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Ring Test Bulletin – RTB#55

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RING TEST DETAILS

Ring Test #55

Type/Contents – General

Circulated – 31/08/18

Results deadline – 02/11/18

Number of Subscribing Laboratories – 21

Number of Participating Laboratories – 20

Number of Results Received – 20*

***multiple data entries per laboratory permitted**

Summary of differences

Specimen	Genus	Species	Size	Total differences for 20 returns	
				Genus	Species
RT5501	*Ciona*	*intestinalis*	small	6	6
RT5502	*Streblospio*	*benedicti*	medium	0	7
RT5503	*Euclymene*	*oerstedii*	medium	0	0
RT5504	*Cossura*	*pygodactyla*	small	0	8
RT5505	*Eunice*	*vittata*	medium	6	8
RT5506	*Megamphopus*	*cornutus*	adult, male	1	1
RT5507	*Sphaerosyllis*	*cf. taylori*	adult	1	10
RT5508	*Boudemos*	*ardabilia*	small	10	10
RT5509	*Antalis*	*entalis*	medium	1	4
RT5510	*Cumopsis*	*goodsir*	small	4	9
RT5511	*Yoldiella*	*nana*	medium	1	8
RT5512	*Euchone*	*limnicola*	medium	7	8
RT5513	*Nebalia*	*herbstii / kocatasi*	medium	0	3
RT5514	*Pista*	*cf. cristata*	medium	0	5
RT5515	*Idotea*	*chelipes*	medium	0	3
RT5516	*Aponuphis*	*bilineata*	medium	0	0
RT5517	*Clausinella*	*fasciata*	juvenile (1-2 mm)	14	14
RT5518	*Diastylis*	*rugosa*	medium	0	7
RT5519	*Diplocirrus*	*glaucus*	medium	0	0
RT5520	*Dosinia*	*lupinus*	small (4-9 mm)	0	4
RT5521	*Nannonyx*	*goesii*	medium	1	2
RT5522	*Streblospio*	*shrubsolii*	medium	0	3
RT5523	*Phtisica*	*marina*	medium	0	0
RT5524	*Thyasira*	*sarsii*	medium (5-8 mm)	0	2
RT5525	*Sphaerodorum*	*gracilis*	medium	1	1
			Total differences	54	123
			Average differences /lab.	2.7	6.2

Figure 1. The number of differences from the AQC identification of specimens distributed in RT55 for each of the participating laboratories. Arranged in order of increasing number of differences (by specific followed by generic errors).

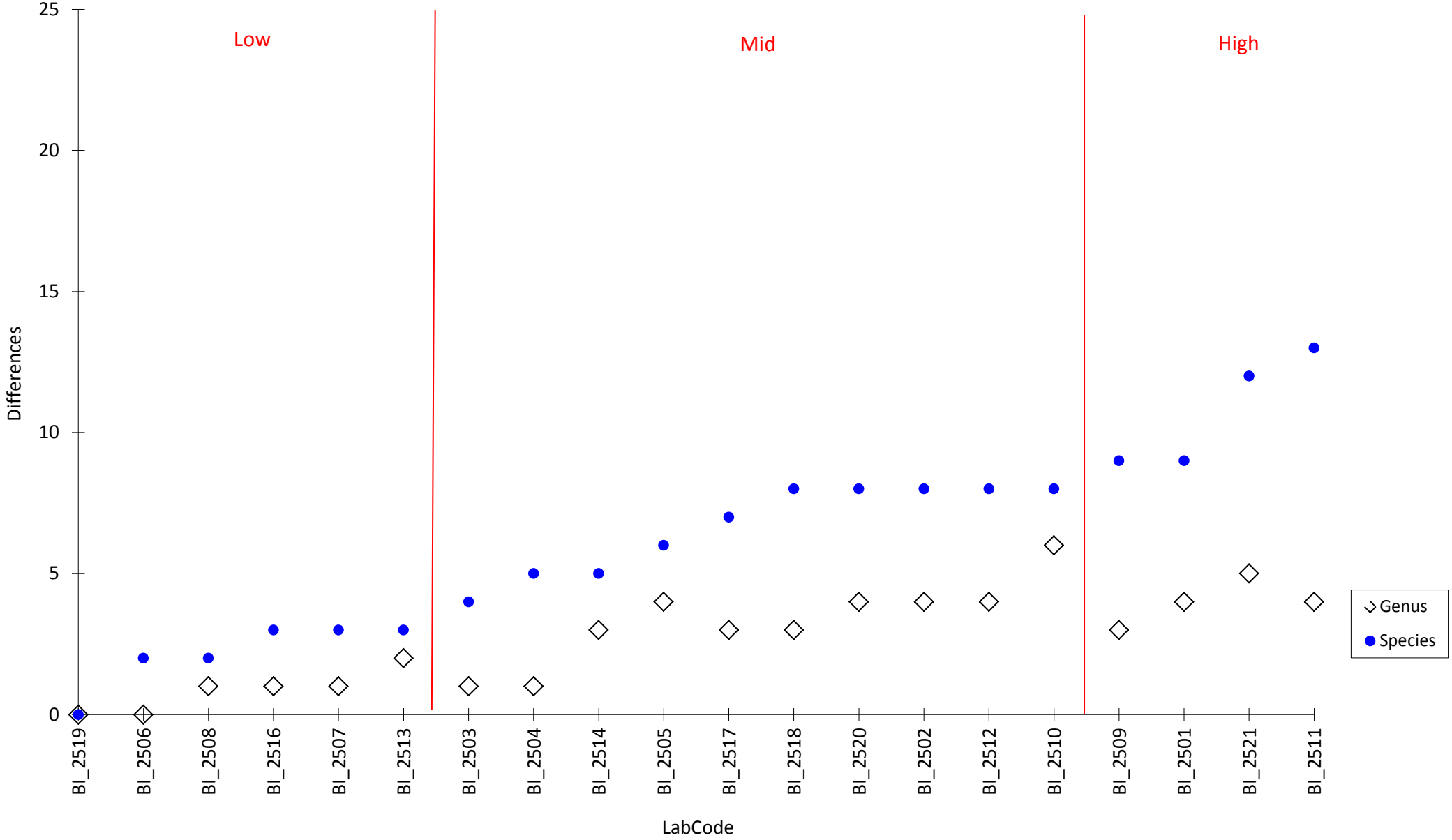

Table 1. The identification of fauna made by participating laboratories for RT55 (arranged by specimen). Names are given only where different from the AQC identification.

	RT5501	RT5502	RT5503	RT5504	RT5505	RT5506
	Ciona intestinalis	*Streblospio benedicti*	*Euclymene oerstedii*	*Cossura pygodactylata*	*Eunice vittata*	*Megamphopus cornutus*
BI_2501	- -	- -	- -	- -	Marphysa sanguinea	- -
BI_2502	- -	- shrubsolii	- -	- longocirrata	Eunice harassii	[Gammaropsis] [cornuta]
BI_2503	- -	- shrubsolii	- -	- -	- -	- -
BI_2504	- -	- -	- -	- -	Leodice harassii	- -
BI_2505	- -	- -	- -	- -	Leodice harassii	- -
BI_2506	- -	- -	- -	- -	- -	- -
BI_2507	- -	- -	- [oerstedii agg.]	- longocirrata	- -	- -
BI_2508	- -	- gynobranchiata	- -	- -	- -	- -
BI_2509	- -	- shrubsolii	- -	- longocirrata	- pennata	- -
BI_2510	Corella parallelogramma	- shrubsolii	- -	- longocirrata	Leodice harassii	- -
BI_2511	- -	- -	- -	- longocirrata	- -	- -
BI_2512	- -	- -	- -	- -	Leodice torquata	- -
BI_2513	- -	- -	- -	- -	- -	- -
BI_2514	Ascidia virginea	- -	- -	- -	Leodice antennata	- -
BI_2516	- -	- gynobranchiata	- -	- -	- -	- -
BI_2517	Ascidia virginea	- gynobranchiata	- -	- longocirrata	- -	[Megaphopus] -
BI_2518	Corella parallelogramma	- -	- -	- -	- -	- -
BI_2519	- -	- -	- -	- -	- -	- -
BI_2520	Craterolophus convolvulus	- -	- -	- longocirrata	- -	Gammaropsis nitida
BI_2521	Ascidia virginea	- -	- -	- longocirrata	- -	- -

Table 1. The identification of fauna made by participating laboratories for RT55 (arranged by specimen). Names are given only where different from the AQC identification.

	RT5507	RT5508	RT5509	RT5510	RT5511	RT5512
	Sphaerosyllis cf. taylori	*Boudemos ardabilia*	*Antalis entalis*	*Cumopsis goodsir*	*Yoldiella nana*	*Euchone limnicola*
BI_2501	- aciculata	Polychaeta 0	- -	- -	- -	Jasmineira elegans
BI_2502	- thomasi	[Vigtorniella] -	Pulsellum affine	- [goodsiri]	- -	Jasmineira elegans
BI_2503	- [taylori]	[Vigtorniella] -	- -	- fagei	- lenticula	- -
BI_2504	- -	[Vigtorniella] -	- -	- longipes	- jeffreysi	- -
BI_2505	- hystrix	- -	- -	Iphinoe serrata	- solidula	Dialychone acustica
BI_2506	- -	- -	- vulgaris	- -	- solidula	- -
BI_2507	- [taylori]	Hesionides 0	- -	- -	- -	- -
BI_2508	- [taylori]	- -	- -	- -	- -	- -
BI_2509	- [taylori]	Iospilus affinis	- -	Vaunthompsonia cristata	- lenticula	Amphicorina armandi
BI_2510	Prosphaerosyllis campoyi	0 0	- -	- -	- -	Dialychone dunerificta
BI_2511	- hystrix	Ophryotrocha craigsmithi	- vulgaris	- longipes	[Yodiella] -	Dialychone acustica
BI_2512	- hystrix	Sigalion squamosum	- -	- -	Phaseolus pusillus	- -
BI_2513	- hystrix	Dysponetus paleophorus	- -	- -	- -	- -
BI_2514	- bulbosa	[Vigtorniella] -	- -	- -	- -	- -
BI_2516	[Spaerosyllis] -	Gyptis rosea	- -	- longipes	- -	- -
BI_2517	- [taylori]	Dysponetus caecus	- -	- -	- lenticula	- -
BI_2518	- hystrix	- -	- -	- longipes	- -	Dialychone dunerificta
BI_2519	- -	- -	- -	- -	- -	- -
BI_2520	- [taylori]	- -	[Anatalis] vulgaris	0 0	- -	- -
BI_2521	- hystrix	Hesionides arenaria	- -	Iphinoe trispinosa	- propinqua	- southerni

Table 1. The identification of fauna made by participating laboratories for RT55 (arranged by specimen). Names are given only where different from the AQC identification.

	RT5513	RT5514	RT5515	RT5516	RT5517	RT5518	RT5519
	Nebalia herbstii / kocatasi	*Pista cf. cristata*	*Idotea chelipes*	*Aponuphis bilineata*	*Clausinella fasciata*	*Diastylis rugosa*	*Diplocirrus glaucus*
BI_2501	- bipes	- [lornensis]	- pelagica	- -	Arctica islandica	- laevis	- -
BI_2502	- [kocatasi]	- maculata	- -	- -	Astarte 0	- -	- -
BI_2503	- [herbstii]	- [cristata]	- -	- -	Venus casina	- -	- -
BI_2504	- [kocatasi]	- [bansei]	- pelagica	- -	- -	- laevis	- -
BI_2505	- [herbstii]	- [cristata]	- -	- -	Chamelea striatula	- -	- -
BI_2506	- [herbstii]	- [bansei]	- -	- -	- -	- -	- -
BI_2507	- [herbstii]	- [bansei]	- -	- -	- -	- -	- -
BI_2508	- [herbstii]	- [bansei]	- -	- -	Dosinia lupinus	- -	- -
BI_2509	- bipes	- [bansei]	- granulosa	- -	- -	- -	- -
BI_2510	- [herbstii]	[Pistella] [lornensis]	- -	- -	Astarte sulcata	- -	- -
BI_2511	- reboredae	- maculata	- -	- -	Gouldia minima	- laevis	- -
BI_2512	- [kocatasi]	- maculata	- -	[Hyalinoecia] -	Mysia undata	- boecki	- -
BI_2513	- [herbstii]	- [cristata]	- -	- -	Chamelea striatula	- -	- -
BI_2514	- [kocatasi]	- [cristata]	- -	- -	Chamelea striatula	- laevis	- -
BI_2516	- [herbstii]	- [cristata]	- -	- -	- -	- -	- -
BI_2517	- [herbstii]	- [cristata]	- -	- -	Chamelea striatula	- -	- -
BI_2518	- [kocatasi]	- mirabilis	- -	- -	Astarte sulcata	- -	- -
BI_2519	- [kocatasi]	- [bansei]	- -	- -	- -	- -	- -
BI_2520	- [herbstii]	- mediterranea	- -	- -	Gouldia minima	- tumida	- -
BI_2521	- [kocatasi]	- [cristata]	- -	- -	Chamelea striatula	- laevis	- -

Table 1. The identification of fauna made by participating laboratories for RT55 (arranged by specimen). Names are given only where different from the AQC identification.

	RT5520	RT5521	RT5522	RT5523	RT5524	RT5525
	Dosinia lupinus	*Nannonyx goesii*	*Streblospio shrubsolii*	*Phtisica marina*	*Thyasira sarsii*	*Sphaerodorum gracilis*
BI_2501	- exoleta	- -	- -	- -	- -	- -
BI_2502	- -	- -	- -	- -	- -	- -
BI_2503	- -	- [goesi]	- -	- -	- -	- -
BI_2504	- -	- -	- -	- -	- -	- -
BI_2505	- -	- -	- -	- -	- -	- -
BI_2506	- -	- -	- [padventralis]	- -	- -	- -
BI_2507	- -	- -	- benedicti	- -	- -	- -
BI_2508	- -	- -	- [padventralis]	- -	- -	- -
BI_2509	- -	- -	- -	- -	- -	- -
BI_2510	- -	- -	- -	- -	- -	- -
BI_2511	- exoleta	- -	- -	- -	- obsoleta	Tubificoides benedii
BI_2512	- exoleta	- [goesi]	- -	- -	- -	- -
BI_2513	- -	- -	- -	- -	- -	- -
BI_2514	- -	- -	- -	- -	- -	- -
BI_2516	- -	- -	- -	- -	- -	- -
BI_2517	- -	- -	- gynobranchiata	- -	- [sarsi]	- -
BI_2518	- exoleta	- spinimanus	- -	- -	- -	- -
BI_2519	- -	- -	- -	- -	- -	- -
BI_2520	- -	- -	- -	- -	- -	- -
BI_2521	- -	Perrierella audouiniana	- benedicti	- -	- ?	- -

Table 2. The identification of fauna made by participating laboratories for RT55 (arranged by participant). Names are given only where different from the AQC identification.

	Taxon	BI_2501	BI_2502	BI_2503	BI_2504	BI_2505	BI_2506	BI_2507
RT5501	*Ciona intestinalis*	- -	- -	- -	- -	- -	- -	- -
RT5502	*Streblospio benedicti*	- -	- shrubsolii	- shrubsolii	- -	- -	- -	- -
RT5503	*Euclymene oerstedii*	- -	- -	- -	- -	- -	- -	- [oerstedii agg.]
RT5504	*Cossura pygodactylata*	- -	- longocirrata	- -	- -	- -	- -	- longocirrata
RT5505	*Eunice vittata*	Marphysa sanguinea	Eunice harassii	- -	Leodice harassii	Leodice harassii	- -	- -
RT5506	*Megamphopus cornutus*	- -	[Gammaropsis] [cornuta]	- -	- -	- -	- -	- -
RT5507	*Sphaerosyllis cf. taylori*	- aciculata	- thomasi	- [taylori]	- -	- hystrix	- -	- [taylori]
RT5508	*Boudemos ardabilia*	Polychaeta 0	[Vigtorniella] -	[Vigtorniella] -	[Vigtorniella] -	- -	- -	Hesionides 0
RT5509	*Antalis entalis*	- -	Pulsellum affine	- -	- -	- -	- vulgaris	- -
RT5510	*Cumopsis goodsir*	- -	- [goodsiri]	- fagei	- longipes	Iphinoe serrata	- -	- -
RT5511	*Yoldiella nana*	- -	- -	- lenticula	- jeffreysi	- solidula	- solidula	- -
RT5512	*Euchone limnicola*	Jasmineira elegans	Jasmineira elegans	- -	- -	Dialychone acustica	- -	- -
RT5513	*Nebalia herbstii / kocatasi*	- bipes	- [kocatasi]	- [herbstii]	- [kocatasi]	- [herbstii]	- [herbstii]	- [herbstii]
RT5514	*Pista cf. cristata*	- [lornensis]	- maculata	- [cristata]	- [bansei]	- [cristata]	- [bansei]	- [bansei]
RT5515	*Idotea chelipes*	- pelagica	- -	- -	- pelagica	- -	- -	- -
RT5516	*Aponuphis bilineata*	- -	- -	- -	- -	- -	- -	- -
RT5517	*Clausinella fasciata*	Arctica islandica	Astarte 0	Venus casina	- -	Chamelea striatula	- -	- -
RT5518	*Diastylis rugosa*	- laevis	- -	- -	- laevis	- -	- -	- -
RT5519	*Diplocirrus glaucus*	- -	- -	- -	- -	- -	- -	- -
RT5520	*Dosinia lupinus*	- exoleta	- -	- -	- -	- -	- -	- -
RT5521	*Nannonyx goesii*	- -	- -	- [goesi]	- -	- -	- -	- -
RT5522	*Streblospio shrubsolii*	- -	- -	- -	- -	- -	- [padventralis]	- benedicti
RT5523	*Phtisica marina*	- -	- -	- -	- -	- -	- -	- -
RT5524	*Thyasira sarsii*	- -	- -	- -	- -	- -	- -	- -
RT5525	*Sphaerodorum gracilis*	- -	- -	- -	- -	- -	- -	- -

Table 2. The identification of fauna made by participating laboratories for RT55 (arranged by participant). Names are given only where different from the AQC identification.

	Taxon	BI_2508	BI_2509	BI_2510	BI_2511	BI_2512	BI_2513	BI_2514
RT5501	*Ciona intestinalis*	- -	- -	Corella parallelogramma	- -	- -	- -	Ascidia virginea
RT5502	*Streblospio benedicti*	- gynobranchiata	- shrubsolii	- shrubsolii	- -	- -	- -	- -
RT5503	*Euclymene oerstedii*	- -	- -	- -	- -	- -	- -	- -
RT5504	*Cossura pygodactylata*	- -	- longocirrata	- longocirrata	- longocirrata	- -	- -	- -
RT5505	*Eunice vittata*	- -	- pennata	Leodice harassii	- -	Leodice torquata	- -	Leodice antennata
RT5506	*Megamphopus cornutus*	- -	- -	- -	- -	- -	- -	- -
RT5507	*Sphaerosyllis cf. taylori*	- [taylori]	- [taylori]	Prosphaerosyllis campoyi	- hystrix	- hystrix	- hystrix	- bulbosa
RT5508	*Boudemos ardabilia*	- -	Iospilus affinis	0 0	Ophryotrocha craigsmithi	Sigalion squamosum	Dysponetus paleophorus	[Vigtorniella] -
RT5509	*Antalis entalis*	- -	- -	- -	- vulgaris	- -	- -	- -
RT5510	*Cumopsis goodsir*	- -	Vaunthompsonia cristata	- -	- longipes	- -	- -	- -
RT5511	*Yoldiella nana*	- -	- lenticula	- -	[Yodiella] -	Phaseolus pusillus	- -	- -
RT5512	*Euchone limnicola*	- -	Amphicorina armandi	Dialychone dunerificta	Dialychone acustica	- -	- -	- -
RT5513	*Nebalia herbstii / kocatasi*	- [herbstii]	- bipes	- [herbstii]	- reboredae	- [kocatasi]	- [herbstii]	- [kocatasi]
RT5514	*Pista cf. cristata*	- [bansei]	- [bansei]	[Pistella] [lornensis]	- maculata	- maculata	- [cristata]	- [cristata]
RT5515	*Idotea chelipes*	- -	- granulosa	- -	- -	- -	- -	- -
RT5516	*Aponuphis bilineata*	- -	- -	- -	- -	[Hyalinoecia] -	- -	- -
RT5517	*Clausinella fasciata*	Dosinia lupinus	- -	Astarte sulcata	Gouldia minima	Mysia undata	Chamelea striatula	Chamelea striatula
RT5518	*Diastylis rugosa*	- -	- -	- -	- laevis	- boecki	- -	- laevis
RT5519	*Diplocirrus glaucus*	- -	- -	- -	- -	- -	- -	- -
RT5520	*Dosinia lupinus*	- -	- -	- -	- exoleta	- exoleta	- -	- -
RT5521	*Nannonyx goesii*	- -	- -	- -	- -	- [goesi]	- -	- -
RT5522	*Streblospio shrubsolii*	- [padventralis]	- -	- -	- -	- -	- -	- -
RT5523	*Phtisica marina*	- -	- -	- -	- -	- -	- -	- -
RT5524	*Thyasira sarsii*	- -	- -	- -	- obsoleta	- -	- -	- -
RT5525	*Sphaerodorum gracilis*	- -	- -	- -	Tubificoides benedii	- -	- -	- -

Table 2. The identification of fauna made by participating laboratories for RT55 (arranged by participant). Names are given only where different from the AQC identification.

	Taxon	BI_2516	BI_2517	BI_2518	BI_2519	BI_2520	BI_2521
RT5501	*Ciona intestinalis*	- -	Ascidia virginea	Corella parallelogramma	- -	Craterolophus convolvulus	Ascidia virginea
RT5502	*Streblospio benedicti*	- gynobranchiata	- gynobranchiata	- -	- -	- -	- -
RT5503	*Euclymene oerstedii*	- -	- -	- -	- -	- -	- -
RT5504	*Cossura pygodactylata*	- -	- longocirrata	- -	- -	- longocirrata	- longocirrata
RT5505	*Eunice vittata*	- -	- -	- -	- -	- -	- -
RT5506	*Megamphopus cornutus*	- -	[Megaphopus] -	- -	- -	Gammaropsis nitida	- -
RT5507	*Sphaerosyllis cf. taylori*	[Spaerosyllis] -	- [taylori]	- hystrix	- -	- [taylori]	- hystrix
RT5508	*Boudemos ardabilia*	Gyptis rosea	Dysponetus caecus	- -	- -	- -	Hesionides arenaria
RT5509	*Antalis entalis*	- -	- -	- -	- -	[Anatalis] vulgaris	- -
RT5510	*Cumopsis goodsir*	- longipes	- -	- longipes	- -	0 0	Iphinoe trispinosa
RT5511	*Yoldiella nana*	- -	- lenticula	- -	- -	- -	- propinqua
RT5512	*Euchone limnicola*	- -	- -	Dialychone dunerificta	- -	- -	- southerni
RT5513	*Nebalia herbstii / kocatasi*	- [herbstii]	- [herbstii]	- [kocatasi]	- [kocatasi]	- [herbstii]	- [kocatasi]
RT5514	*Pista cf. cristata*	- [cristata]	- [cristata]	- mirabilis	- [bansei]	- mediterranea	- [cristata]
RT5515	*Idotea chelipes*	- -	- -	- -	- -	- -	- -
RT5516	*Aponuphis bilineata*	- -	- -	- -	- -	- -	- -
RT5517	*Clausinella fasciata*	- -	Chamelea striatula	Astarte sulcata	- -	Gouldia minima	Chamelea striatula
RT5518	*Diastylis rugosa*	- -	- -	- -	- -	- tumida	- laevis
RT5519	*Diplocirrus glaucus*	- -	- -	- -	- -	- -	- -
RT5520	*Dosinia lupinus*	- -	- -	- exoleta	- -	- -	- -
RT5521	*Nannonyx goesii*	- -	- -	- spinimanus	- -	- -	Perrierella audouiniana
RT5522	*Streblospio shrubsolii*	- -	- gynobranchiata	- -	- -	- -	- benedicti
RT5523	*Phtisica marina*	- -	- -	- -	- -	- -	- -
RT5524	*Thyasira sarsii*	- -	- [sarsi]	- -	- -	- -	- ?
RT5525	*Sphaerodorum gracilis*	- -	- -	- -	- -	- -	- -

Specimen Images and Detailed Breakdown of Identifications

RT55 had the highest number of species never previously sent (20), since RT08 (1996). This included several species anticipated to change our understanding of the fauna and assist with the development of identification literature. Two RT55 specimens were spionids and, for these, specimens from adjacent samples were sent to Dr Vasily Radashevsky for examination; details are included in the explanations below each circulated specimen entry. Soon after the circulation of RT54, the then current version of the guide that resulted from the 2016 spionid workshop (Radashevsky, 2017) was also circulated to ring test participants (3rd November 2017). It is hoped the final spionid guide will be published next year. Several participants highlighted problems with the originally circulated identifications and the results have identified several areas that require further research; these are detailed under the specimen headings and in the discussion section below.

LabCodes are abbreviated in this report to exclude the Scheme year, *e.g.* BI_2501 = Lab 01. An additional terminal character has been added within each LabCode (small case sequential letters) to permit multiple data entries from each laboratory, *i.e.* two participants from laboratory 01 would be coded as Lab 01a & Lab 01b. For details of your LabCode please contact your Scheme representative or APEM Ltd.
(Figure codes: A=anterior; P=posterior; L=lateral; D=dorsal; V=ventral)

RT5501 – *Ciona intestinalis* (Linnaeus, 1767) (Figure 1a)

Substratum: Hard substrata. Salinity: Full (Euhaline). Depth: Infralittoral. Geography: northern Scotland. Condition: good, small. All specimens from one sample.

Fig. 1a. *Ciona intestinalis* (RT5501; 57161) – L

Six generic and six specific differences: Lab 20 identified as *Craterolophus convolvulus* (no material available; Figure 1b shows *Haliclystus salpinx*) (which lacks a test and has eight radial arms); labs 10 and 18 identified as *Corella parallelogramma* (Figure 1c) (which has spiral stigmata); labs 14, 17 and 21 identified as *Ascidia virginea* (no material available) (in which the gut loop lies to the left of the branchial sac).

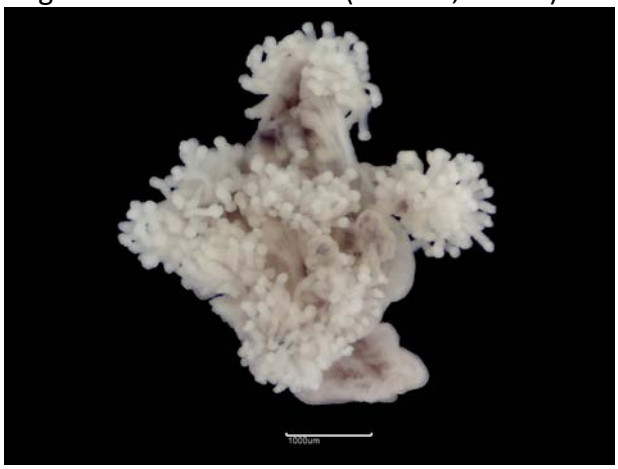

Fig. 1b. *Haliclystus salpinx* (58015) – D

Fig. 1c. *Corella parallelogramma* (59164) – L

RT5502 – *Streblospio benedicti* Webster, 1879 (Figure 2a, b)

Substratum: Diamicton. Salinity: Variable (Euryhaline). Depth: Infralittoral. Geography: southeast England. Condition: good, medium. All specimens from one sample; one more from same survey reviewed by V. Radashevsky.

Fig. 2a. *Streblospio benedicti* (RT5102; 58172) – L

Seven specific differences: Labs 02, 03, 09 and 10 identified as *S. shrubsolii* (Figure 22a, b, c) (which has only a low raised elevation between the branchial bases and neuropodial hooks beginning on chaetiger 8, 9 or 10). Labs 08, 16 and 17 identified as *S. gynobranchiata* (Figure 2c) (which has distinct, finger-like dorsal epithelial projections on female mid-body segments – see Radashevsky & Selifonova, 2013).

Fig. 2b. *Streblospio benedicti* (RT5102; 58172) – D

Fig. 2c. *Streblospio gynobranchiata* (from Radashevsky & Selifonova, 2013) – D

RT5503 – *Euclymene oerstedii* (Claparède, 1863) (Figure 3a)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Infralittoral. Geography: southwest England. Condition: fair (no tails), medium. All specimens from one sample.

Fig. 3a. *Euclymene oerstedii* (RT5503; 9680) - L

No generic and no specific differences.

Lab 03 added 'agg.' to their identification.

RT5504 – *Cossura pygodactylata* Jones, 1956 (Figure 4a, 4b)

Substratum: Mud. Salinity: Variable (Euryhaline). Depth: Infralittoral. Geography: southwest England. Condition: good, small. Specimens from three samples.

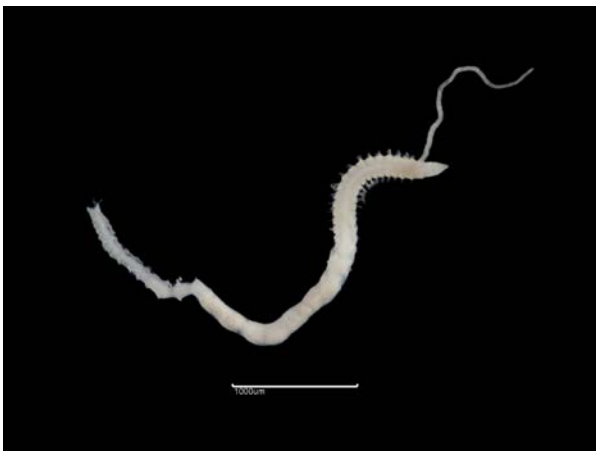

Fig. 4a. *Cossura pygodactylata* (RT5504; 6891) - D

Eight specific differences: Labs 02, 07, 09, 10, 11, 17, 20 and 21 identified as *Cossura longocirrata* (Figure 4c, d) (which lacks intercirral processes). It is likely that many of the identification differences were the result of outdated literature; *Cossura* have been reviewed by Bachelet *et al*. (1964), Fournier & Petersen (1991) and Zhadan *et al*. (2012).

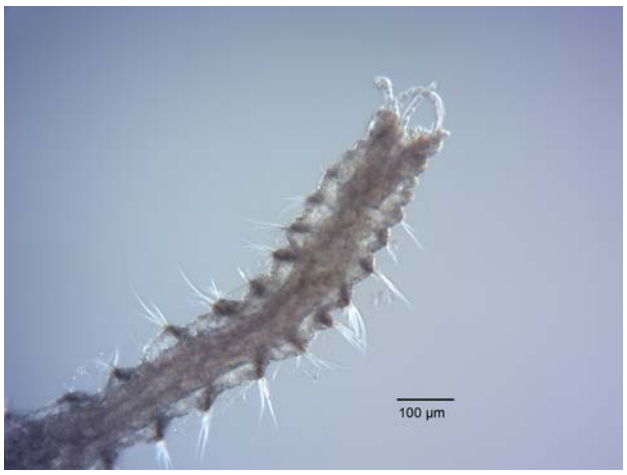

Fig. 4b. *Cossura pygodactylata* (RT5504; 6891) – tail

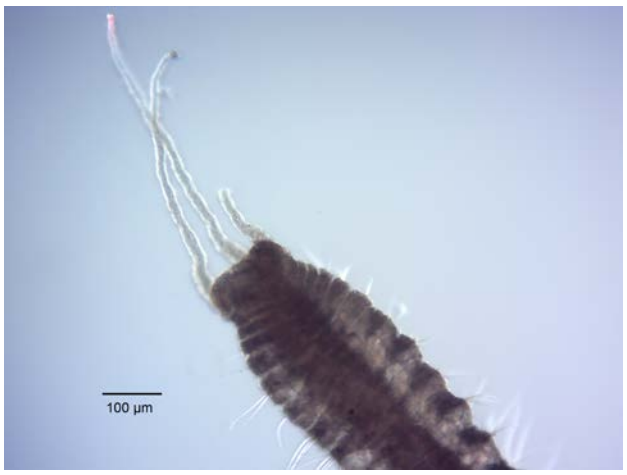

Fig. 4c. *Cossura longocirrata* (59262) – tail

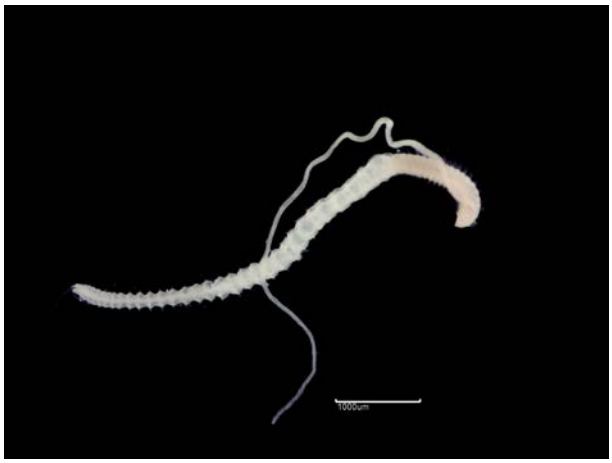

Fig. 4d. *Cossura longocirrata* (59262) – L

RT5505 – *Eunice vittata* (Delle Chiaje, 1828) (Figure 5a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Infralittoral. Geography: southwest England. Condition: fair, medium (most of body; some with tails). Specimens from three samples.

Fig. 5a. *Eunice vittata* (RT5505; 6935) – D

Six generic and eight specific differences: Lab 01 identified as *Marphysa sanguinea* (Figure 5b) (which lacks cirri on the apodous segment); Labs 02, 04, 05 and 10 identified as *Leodice harassii* (Lab 02 as the synonym *Eunice harassii*) (Figure 5c); Lab 12 identified as *Leodice torquata* (no material available); Lab 14 identified as *Leodice antennata* (no material available); Lab 09 identified as *Eunice pennata* (Figure 5d) (all of which have bidentate hooked chaetae).

Fig. 5b. *Marphysa sanguinea* (55550) – D

Fig. 5c. *Leodice harassii* (8558) – D

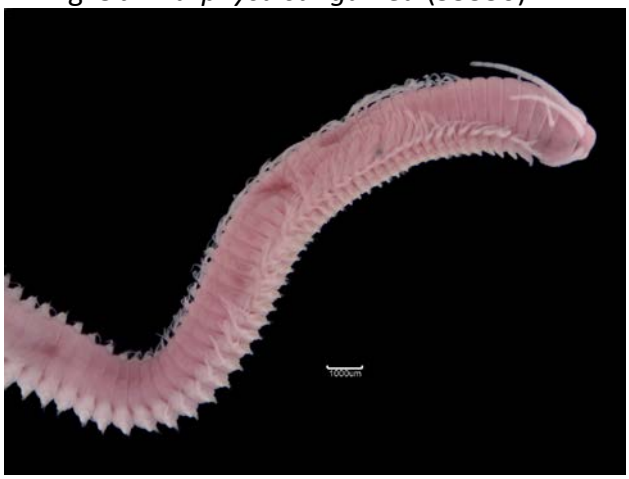

Fig. 5d. *Eunice pennata* (60064) – D

RT5506 – Megamphopus cornutus Norman, 1869 (Figure 6a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: north of Ireland. Condition: fair (no antennal flagella; at least one of each of Gn1 and Gn2, most other pereopods missing), adult, male. Specimens from two samples.

Fig. 6a. *Megamphopus cornutus* (RT5506; 8305) – L

Fig. 6b. *Gammaropsis nitida* (54912) – L

One generic and specific difference; Lab 20 identified as *Gammaropsis nitida* (Figure 6b) (which has gnathopod 2 significantly broader than gnathopod 1).

Lab 01 used the synonym *Gammaropsis cornuta*; Lab 17 mis-spelled the genus as '*Megaphopus*'.

RT5507 – *Sphaerosyllis cf. taylori* Perkins, 1981 (Figure 7a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Infralittoral. Geography: southeast England: fair, adult. All specimens from one sample.

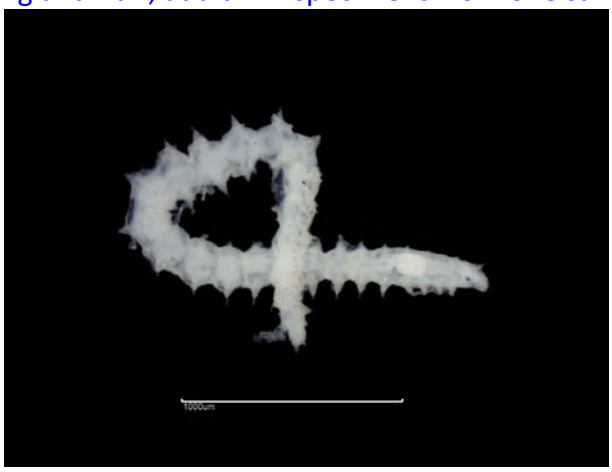

Fig. 7a. *Sphaerosyllis c.f. taylori* (RT5507; 54820) – D

One generic and ten specific differences: Lab 10 identified as *Prosphaerosyllis campoyi* (Figure 7b) (which has a pair of anterior eyespots in addition to the two pairs of large eyes); Lab 22 identified as *Sphaerosyllis aciculata* (no material available) (which lacks compound chaetae in the mid body); Lab 14 identified as *Sphaerosyllis bulbosa* (Figure 7c) (which lacks fibrillary inclusions in the parapodial glands); Lab 02 identified as *Sphaerosyllis thomasi* (no material available) (which has dorsal cirri shorter than the parapodial lobes); Labs 05, 11, 12, 13, 18 and 21 identified as *Sphaerosyllis hystrix* (Figure 7e) (which has longer blades in the mid body compound chaetae; see RTB48).

Labs 03, 07, 08, 09, 17 and 20 omitted the 'cf.' qualifier; Lab 16 mis-spelled the genus name as '*Spaerosyllis*'.

Fig. 7b. *Prosphaerosyllis campoyi* (BI2105_15) – D

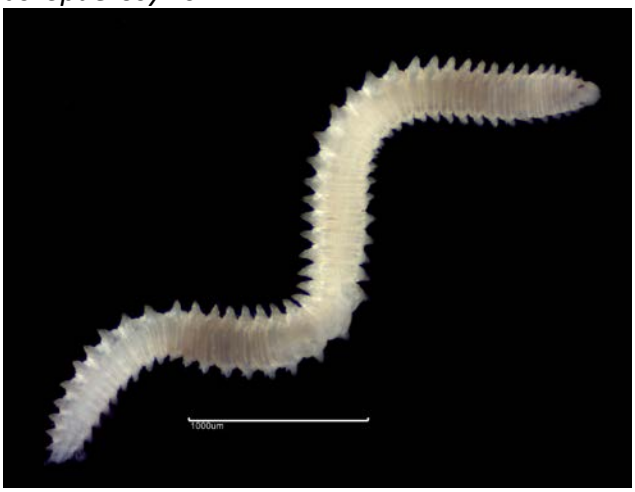

Fig. 7c. *Sphaerosyllis bulbosa* (RT4802) – D

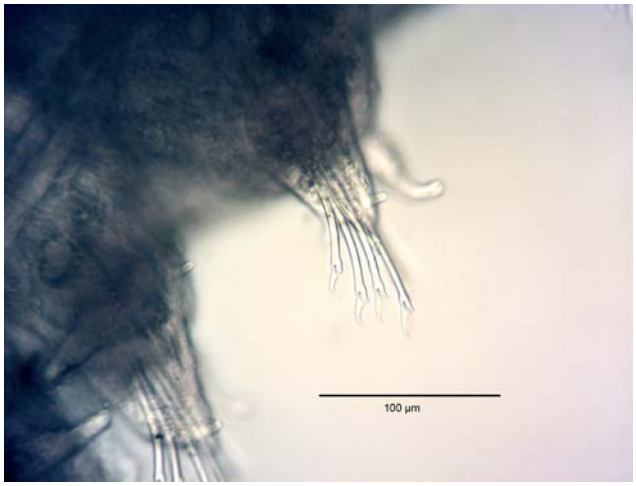

Fig. 7d. *Sphaerosyllis taylori* (BI2105_24) – PaM

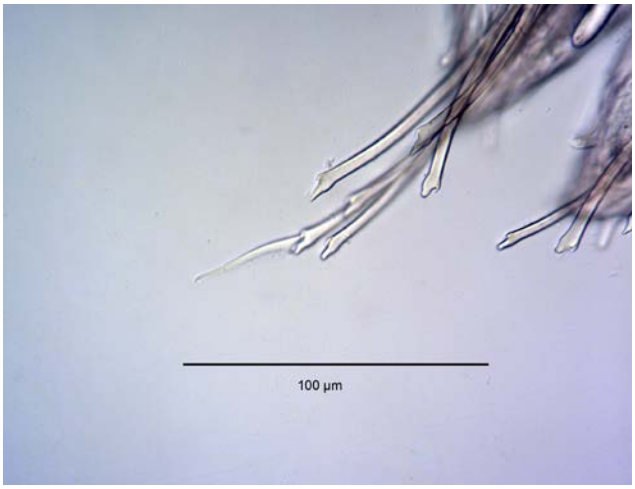

Fig. 7e. *Sphaerosyllis hystrix* (5964) – PaM

RT5508 – *Boudemos ardabilia* (Wiklund, Glover, Johannessen & Dahlgren, 2009) (Figure 8a)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Lower Shelf). Geography: Norway. Condition: poor (anterior only), small. Specimens from two samples.

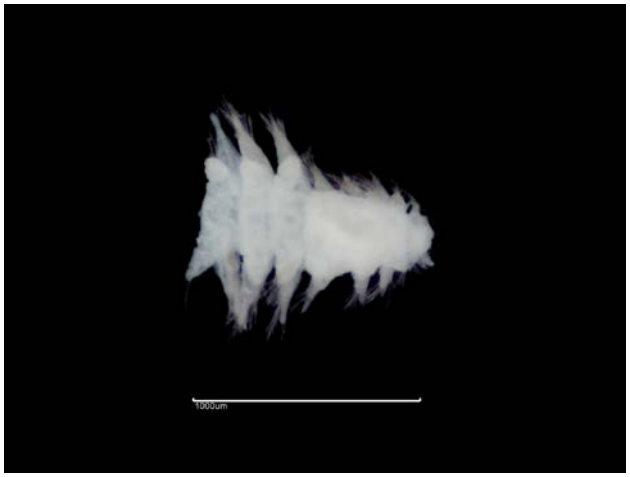

Fig. 8a. *Boudemos ardabilia* (RT5508; 59464) – D

Ten generic and specific differences: Lab 10 did not identify the specimen and Lab 01 identified only as 'Polychaeta' (we recommend identification to species level in the Ring Test exercise, with the 'confidence level' used to qualify the submission); Lab 01 identified as *Ophryotrocha craigsmithi* (Figure 8b shows *Ophryotrocha* sp.) (which has complex jaws); Lab 09 identified as *Iospilus affinis*, a synonym of *Paraiospilus affinis* (no material available) (which lacks notochaetae); Lab 12 identified as *Sigalion squamosum* (Figure 8c shows *Sigalion* sp.) (which has scales, or scale attachment scars); Lab 07 identified as *Hesionides* (Figure 8d), Lab 21 as *H. arenaria* (which has poorly developed notopodia); Lab 16 identified as *Gyptis rosea* (Figure 8e shows *Gyptis* sp.) (which has eight pairs of tentacular cirri); Lab 13 identified as *Dysponetus paleophorus*; Lab 17 identified as *Dysponetus caecus* (no material of either available; Figure 8f shows *Dysponetus joeli*) (both of which have a median antenna).

Labs 02, 03, 04 and 14 used the genus name *Vigtorniella*. This was the name used in the species' original description (Wiklund et al. (2009) and also on WoRMS until we requested, following participant feedback to this exercise, for WoRMS to be updated to follow recent generic reassignment (Watson et al., 2016).

Fig. 8b. *Ophryotrocha* sp. (9583) - D

Fig. 8c. *Sigalion* sp. (57016) - D

Fig. 8d. *Hesionides* sp. (7981) - D

Fig. 8e. *Gyptis* sp. (6998) - D

Fig. 8f. *Dysponetus joeli* (413532) - D

RT5509 – *Antalis entalis* (Linnaeus, 1758) (Figure 9a)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: Norway. Condition: fair, medium. Specimens from nine samples.

Fig. 9a. *Antalis entalis* (RT5509; BAL 37.5) – L

One generic and four specific differences: Lab 02 identified as *Pulsellum affine* (Figure 9b) (which has a wider, symmetrical posterior opening); Labs 06, 11 and 20 identified as *Antalis vulgaris* (Figure 9c) (which has a strongly truncated posterior opening, weaker curvature and stronger longitudinal striations).

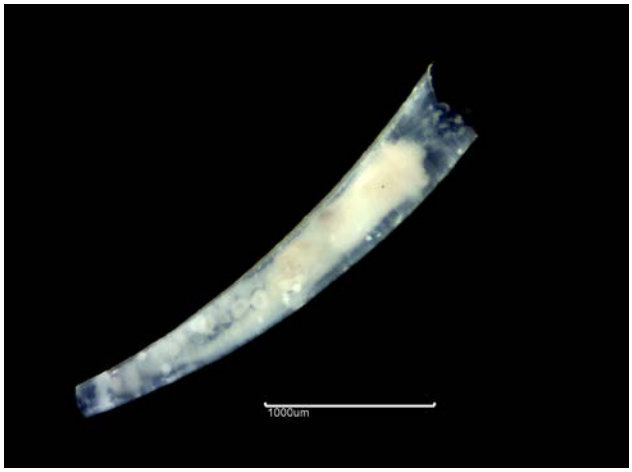

Fig. 9b. *Pulsellum affine* (RT49_15) – L

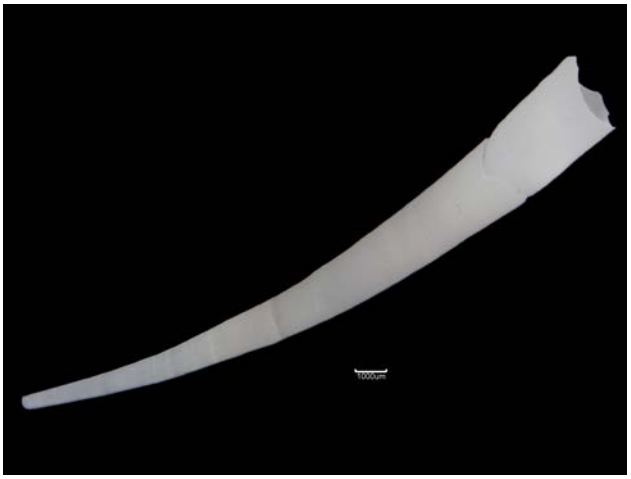

Fig. 9c. *Antalis vulgaris* (8199) – L

RT5510 – *Cumopsis goodsir* (Van Beneden, 1861) (Figure 10a)

Substratum: Sand. Salinity: Full (Euhaline). Depth: Intertidal. Geography: southeast England. Condition: good, small, female. All specimens from one sample; southeast England.

Fig. 10a. *Cumopsis goodsir* (RT5510; 55607) – L

Four generic and nine specific differences: Lab 05 identified as *Iphinoe serrata* (Figure 10b); Lab 21 identified as *Iphinoe trispinosa* (Figure 10c); Lab 21 identified as *Vaunthompsonia cristata* (Figure 10d) (all of which have dorsal serrations in females and males with pleopods); Lab 03 identified as *Cumopsis fagei* (Figure 10e); Labs 04, 11, 16 and 18 identified as *Cumopsis longipes* (no material available) (both of which lack carapace ridges – these were faint in the specimens circulated).

Lab 20 lost the specimen (the contractor can provide replacement specimens in most cases).

Fig. 10b. *Iphinoe serrata* (55029) – L

Fig. 10c. *Iphinoe trispinosa* (43475) – L

Fig. 10d. *Vaunthompsonia cristata* (6052) – L

Fig. 10e. *Cumopsis fagei* (60561) – L

RT5511 – *Yoldiella nana* (M. Sars, 1865) (Figure 11a, d)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Lower Shelf). Geography: Norway. Condition: fair, medium (1-2 mm). Specimens from two samples.

Fig. 11a. *Yoldiella nana* (RT5511; GEM 4.2) – L

One generic and eight specific differences: Lab 12 identified as *Phaseolus pusillus*, a synonym of *Microgloma pusilla* (no material available) (which has more rounded anterior and posterior margins); Lab 04 identified as *Yoldiella jeffreysi* (no material available) (which has a complex gut loop); Labs 03 and 09 identified as *Yoldiella lenticula* (Figure 11b); Lab 21 identified as *Yoldiella propinqua* (Figure 11c) (both of which have umbones placed anteriorly to the midline); Labs 05 and 06 identified as *Yoldiella solidula* (Figure 11e) (which has a more acute angle to the hinge line).

Lab 11 mis-spelled the genus name as '*Yodiella*'.

Fig. 11b. *Yoldiella lenticula* (P863: GC4.1) – L

Fig. 11c. *Yoldiella propinqua* (62436) – L

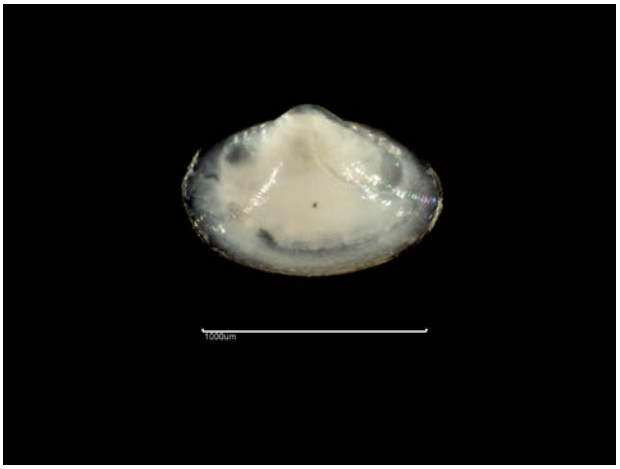

Fig. 11d. *Yoldiella nana* (62439) – L

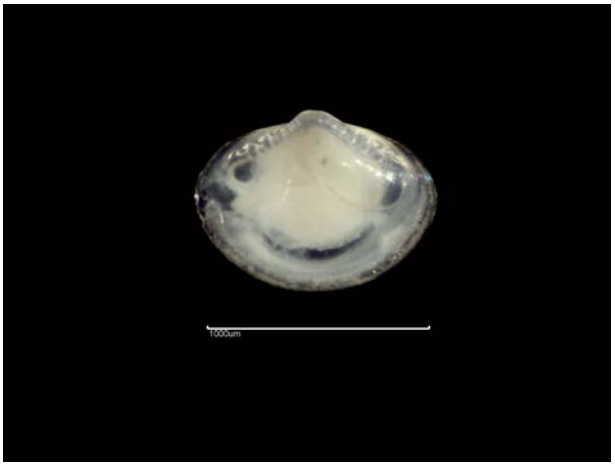

Fig. 11e. *Yoldiella solidula* (62450) – L

RT5512 – *Euchone limnicola* Reish, 1959 (Figure 12a)

Substratum: Mud. Salinity: Variable (Euryhaline). Depth: Infralittoral. Geography: northeast England. Condition: good, medium. All specimens from one sample.

Fig. 12a. *Euchone limnicola* (RT5512; 57520) – L

Seven generic and eight specific differences: Lab 09 identified as *Amphicorina armandi* (Figure 12b shows *Amphicorina* sp); Labs 01 and 02 identified as *Jasmineira elegans* (Figure 12c) (both of which lack an anal depression); Labs 05 and 11 identified as *Dialychone acustica* (Figure 12d); Labs 10 and 18 identified as *Dialychone dunerificta* (Figure 12e) (both of which have a barely perceptible anal depression); Lab 21 identified as *Euchone southerni* (Figure 12f) (in which the margins of the anal depression are developed into lateral wings).

Fig. 12b. *Amphicorina* (61571) – L

Fig. 12c. *Jasmineira elegans* (58449) – V

Fig. 12d. *Dialychone acustica* (60650) – D

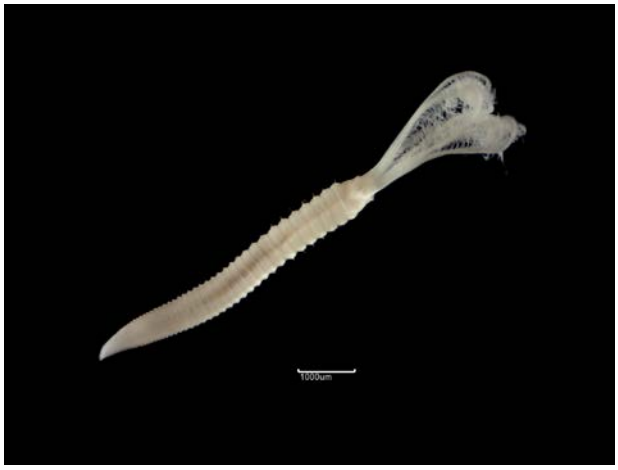

Fig. 12e. *Dialychone dunerificta* (58127) – V

Fig. 12f. *Euchone southerni* (58212) – V

RT5513 – *Nebalia herbstii* Leach, 1814 (Figure 13a, d, f) / Nebalia kocatasi Kocak & Katagan, 2007 (Figure 13c, e, g)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Infralittoral. Geography: southwest England. Condition: good, medium. All specimens from one sample.

Fig. 13a. *Nebalia herbstii* (RT5513; 7129) - L

No generic and three specific differences: Labs 01 and 09 identified as *Nebalia bipes* (no material available) (which has a less symmetrical anal scale); Lab 11 identified as *Nebalia reboredae* (Figure 13c) (which has fewer than ten articles to the antennular flagellum).

Labs 02, 04, 12, 14, 18, 19 and 21 identified as *Nebalia kocatasi* (Figure 13c, e, g) (in which the proximal article of the endopod of maxilla 2 is of equal length to the distal article; after examination of more material from the source sample, it seems that a mixture of species may have been sent, so *N. kocatasi* identifications have been marked as correct.

Fig. 13b. *Nebalia reboredae* (11449) - L

Fig. 13c. *Nebalia kocatasi* (RT53) - L

Fig. 13d. *Nebalia herbstii* (RT5513; 7129) - Antenna Article 3

Fig. 13e. *Nebalia kocatasi* (RT5513; 7129) - Antenna Article 3

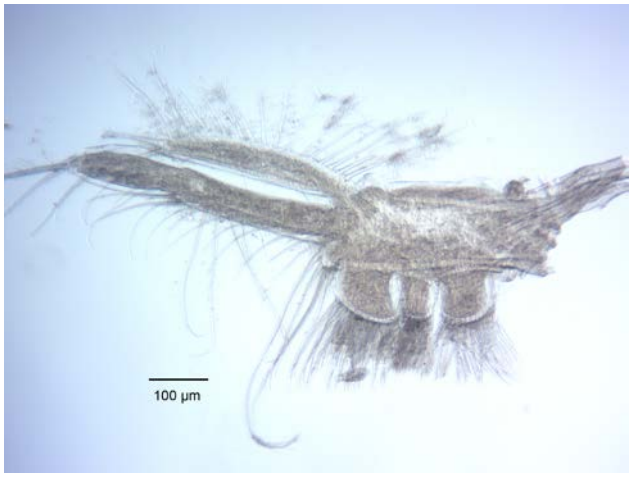

Fig. 13f. *Nebalia herbstii* (RT5513; 7129) - Maxilla 2

Fig. 13g. *Nebalia kocatasi* (RT5513; 7129) – Maxilla 2

RT5514 – *Pista cf. cristata* (Müller, 1776) (Figure 14a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: southwest England. Condition: fair, medium. Specimens from seven samples.

Fig. 14a. *Pista cristata* (RT5514; 57056) – L

Five specific differences: Labs 02, 11 and 12 identified as *Pista maculata* (Figure 14b); Lab 18 identified as *Pista mirabilis* (Figure 14c) (both of which have dichotomous, rather than bottle-brush shaped, branchiae; Lab 11 identified as *Pista mediterranea* (which has three or four branchiae).

Labs 04, 06, 07, 08, 09, 19, 20, 21, 23 and 24 identified as *Pista bansei*, which has been accepted as correct for the purposes of this exercise (see notes below); Lab 01 used the synonym *Pista lornensis*; Lab 10 used *Pistella lornensis*.

Fig. 14b. *Pista maculata* (58389) – L

Fig. 14c. *Pista mirabilis* (55995) – L

Fig. 14d. *Pista mediterranea* (12101) – L

RT5515 – *Idotea chelipes* (Pallas, 1766) (Figure 15a)

Substratum: Floral turf. Salinity: Reduced (Mesohaline). Depth: Infralittoral. Geography: southeast England. Condition: good, medium. All specimens from one sample.

Fig. 15a. *Idotea chelipes* (RT5515; 55863) – D

No generic and three specific differences: Labs 01 and 04 identified as *Idotea pelagica* (Figure 15b); Lab 09 identified as *Idotea granulosa* (Figure 15c) (both of which have paired aesthetascs at the distal end of the antennule).

Fig. 15b. *Idotea pelagica* (55782) – D

Fig. 15c. *Idotea granulosa* (56109) – D

RT5516 – *Aponuphis bilineata* (Baird, 1870) (Figure 16a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: Southwest England. Condition: Fair, medium. Specimens from seven samples.

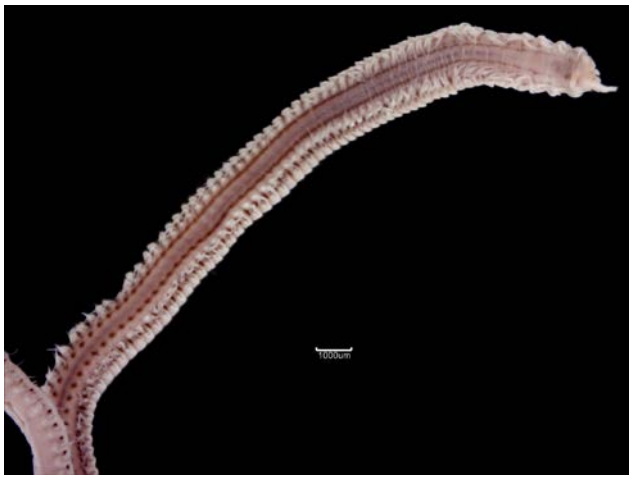

Fig. 16a. *Aponuphis bilineata* (RT5516; 57089) – D

No generic or specific differences.

Lab 12 used the synonym *Hyalinoecia bilineata*.

RT5517 – *Clausinella fasciata* (da Costa, 1778) (Figure 17a, i, k)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: Southwest England. Condition: good, juvenile (1-2 mm). All specimens from one sample.

Fig. 17a. *Clausinella fasciata* (RT5517; 57091) – L

Fourteen generic and specific differences: Lab 01 identified as *Arctica islandica* (Figure 17b); Labs 11 and 20 identified as *Gouldia minima* (Figure 17c); Lab 12 identified as *Mysia undata* (Figure 17d) (all of which lack distinct concentric sculpture at this size); Lab 02 identified as *Astarte* sp.; Labs 10 and 18 as *A. sulcata* (Figure 17e) (which has fewer concentric ridges at this size); Lab 08 identified as *Dosinia lupinus* (Figure 17f) (which has a more rounded outline); Lab 03 identified as *Venus casina* (Figure 17g); Labs 05, 13, 14, 17 and 21 identified as *Chamelea striatula* (Figure 17h, j) (both of which have coarser, sharper concentric ridges at this size).

Fig. 17b. *Arctica islandica* (58905) – L

Fig. 17c. *Gouldia minima* (RT52_20) – L

Fig. 17d. *Mysia undata* (37538) – L

Fig. 17e. *Astarte sulcata* (8725) – L

Fig. 17f. *Dosinia lupinus* (58912) – L

Fig. 17g. *Venus casina* (55077) – L

Fig. 17h. *Chamelea striatula* (RT52_13) – L

Fig. 17i. *Clausinella fasciata* (57091) – L

Fig. 17j. *Chamelea striatula* (58910) – L

Fig. 17k. *Clausinella fasciata* (57059) – L

RT5518 – *Diastylis rugosa* Sars, 1865 (Figure 18a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: north of Ireland. Condition: fair, medium, female. Specimens from six samples.

Fig. 18a. *Diastylis rugosa* (RT5518 ; 58709) – L

Seven specific differences: Labs 01, 04, 11, 14 and 21 identified as *Diastylis laevis* (Figure 18b); Lab 12 identified as *Diastylis boecki* (Figure 18c); Lab 20 identified as *Diastylis tumida* (Figure 18d) (all of which lack vertical folds on the carapace).

Fig. 18b. *Diastylis laevis* (7232) – L

Fig. 18c. *Diastylis boecki* (58255) – L

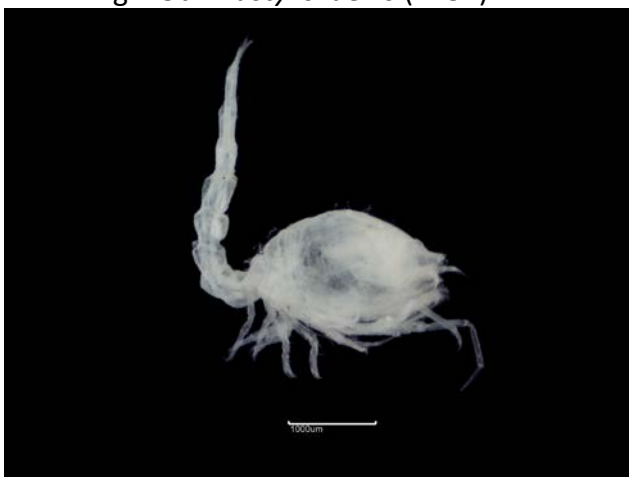

Fig. 18d. *Diastylis tumida* (59441) – L

RT5519 – *Diplocirrus glaucus* (Malmgren, 1867) (Figure 19a)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: northeast England. Condition: Fair, medium. Specimens from four samples.

Fig. 19a. *Diplocirrus glaucus* (RT5519; 58910) – D

No generic or specific differences.

RT5520 – *Dosinia lupinus* (Linnaeus, 1758) (Figures 17f, 20a, 20b)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: southwest England. Condition: good, small (4-9 mm). Specimens from four samples.

Fig. 20a. *Dosinia lupinus* (RT5520; 47056) – L

Four specific differences: Labs 01, 11, 12 and 18 identified as *Dosinia exoleta* (Figure 20c) (which has a less glossy shell and has coarser sculpture at this size).

Fig. 20b. *Dosinia lupinus* (58841) – L

Fig. 20c. *Dosinia exoleta* (57051) – L

RT5521 – *Nannonyx goesii* (Boeck, 1871) (Figure 21a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: north of Ireland. Condition: good, medium. All specimens from one sample.

Fig. 21a. *Nannonyx goesii* (RT5521; 58676) – L

One generic and two specific differences: Lab 21 identified as *Perrierella audouiniana* (Figure 21b) (which has a reduced first coxal plate); Lab 18 identified as *Nannonyx spinimanus* (no material available) (which has a narrower, spinose and less hairy gnathopod 1 propodus).

Labs 03 and 12 mis-spelled the species as '*goesi*'.

Fig. 21b. *Perrierella audouiniana* (9588) – L

RT5522 – *Streblospio shrubsolii* (Buchanan, 1890) (Figure 22a)

Substratum: Mud. Salinity: Variable (Euryhaline). Depth: Intertidal. Geography: southeast England. Condition: fair, medium. All specimens from one sample; one more from same survey reviewed by V. Radashevsky.

Fig. 22a. *Streblospio shrubsolii* (RT5522; 58391) – D

Three specific differences: Lab 17 identified as *Streblospio gynobranchiata* (Figure 2c); Labs 07 and 21 identified as *Streblospio benedicti* (Figure 2a, b) (both of which have neuropodial hooks from chaetiger 7 and a mid-dorsal papilla between the branchial bases).

Labs 06 and 08 identified as *Streblospio padventralis* (which has been scored as correct for the purposes of this exercise).

Fig. 22b. *Streblospio shrubsolii* (RT5522; 58391) – D

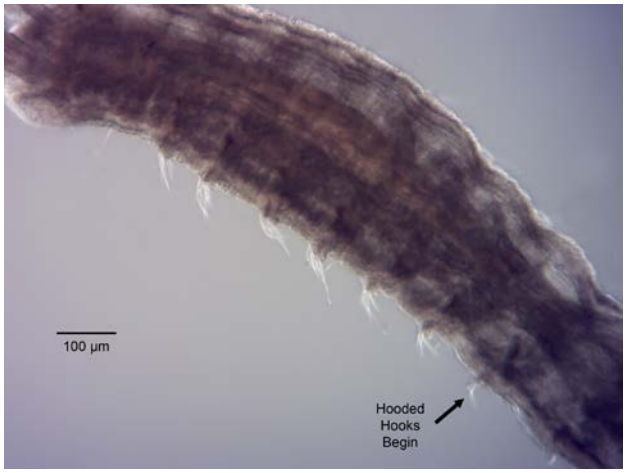

Fig. 22c. *Streblospio shrubsolii* (RT5522; 58391) – V

RT5523 – *Phtisica marina* Slabber, 1769 (Figure 23a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: North of Ireland. Condition: Fair, medium. All specimens from one sample.

Fig. 23a. *Phtisica marina* (RT5523; 58657) – L

No generic or specific differences.

RT5524 – *Thyasira sarsii* (Philippi, 1845) (Figure 24a)

Substratum: Mud. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: Norway. Condition: good, medium (5-8 mm). All specimens from one sample.

Fig. 24a. *Thyasira sarsii* (RT5524; 59889) – L

Two specific differences: Lab 21 identified only as *Thyasira* sp. (we recommend identification to species level in the Ring Test exercise, with the 'confidence level' used to qualify the submission); Lab 11 identified as *Thyasira obsoleta* (Figure 24b) (which is smaller and has a pyriform outline and projecting auricle).

Lab 17 mis-spelled the species as '*sarsi*'.

Fig. 24b. *Thyasira obsoleta* (62428) – L

RT5525 – *Sphaerodorum gracilis* (Rathke, 1843) (Figure 25a)

Substratum: Diamicton. Salinity: Full (Euhaline). Depth: Circalittoral (Upper Shelf). Geography: north of Ireland. Condition: Fair, medium. Specimens from two samples.

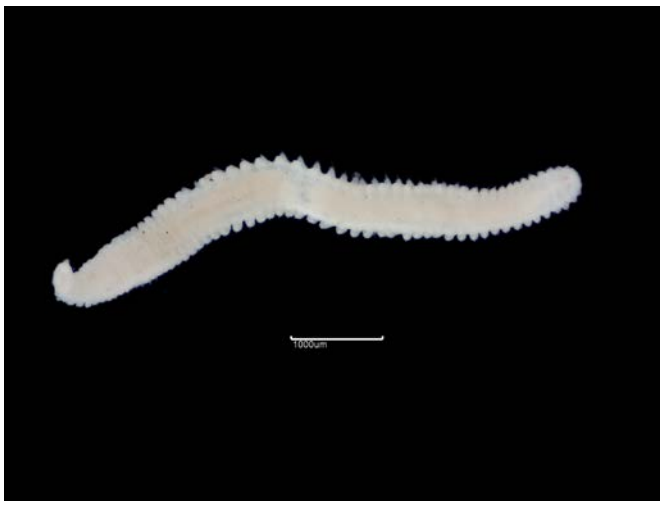

Fig. 25a. *Sphaerodorum gracilis* (RT5525; 6092) – D

One specific difference: Lab 11 identified as *Tubificoides benedii* (Figure 25b) (which lacks projecting parapodia).

Fig. 25b. *Tubificoides benedii* (5880) – L

Taxonomic and Identification policy problems highlighted by this RT

The ring test included species from several problematic groups and it was anticipated that it would highlight areas for further work. Some participants submitted comments following submission of the initial results and reviews of identifications and scoring policies were made after circulation of the interim results. Several taxonomic and identification problems were highlighted through this exercise, discussed above; more detail on *Pista* is given below.

Pista cf. cristata. Specimen 14 was originally identified by APEM as *P. cristata*, on the understanding that *P. bansei* is a boreal species unknown from southern Britain. Some participants identified the presence of structures on the thoracic uncini that resembled the manubrium of *P. bansei*. In response, specimens have been sent to Igor Jirkov for further study and we will update participants with future conclusions. Meanwhile, Specimen 14 has been provisionally named as *P. cf. cristata* and identifications of either *P. cristata* or *P. bansei* have been scored as correct.

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We would like to thank Fredrik Melsom (DNV GL) for investigating the identity of Specimen 8. We are grateful to Vasily Radashevsky (Institute of Marine Biology, National Scientific Center of Marine Biology, Far Eastern Branch of the Russian Academy of Sciences) for the review of specimens from the same samples as RT55 ring test Specimens 02 and 22 and for further discussion on these species. We thank Igor Jirkov (Moscow Lomonosov State University) for discussion of Specimen 14 and Salma Shalla (Salma Shalla Benthic Identification Services) for review of Specimen 10. We also thank all participants that have provided feedback following issue of interim results.

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Ring Test Specimen Return Instructions

Please return all ring test specimens by 4th January 2019. These are reference collection specimens and must be returned to our museum. Your laboratory will be ineligible for future ring tests if specimens are not returned.

Return address: **David Hall, APEM Ltd., 7a Diamond Centre,**
Works Road, Letchworth, Hertfordshire SG6 1LW, UK