1313b, 1313c, 1313d, 1313e, 1313f and 1313g identified as *Enchelyopus cimbrius*, or a synonym (which has four barbels and is an offshore species); Labs 1314b and 1314d identified as *Phycis blennoides*; Lab 1325a identified as *Molva molva* (both of which have one barbel and lack a first dorsal fin set of one long ray followed by several fine, thread-like rays); Labs 1325b and 1325c identified as *Atherina presbyter* (which lacks barbels and has much shorter dorsal and ventral fin sets); Lab 1312c identified as *Hyperoplus immaculatus* (which has a protruding, pointed lower jaw and lacks pelvic fins and barbels); Lab 1315a identified as *Gaidaropsarus vulgaris* (which has longer barbels and is not an intertidal species); Lab 1313h identified as *Gaidropsarus* sp; Lab 1312d identified as Clupeid; Lab 1312e identified as 'Rockling / Burbot / Ling?' (identification to species using scientific nomenclature with a specified confidence level is required for this exercise).

Lab 1326a incorrectly spelt the genus.

Lab 1314a transposed the names of specimens 04 & 05.

RT3106 – *Mullus surmuletus* (Striped Red Mullet, Red Mullet) (Figure 6a)



Figure 6a (RT3106) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Poor/Fair, Length 13-21cm.

One specific difference: Lab 1310a identified as *Mullus barbatus* (which has a near vertical head profile, three scales on the cheek below the eye and lacks longitudinal colour bands).

RT3107 – *Zeus faber* (John Dory) (Figure 7a)



Figure 7a (RT3107) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 20-30cm.

No differences recorded.

RT3108 – *Limanda limanda* (Dab) (Figure 8a)



Figure 8a (RT3108) – L (right - eyed side)

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 18-22cm.

Three generic and three specific differences: Lab 1306a identified as *Microstomus kitt*; Lab 1312c identified as *Pleuronectes platessa* (both lack D-shaped lateral line curves and have mouths that only just reach the level of the eyes); Lab 1325a identified as *Solea solea* (which has a sub-terminal mouth and lacks a D-shaped lateral line curve).

RT3109 – *Scyliorhinus canicula* (Small-Spotted Catshark, Lesser Spotted Dogfish) (Figure 9a)



Figure 9a (RT3109) - DL

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 32-41cm.

No differences recorded.

Labs 1306a, 1312a, 1312b, 1312c, 1313h, 1314a, 1314d, 1315a, 1316a, 1325a, 1325b, 1325c and 1326a recorded the synonym *Scyliorhinus caniculus*. Labs 1312d, 1313g, 1314a, 1316a, 1325b and 1325c incorrectly spelt the genus; Lab 1312c incorrectly spelt the species.

RT3110 – *Trachurus trachurus* (Atlantic Horse Mackerel, Scad) (Figure 10a)



Figure 10a (RT3110) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 11-14cm.

Five generic and five specific differences: Labs 1313e and 1313f identified as *Trisopterus luscus*; Lab 1310a identified as *Pollachius pollachius*; Lab 1312c identified as *Pollachius virens*; Lab 1325c identified as *Alosa* sp. (all of which lack a complete row of large, bony scutes along the lateral line) (identification to species with a specified confidence level is required for this exercise).

Labs 1303a, 1303b and 1312d incorrectly spelt the genus

RT3111 – *Scomber scombrus* (Atlantic Mackerel, Mackerel) (Figure 11a)



Figure 11a (RT3111) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 19-25cm.

No differences recorded.

Lab 1312b incorrectly spelt the genus; Labs 1312a and 1312d incorrectly spelt the species.

RT3112 – *Callionymus lyra* (Dragonet) (Figure 12a)



Figure 12a (RT3112) - D

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 22-28cm.

One generic and three specific differences: Labs 1323a and 1326a identified as *Callionymus reticulatus* (which has three pre-opercular spines and lacks longitudinal pigment stripes on the second dorsal fin set); Lab 1325c identified as *Scorpaena* sp. (which are not dorso-ventrally flattened) (identification to species with a specified confidence level is required for this exercise).

Labs 1314a and 1325b incorrectly spelt the genus.

RT3113 – *Agonus cataphractus* (Hooknose, Pogge) (Figure 13a)



Figure 13a (RT3113) - L

Substratum: Mixed. Salinity: High. Depth: Circalittoral. Geography: W. Scotland. Condition: Good, Length 11-13cm.

One generic and one specific difference: Lab 1325c identified as *Scorpaena scofa* (which has a stout body with a single long dorsal fin).

RT3114 – *Trisopterus minutus* (Poor Cod) (Figure 14a)



Figure 14a (RT3114) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 15-18cm.

Twelve specific differences: Labs 1303b, 1306a, 1312a, 1312b, 1312e, 1313b, 1313d, 1313g, 1323a, 1323b and 1326a identified as *Trisopterus luscus* (which has confluent fins, the first anal fin originating beneath the mid point of the first dorsal fin and a barbel length equal to the orbit); Lab 1312d identified as *Trisopterus* sp. (identification to species with a specified confidence level is required for this exercise).

RT3115 – *Merlangius merlangus* (Whiting) (Figure 15a)



Figure 15a (RT3115) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 22-27cm.

No differences recorded.

Lab 1313d incorrectly spelt the genus; Lab 1312d incorrectly spelt the species.

RT3116 – *Raja montagui* (Spotted Ray) (Figure 16a)



Figure 16a (RT3116) - D

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Fair/Good, Length 25-30cm (not all specimens with dorsal 'eye' markings).

One generic and thirteen specific differences: Labs 1303a, 1312d, 1314a, 1315a, 1325b and 1326a identified as *Raja clavata* (which has the dorsal surface covered in coarse prickles and sinuous edges to the pectoral wings); Labs 1305a, 1314c, 1314d and 1325c identified as *Raja brachyura* (which has dark pigment spots extending to the edge of the pectoral wings); Lab 1303b identified as *Raja radiata* (which has broadly rounded outer angles of the pectoral wings); Lab 1307a identified as *Raja alba*, a synonym of *Rostroraja alba* (which has a long snout); Lab 1312a identified as *Raja* ? (identification to species with a specified confidence level is required for this exercise).

Labs 1313g and 1313h incorrectly spelt the species.

RT3117 – *Aspitrigla cuculus* (East Atlantic Red Gurnard, Red Guarnard) (Figure 17a)



Figure 17a (RT3117) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 17-22cm.

Five generic and five specific differences: Labs 1312c, 1313g and 1325a identified as *Trigla lucerna* (which has a smooth lateral line and pectoral fins that extend well beyond the anus); Lab 1313d identified as *Eutrigla gurnardus* (which has sharp spines along the lateral line, see Figure 18a); Lab 1312d identified as Triglidae (identification to species with a specified confidence level is required for this exercise).

Lab 1314a incorrectly spelt the genus.

RT3118 – *Eutrigla gurnardus* (Grey Gurnard) (Figure 18a)



Figure 18a (RT3118) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Fair/Good, Length 18-22cm.

Five generic and five specific differences: Labs 1313d, 1313g and 1325a identified as *Aspitrigla cuculus* (which lacks sharp spines along the lateral line and has smaller opercular spines, see Figure 17a); Lab 1325b identified as *Trigla lucerna* (which has a smooth lateral line and pectoral fins that extend well beyond the anus); Lab 1312d identified as Triglidae (identification to species with a specified confidence level is required for this exercise).

Lab 1314c incorrectly spelt the genus.

RT3119 – *Syngnathus rostellatus* (Nilsson’s Pipefish) (Figure 19a)



Figure 19a (RT3119) - L

Substratum: Mixed. Salinity: High. Depth: Circalittoral. Geography: East Anglia. Condition: Good, Length 9-15cm.

Three generic and eight specific differences: Labs 1314d, 1323a, 1323b and 1326a identified as *Syngnathus acus*; Lab 1312c identified as *Syngantus typhle* (*sic.*) (both of which have long snouts, *i.e.* the distance from the anterior edge of the eye to the tip of the snout is far greater than the distance from the anterior edge of the eye to the posterior edge of the operculum; *S. acus* has more pre and post anal body rings); Lab 1325a identified as *Nerophis lumbriciformis*; Lab 1325c identified as *Enterulus aequorinus* (*sic.*) (both of which lack pectoral and fully developed anal fins); Lab 1312D identified as Signathodiae (*sic.*) (identification to species with a specified confidence level is required for this exercise).

Lab 1306a incorrectly spelt the species.

RT3120 – *Ammodytes marinus* (Lesser Sand-eel, Raitt’s Sand-eel) (Figure 20a)

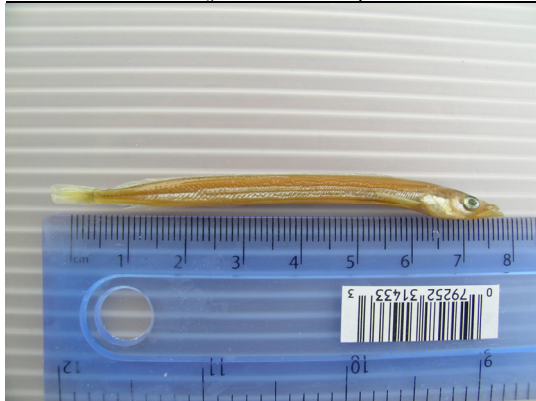


Figure 20a (RT3120) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: N. Scotland. Condition: Fair/Good, Length 9-11cm.

Eleven generic and twenty-five specific differences: Labs 1312b, 1312c, 1313a, 1313b, 1313c, 1313e, 1313f, 1313g, 1313h, 1315a, 1316a, 1325a and 1325c identified as *Ammodytes tobianus* (which has scales present at the base of each caudal lobe, see Figure 25a); Labs 1303b, 1310a, 1314c and 1314d identified as *Hyperoplus immaculatus*; Labs 1307a, 1314b and 1323b identified as *Hyperoplus lanceolatus* (both of which have hinged upper jaws that do not extend forwards; *H. lanceolatus* has a conspicuous dark spot on the upper jaw); Lab 1325b identified as *Lumpenus lambretaeformis* (*sic.*) (which has pelvic fins and lacks a protruding, pointed lower jaw); Labs 1312d and 1313d identified as Ammodytidae; Lab 1312a identified as *Ammodytes* ?; Lab 1312e identified as *Hyperoplus* ? (identification to species with a specified confidence level is required for this exercise).

RT3121 – *Clupea harengus* (Atlantic Herring, Herring) (Figure 21a)



Figure 21a (RT3121) - L

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. E. England. Condition: Good, Length 28cm.

One generic and one specific difference: Lab 1326a identified as *Sardina pilchardus* (which is smaller, has prominent radiating lines on the gill cover and has the origin of the dorsal fin closer to the mouth than the tail fin base).

Labs 1325b and 1325c incorrectly spelt the genus; Lab 1314b incorrectly spelt the species.

RT3122 – *Osmerus eperlanus* (European Smelt, Smelt) (Figure 22a)



Figure 22a (RT3122) - L

Substratum: Mixed. Salinity: High. Depth: Circalittoral. Geography: S. E. England. Condition: Good, Length 16-19cm.

Six generic and six specific differences: Labs 1313a, 1313c, 1313e, 1313f and 1313h identified as *Atherina presbyter* (which has two fully developed dorsal fins); Lab 1314d identified as *Alosa fallax* (which lacks an adipose fin and has a strongly toothed ventral keel).

Labs 1312d and 1314b incorrectly spelt the species.

RT3123 – *Arnoglossus laterna* (Scaldfish) (Figure 23a)



Figure 23a (RT3123) – L (left - eyed side)

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Poor/Fair, Length 11-13cm. Note: All specimens showed characteristic significant loss of scales.

Eighteen generic and eighteen specific differences: Labs 1306a, 1310a, 1312d, 1312e, 1314b, 1314c and 1314d identified as *Lepidorhombus whiffagonis* (which has a proportionally much larger head and dorsal and anal fins that end on the underside of the tail); Labs 1313a, 1313b, 1313c, 1313d, 1313e, 1313f, 1313g, 1313h, 1325b and 1325c identified as *Solea solea*; Lab 1315a identified as *Microstomus kitt* (which are both right-eyed flatfish).

Lab 1323a incorrectly spelt the genus; Lab 1316a incorrectly spelt the species.

RT3124 – *Lophius piscatorius* (Angler, Monk fish*) (Figure 24a)



Figure 24a (RT3124) - D

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Poor/Fair, Length 20-32cm.

One generic and one specific difference: Lab 1325a identified as *Squatina squatina* (which has a bodyform half-way between a small shark and a ray).

*Monk fish is a common name also associated with *Squatina squatina*.

RT3125 – *Ammodytes tobianus* (Small Sand-eel, Lesser Sand-eel) (Figure 25a)



Figure 25a (RT3125) - L

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Length 13-14cm.

Seventeen generic and eighteen specific differences: Labs 1303a, 1303b, 1312b, 1312c, 1313a, 1313b, 1313c, 1313d, 1313e, 1313f, 1313g, 1313h, 1314d, 1315a and 1325c identified as *Hyperoplus lanceolatus* (which has a conspicuous dark spot on the upper jaw and the hinged upper jaw that does not extend forwards); Lab 1314a identified as *Ammodytes marinus* (which lacks scales at the base of each caudal lobe, see Figure 20a); Lab 1325a identified as *Gymnammodytes circereus* (*sic.*) (which is a Mediterranean species with lateral line pores situated at the end of short perpendicular canals off the lateral line); Lab 1312d identified as *Ammodytidae* (identification to species with a specified confidence level is required for this exercise).

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- FishBase - <http://www.fishbase.org/search.php>
- The Aquarium Project – <http://web.ukonline.co.uk/aquarium/>

Specimen Labels

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NMBAQC Scheme <i>Echiichthys vipera</i> Location: Gt. Yarmouth Gear: Beam Trawl FullCode #: RT31_01	NMBAQC Scheme <i>Dicentrarchus labrax</i> Location: Harwich Gear: Beam Trawl FullCode #: RT31_02	NMBAQC Scheme <i>Platichthys flesus</i> Location: Clyde Gear: Beam Trawl FullCode #: RT31_03	NMBAQC Scheme <i>Sprattus sprattus</i> Location: Wash Gear: Beam Trawl FullCode #: RT31_04
NMBAQC Scheme <i>Gaidropsarus mediterraneus</i> Location: Strangford Lough Gear: Hand Net FullCode #: RT31_05	NMBAQC Scheme <i>Mullus surmuletus</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_06	NMBAQC Scheme <i>Zeus faber</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_07	NMBAQC Scheme <i>Limanda limanda</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_08
NMBAQC Scheme <i>Scyliorhinus canicula</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_09	NMBAQC Scheme <i>Trachurus trachurus</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_10	NMBAQC Scheme <i>Scomber scombrus</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_11	NMBAQC Scheme <i>Callionymus lyra</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_12
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NMBAQC Scheme <i>Clupea harengus</i> Location: Thames Gear: Beam Trawl FullCode #: RT31_21	NMBAQC Scheme <i>Osmerus eperlanus</i> Location: Essex Coast Gear: Beam Trawl FullCode #: RT31_22	NMBAQC Scheme <i>Arnoglossus laterna</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_23	NMBAQC Scheme <i>Lophius piscatorius</i> Location: Plymouth Gear: Beam Trawl FullCode #: RT31_24
NMBAQC Scheme <i>Ammodytes tobianus</i> Location: Teignmouth Gear: Beam Trawl FullCode #: RT31_25			