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Ring Test Bulletin – RTB#43

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RING TEST DETAILS

Ring Test #43
Type/Contents – General
Circulated – 28/09/2012
Completion Date – 14/12/2012
Number of Subscribing Laboratories – 23
Number of Participating Laboratories – 21
Number of Results Received – 22*
***multiple data entries per laboratory permitted**

Summary of differences

Specimen	Genus	Species	Total differences for 22 returns	
			Genus	Species
RT4301	*Mactra*	*stultorum*	3	4
RT4302	*Mesopodopsis*	*slabberi*	1	0
RT4303	*Pharus*	*legumen*	1	1
RT4304	*Cylichnina*	*umbilicata*	5	4
RT4305	*Diastylis*	*rathkei*	0	6
RT4306	*Asterias*	*rubens*	3	3
RT4307	*Macoma*	*balthica*	6	6
RT4308	*Nucula*	*nucleus*	1	6
RT4309	*Aricidea*	*wassi*	0	8
RT4310	*Mytilus*	*edulis*	7	7
RT4311	*Spiophanes*	*bombyx*	0	0
RT4312	*Urothoe*	*brevicornis*	0	1
RT4313	*Urothoe*	*poseidonis*	0	3
RT4314	*Mediomastus*	*fragilis*	2	2
RT4315	*Hippolyte*	*varians*	1	1
RT4316	*Caecum*	*glabrum*	1	1
RT4317	*Cerastoderma*	*edule*	0	3
RT4318	*Heteromastus*	*filiformis*	2	2
RT4319	*Gammarellus*	*homari*	0	16
RT4320	*Asellus*	*aquaticus*	7	8
RT4321	*Stenopleustes*	*latipes*	6	7
RT4322	*Angulus*	*tenuis*	2	1
RT4323	*Hesionura*	*elongata*	1	1
RT4324	*Cirriformia*	*tentaculata*	2	3
RT4325	*Chaetozone*	*setosa*	0	10
		Total differences	51	105
		Average diff. / data return	3.9	8.1

Table 1. The identification of fauna made by participating laboratories for RT43 (arranged by specimen). Names are given only where different from the AQC identification.

	RT4301	RT4302	RT4303	RT4304	RT4305	RT4306
Taxon	*Mactra stultorum*	*Mesopodopsis slabberi*	*Pharus legumen*	*Cylichnina umbilicata*	*Diastylis rathkei*	*Asterias rubens*
LB1901	- -	- -	- -	- -	- -	*Leptasterias muelleri*
LB1902	- -	- -	- -	- -	- -	- -
LB1904	- -	- -	- -	*Retusa truncatula*	*- bradyi*	- -
LB1905a	- -	- -	- -	- -	- -	- -
LB1905b	- -	- -	- -	- -	- -	- -
LB1907	- -	- -	- -	- -	- -	*Leptasterias nivelleri*
LB1908	- -	- -	- -	- -	- -	- -
LB1909	- -	- -	- -	*Retusa obtusa*	- -	- -
LB1910	- -	- -	- -	- -	- -	- -
LB1911	- -	- -	- -	- -	- -	- -
LB1912	- -	- -	- -	- -	- -	- -
LB1913	- -	- -	- -	*Retusa -*	- -	- -
LB1914	- -	- -	- -	- -	- -	- -
LB1916	- -	- -	- -	- -	- -	*Echinaster sepositus*
LB1918	*- glauca*	- -	*Phaxas pellucidus*	- -	*- bradyi*	- -
LB1919	*Arcopagia balaustina*	- -	- -	- -	*- bradyi*	- -
LB1920	- -	- -	- -	- -	- -	- -
LB1922	- -	- -	- -	*Retusa truncatula*	- -	- -
LB1926	- -	- -	- -	*Roxania utriculus*	*- bradyi*	- -
LB1950	*Spisula elliptica*	- -	- -	- -	*- bradyi*	- -
LB1956	*Spisula elliptica*	*Mesodopsis -*	- -	- -	*- bradyi*	- -
LB1961	- -	- -	- -	- -	- -	- -

Table 1. The identification of fauna made by participating laboratories for RT43 (arranged by specimen). Names are given only where different from the AQC identification.

	RT4307	RT4308	RT4309	RT4310	RT4311	RT4312	RT4313
Taxon	*Macoma balthica*	*Nucula nucleus*	*Aricidea wassi*	*Mytilus edulis*	*Spiophanes bombyx*	*Urothoe brevicornis*	*Urothoe poseidonis*
LB1901	- -	- -	- -	- -	- -	- -	- -
LB1902	- -	- -	- -	- -	- -	- -	- -
LB1904	*Mactra glauca*	- -	- -	*Modiolula phaseolina*	- -	- -	*- elegans*
LB1905a	- -	- -	- -	- -	- -	- -	- -
LB1905b	- -	- -	- -	- -	- -	- -	- -
LB1907	- -	- -	- -	- -	- -	- -	- -
LB1908	- -	- -	- -	- -	- -	- -	- -
LB1909	- -	*Nucleus -*	*- capensis*	- -	- -	- -	- -
LB1910	- -	- -	- -	- -	- -	- -	- -
LB1911	*Abra tenuis*	*- sulcata*	*- minuta*	- -	- -	- -	- -
LB1912	- -	- -	- -	- -	- -	- -	- -
LB1913	*Arcopagia crassa*	- -	- -	*Modiolula phaseolina*	- -	- -	*- Spp. Juv,*
LB1914	*Arcopagia crassa*	*- nitidosa*	*- minuta*	- -	- -	- -	- -
LB1916	- -	- -	- -	- -	- -	- -	- -
LB1918	- -	- -	*- minuta*	*Modiolula phaseolina*	- -	- -	- -
LB1919	*Angulus tenuis*	*- hanleyi*	- -	*Modiolula phaseolina*	- -	- -	- -
LB1920	- -	- -	- -	- -	- -	*- pulchella*	- -
LB1922	- -	- -	*- minuta*	- -	- -	- -	- -
LB1926	- -	- -	*- capensis bansei*	*Modiolula phaseolina*	- -	- -	- -
LB1950	- -	*- nitidosa*	- -	*Modiolula phaseolina*	- -	- -	- -
LB1956	- -	*- sulcata*	- 0	- -	- -	- -	- -
LB1961	*Diplodonta rotundata*	*- sulcata*	*- capensis bansei*	*Modiolula phaseolina*	- -	- -	*- grimaldii*

Table 1. The identification of fauna made by participating laboratories for RT43 (arranged by specimen). Names are given only where different from the AQC identification.

	RT4314	RT4315	RT4316	RT4317	RT4318	RT4319
Taxon	*Mediomastus fragilis*	*Hippolyte varians*	*Caecum glabrum*	*Cerastoderma edule*	*Heteromastus filiformis*	*Gammarellus homari*
LB1901	- -	- -	- -	- -	- -	*- angulosus*
LB1902	- -	- -	- -	- -	- -	*- angulosus*
LB1904	- -	- -	- -	- -	- -	- -
LB1905a	- -	- -	- -	- -	- -	*- angulosus*
LB1905b	- -	- -	- -	- -	- -	*- angulosus*
LB1907	- -	- -	- -	- -	- -	*- angulosus*
LB1908	- -	- -	- -	- -	- -	*- angulosus*
LB1909	- -	- -	- -	- -	- -	- -
LB1910	- -	- -	- -	- -	- -	*- angulosus*
LB1911	- -	- -	- -	- -	- -	*- angulosus*
LB1912	- -	- -	- -	- -	- -	- -
LB1913	- -	- -	- -	- -	- -	*- angulosus*
LB1914	- -	- -	- -	- -	*Notomastus latericeus*	*- angulosus*
LB1916	- -	- -	- -	- -	- -	*- angulosus*
LB1918	- -	- -	- -	- -	- -	- -
LB1919	- -	- -	- -	- -	- -	- -
LB1920	- -	- -	- -	*- glaucum*	- -	- -
LB1922	- -	*Caridea 0*	*Oweniidae 0*	- -	- -	*- angulosus*
LB1926	- -	- -	- -	- -	- -	*- angulosus*
LB1950	*Pseudonotomastus southerni*	- -	- -	*- glaucum*	*Mediomastus fragilis*	*- angulosus*
LB1956	*Capitella minima*	- -	- 0	- -	- -	*- angulosus*
LB1961	- -	- -	- -	*- glaucum*	- -	*- angulosus*

Table 1. The identification of fauna made by participating laboratories for RT43 (arranged by specimen). Names are given only where different from the AQC identification.

	RT4320	RT4321	RT4322	RT4323	RT4324	RT4325
Taxon	*Asellus aquaticus*	*Stenopleustes latipes*	*Angulus tenuis*	*Hesionura elongata*	*Cirriformia tentaculata*	*Chaetozone setosa*
LB1901	*Janira maculosa*	- -	- -	- -	- -	*- christei*
LB1902	- -	- -	- -	- -	- -	- -
LB1904	*Proasellus meridianus*	- -	- -	- -	- -	- -
LB1905a	- -	- -	- -	- -	- -	- -
LB1905b	- -	- -	- -	- -	- -	- -
LB1907	- -	- -	- -	- -	- -	- -
LB1908	*- meridianus*	- -	- -	- -	- -	*- christei*
LB1909	- -	*Maera loveni*	- -	- -	- -	- -
LB1910	- -	- -	- -	- -	- -	- -
LB1911	- -	- -	*- pygmaeus*	- -	- -	- -
LB1912	- -	- -	- -	- -	- -	*- christei*
LB1913	*Janira maculosa*	*Amphilochidae ?*	*Tellina -*	*Microphthalmus sczelkowii*	- -	- -
LB1914	- -	- -	- -	- -	- -	*- christei*
LB1916	- -	- -	- -	- -	- -	*- christei*
LB1918	- -	*Calliopus? 0*	- -	- -	*Ophelia borealis*	*- christei*
LB1919	*Janira maculosa*	*Calliopius laeviusculus*	- -	- -	- -	- -
LB1920	*Janiropsis breviremis*	- -	- -	- -	- -	*- christei*
LB1922	- -	- -	- -	- -	- -	- type B
LB1926	- -	*Liljeborgia pallida*	- -	- -	*Cirratulus cirratus*	*- christiei*
LB1950	- -	- -	- -	- -	*- norvegica*	- -
LB1956	- 0	*- family*	*Tenllina -*	- -	- -	- -
LB1961	*Proasellus meridianus*	*- malmgreni*	- -	- -	- -	- -

Table 2. The identification of fauna made by participating laboratories for RT43 (arranged by participant). Names are given only where different from the AQC identifcation.

	Taxon	LB1901	LB1902	LB1904	LB1905a	LB1905b	LB1907
RT4301	*Mactra stultorum*	- -	- -	- -	- -	- -	- -
RT4302	*Mesopodopsis slabberi*	- -	- -	- -	- -	- -	- -
RT4303	*Pharus legumen*	- -	- -	- -	- -	- -	- -
RT4304	*Cylichnina umbilicata*	- -	- -	Retusa truncatula	- -	- -	- -
RT4305	*Diastylis rathkei*	- -	- -	- bradyi	- -	- -	- -
RT4306	*Asterias rubens*	Leptasterias muelleri	- -	- -	- -	- -	Leptasterias nivelleri
RT4307	*Macoma balthica*	- -	- -	Mactra glauca	- -	- -	- -
RT4308	*Nucula nucleus*	- -	- -	- -	- -	- -	- -
RT4309	*Aricidea wassi*	- -	- -	- -	- -	- -	- -
RT4310	*Mytilus edulis*	- -	- -	Modiolula phaseolina	- -	- -	- -
RT4311	*Spiophanes bombyx*	- -	- -	- -	- -	- -	- -
RT4312	*Urothoe brevicornis*	- -	- -	- -	- -	- -	- -
RT4313	*Urothoe poseidonis*	- -	- -	- elegans	- -	- -	- -
RT4314	*Mediomastus fragilis*	- -	- -	- -	- -	- -	- -
RT4315	*Hippolyte varians*	- -	- -	- -	- -	- -	- -
RT4316	*Caecum glabrum*	- -	- -	- -	- -	- -	- -
RT4317	*Cerastoderma edule*	- -	- -	- -	- -	- -	- -
RT4318	*Heteromastus filiformis*	- -	- -	- -	- -	- -	- -
RT4319	*Gammarellus homari*	- angulosus	- angulosus	- -	- angulosus	- angulosus	- angulosus
RT4320	*Asellus aquaticus*	Janira maculosa	- -	Proasellus meridianus	- -	- -	- -
RT4321	*Stenopleustes latipes*	- -	- -	- -	- -	- -	- -
RT4322	*Angulus tenuis*	- -	- -	- -	- -	- -	- -
RT4323	*Hesionura elongata*	- -	- -	- -	- -	- -	- -
RT4324	*Cirriformia tentaculata*	- -	- -	- -	- -	- -	- -
RT4325	*Chaetozone setosa*	- christiei	- -	- -	- -	- -	- -

Table 2. The identification of fauna made by participating laboratories for RT43 (arranged by participant). Names are given only where different from the AQC identifcation.

	Taxon	LB1908	LB1909	LB1910	LB1911	LB1912
RT4301	*Mactra stultorum*	- -	- -	- -	- -	- -
RT4302	*Mesopodopsis slabberi*	- -	- -	- -	- -	- -
RT4303	*Pharus legumen*	- -	- -	- -	- -	- -
RT4304	*Cylichnina umbilicata*	- -	Retusa obtusa	- -	- -	- -
RT4305	*Diastylis rathkei*	- -	- -	- -	- -	- -
RT4306	*Asterias rubens*	- -	- -	- -	- -	- -
RT4307	*Macoma balthica*	- -	- -	- -	Abra tenuis	- -
RT4308	*Nucula nucleus*	- -	Nucleus -	- -	- sulcata	- -
RT4309	*Aricidea wassi*	- -	- capensis	- -	- minuta	- -
RT4310	*Mytilus edulis*	- -	- -	- -	- -	- -
RT4311	*Spiophanes bombyx*	- -	- -	- -	- -	- -
RT4312	*Urothoe brevicornis*	- -	- -	- -	- -	- -
RT4313	*Urothoe poseidonis*	- -	- -	- -	- -	- -
RT4314	*Mediomastus fragilis*	- -	- -	- -	- -	- -
RT4315	*Hippolyte varians*	- -	- -	- -	- -	- -
RT4316	*Caecum glabrum*	- -	- -	- -	- -	- -
RT4317	*Cerastoderma edule*	- -	- -	- -	- -	- -
RT4318	*Heteromastus filiformis*	- -	- -	- -	- -	- -
RT4319	*Gammarellus homari*	- angulosus	- -	- angulosus	- angulosus	- -
RT4320	*Asellus aquaticus*	- meridianus	- -	- -	- -	- -
RT4321	*Stenopleustes latipes*	- -	Maera loveni	- -	- -	- -
RT4322	*Angulus tenuis*	- -	- -	- -	- pygmaeus	- -
RT4323	*Hesionura elongata*	- -	- -	- -	- -	- -
RT4324	*Cirriformia tentaculata*	- -	- -	- -	- -	- -
RT4325	*Chaetozone setosa*	- christiei	- -	- -	- -	- christei

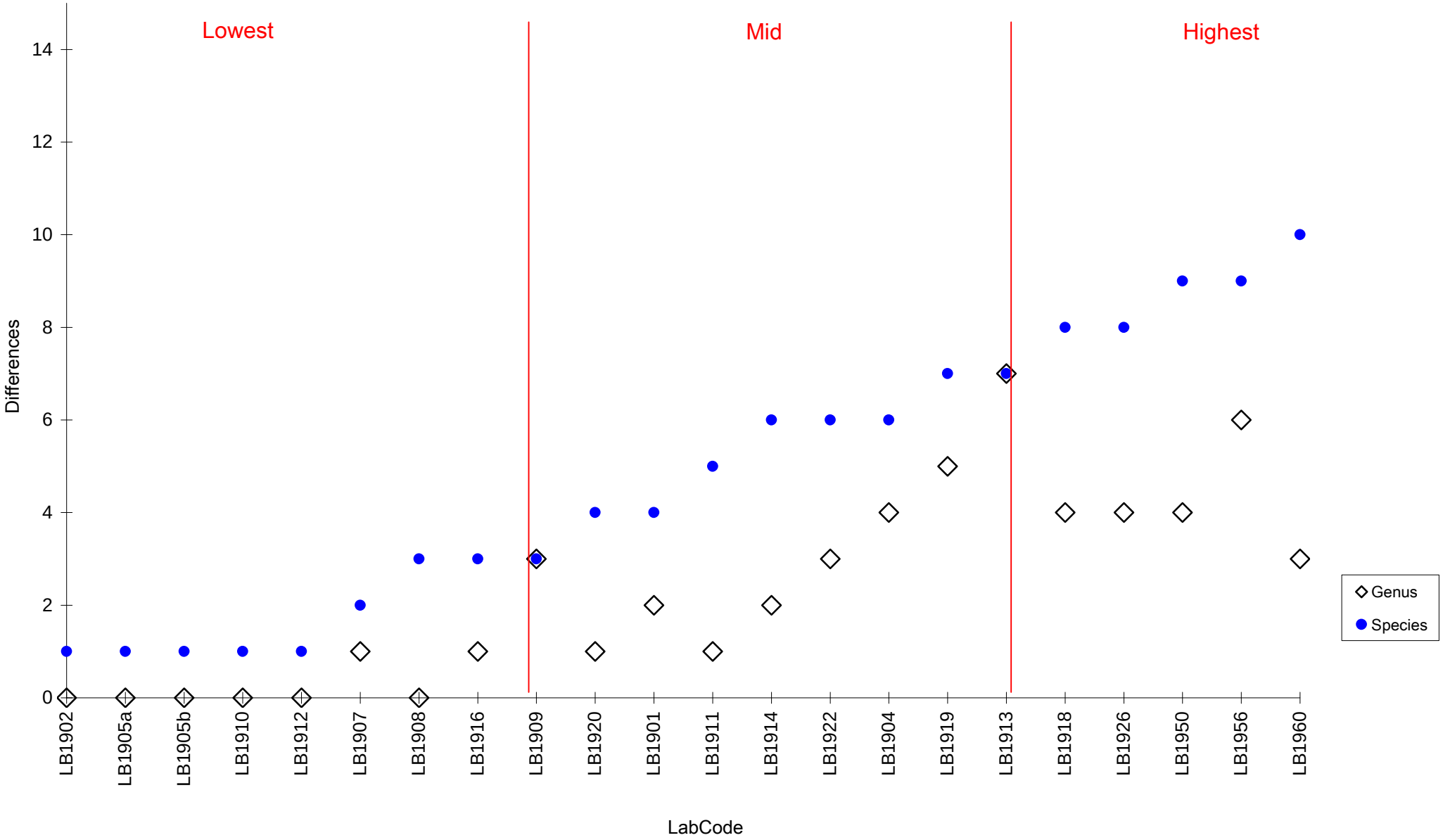
Table 2. The identification of fauna made by participating laboratories for RT43 (arranged by participant). Names are given only where different from the AQC identifcation.

	Taxon	LB1913	LB1914	LB1916	LB1918	LB1919
RT4301	*Mactra stultorum*	- -	- -	- -	- glauca	Arcopagia balaustina
RT4302	*Mesopodopsis slabberi*	- -	- -	- -	- -	- -
RT4303	*Pharus legumen*	- -	- -	- -	Phaxas pellucidus	- -
RT4304	*Cylichnina umbilicata*	Retusa -	- -	- -	- -	- -
RT4305	*Diastylis rathkei*	- -	- -	- -	- bradyi	- bradyi
RT4306	*Asterias rubens*	- -	- -	Echinaster sepositus	- -	- -
RT4307	*Macoma balthica*	Arcopagia crassa	Arcopagia crassa	- -	- -	Angulus tenuis
RT4308	*Nucula nucleus*	- -	- nitidosa	- -	- -	- hanleyi
RT4309	*Aricidea wassi*	- -	- minuta	- -	- minuta	- -
RT4310	*Mytilus edulis*	Modiolula phaseolina	- -	- -	Modiolula phaseolina	Modiolula phaseolina
RT4311	*Spiophanes bombyx*	- -	- -	- -	- -	- -
RT4312	*Urothoe brevicornis*	- -	- -	- -	- -	- -
RT4313	*Urothoe poseidonis*	- Spp. Juv.	- -	- -	- -	- -
RT4314	*Mediomastus fragilis*	- -	- -	- -	- -	- -
RT4315	*Hippolyte varians*	- -	- -	- -	- -	- -
RT4316	*Caecum glabrum*	- -	- -	- -	- -	- -
RT4317	*Cerastoderma edule*	- -	- -	- -	- -	- -
RT4318	*Heteromastus filiformis*	- -	Notomastus latericeus	- -	- -	- -
RT4319	*Gammarellus homari*	- angulosus	- angulosus	- angulosus	- -	- -
RT4320	*Asellus aquaticus*	Janira maculosa	- -	- -	- -	Janira maculosa
RT4321	*Stenopleustes latipes*	Amphilochidae?	- -	- -	Calliopus? 0	Calliopius laeviusculus
RT4322	*Angulus tenuis*	Tellina -	- -	- -	- -	- -
RT4323	*Hesionura elongata*	Microphthalmus sczelkowii	- -	- -	- -	- -
RT4324	*Cirriformia tentaculata*	- -	- -	- -	Ophelia borealis	- -
RT4325	*Chaetozone setosa*	- -	- christei	- christei	- christei	- -

Table 2. The identification of fauna made by participating laboratories for RT43 (arranged by participant). Names are given only where different from the AQC identifcation.

	Taxon	LB1920	LB1922	LB1926	LB1950	LB1956	LB1961
RT4301	*Mactra stultorum*	- -	- -	- -	Spisula elliptica	Spisula elliptica	- -
RT4302	*Mesopodopsis slabberi*	- -	- -	- -	- -	Mesodposis -	- -
RT4303	*Pharus legumen*	- -	- -	- -	- -	- -	- -
RT4304	*Cylichnina umbilicata*	- -	Retusa truncatula	Roxania utriculus	- -	- -	- -
RT4305	*Diastylis rathkei*	- -	- -	- bradyi	- bradyi	- bradyi	- -
RT4306	*Asterias rubens*	- -	- -	- -	- -	- -	- -
RT4307	*Macoma balthica*	- -	- -	- -	- -	- [sabella]	Diplodonta rotundata
RT4308	*Nucula nucleus*	- -	- -	- -	- nitidosa	-sulcata	- sulcata
RT4309	*Aricidea wassi*	- -	- minuta	- capensis bansei	- -	- 0	- capensis basei
RT4310	*Mytilus edulis*	- -	- -	Modiolula phaseolina	Modiolula phaseolina	- -	Modiolula phaseolina
RT4311	*Spiophanes bombyx*	- -	- -	- -	- -	- -	- -
RT4312	*Urothoe brevicornis*	- pulchella	- -	- -	- -	- -	- -
RT4313	*Urothoe poseidonis*	- -	- -	- -	- -	- -	- grimaldii
RT4314	*Mediomastus fragilis*	- -	- -	- -	Pseudonotomastus southerni	Capitella minima	- -
RT4315	*Hippolyte varians*	- -	Caridea 0	- -	- -	- -	- -
RT4316	*Caecum glabrum*	- -	Oweniidae 0	- -	- -	- 0	- -
RT4317	*Cerastoderma edule*	- glaucum	- -	- -	- glaucum	- -	- glaucum
RT4318	*Heteromastus filiformis*	- -	- -	- -	Mediomastus fragilis	Hydrobia ulvae	- -
RT4319	*Gammarellus homari*	- -	- angulosus	- angulosus	- angulosus	- angulosus	- angulosus
RT4320	*Asellus aquaticus*	Janiropsis breviremis	- -	- -	- -	- 0	Proasellus meridianus
RT4321	*Stenopleustes latipes*	- -	- -	Liljeborgia pallida	- -	- family	- malmgreni
RT4322	*Angulus tenuis*	- -	- -	- -	- -	Tenllina -	- -
RT4323	*Hesionura elongata*	- -	- -	- -	- -	- -	- -
RT4324	*Cirriformia tentaculata*	- -	- -	Cirratulus cirratus	- norvegica	- -	- -
RT4325	*Chaetozone setosa*	- christiei	- type B	- christiei	- -	- -	- -

Figure 1. The number of differences from the AQC identification of specimens distributed in RT43 for each of the participating laboratories. Arranged in order of increasing number of differences.



Specimen Images and Detailed Breakdown of Identifications

LabCodes are abbreviated in this report to exclude the Scheme year, *i.e.* LB1901a = Lab 01a. 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 Thomson Unicomarine Ltd.
(Figure codes: A=anterior; P=posterior; L=lateral; D=dorsal; V=ventral)

RT4301 – *Mactra stultorum* (Figure 1a).

Substratum: Sand. Salinity: Full. Depth: Infralittoral. Geography: Irish Sea. Condition: Good, Large

Fig. 1a. *Mactra stultorum* (RT4301) – L

Three generic and four specific difference:
Labs 50 and 56 identified as *Spisula elliptica* (Figure 1b) (which has a more oval appearance than *Mactra stultorum*);
Lab 19 identified as *Arcopagia balaustina* (Figure 1c) (this is a rare bivalve in British waters. It is not quite equilateral, the beaks being behind the midline);
Lab 18 misidentified the species as *Mactra glauca* (no photograph available) (in this species the beaks are slightly in front of the midline).

Fig. 1b. *Spisula elliptica* – L

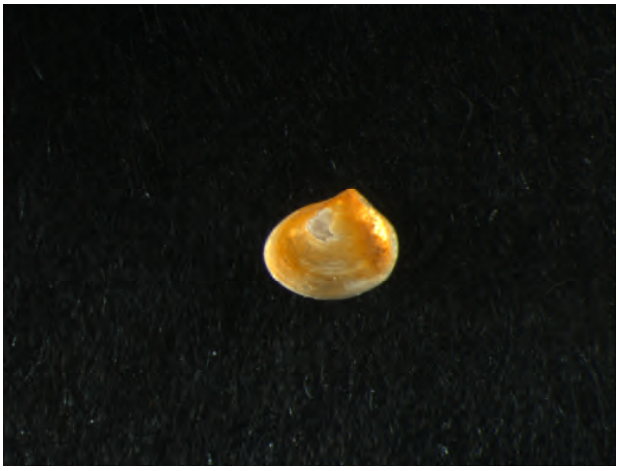


Fig. 1c. *Arcopagia balaustina* – L

RT4302 – *Mesopodopsis slabberi* (Figure 2a).

Substratum: Mixed. Salinity: Slightly reduced. Depth: Infralittoral. Geography: W. France. Condition: Good, Large.

Fig. 2a. *Mesopodopsis slabberi* (RT4302) – L

Lab 56 incorrectly spelt the genus.

RT4303 – *Pharus legumen* (Figure 3a).

Substratum: Sand. Salinity: Full. Depth: Infralittoral. Geography: Irish Sea. Condition: Good, Medium.

Fig. 3a. *Pharus legumen* (RT4303) – L

One generic and one specific difference:
Lab 18 identified as *Phaxas pellucidus* (Figure 3b) (which has more parallel and straight dorsal and ventral surfaces, with the anterior and posterior ends gaping and rounded. The hinge ligament is positioned at the anterior end of the shell, whereas in *Pharus legumen* it is positioned at the central part of the shell).
In *Phaxas pellucidus* the dorsal surface is straight, but the ventral surface is curved. The posterior end is truncate while the anterior end is rounded.

Fig. 3b Phaxas pellucidus - L

RT4304 – *Cylichnina umbilicata* (Figure 4a).

Substratum: Mud. Salinity: Full. Depth: Circalittoral. Geography: North Sea. Condition: Good, Medium.

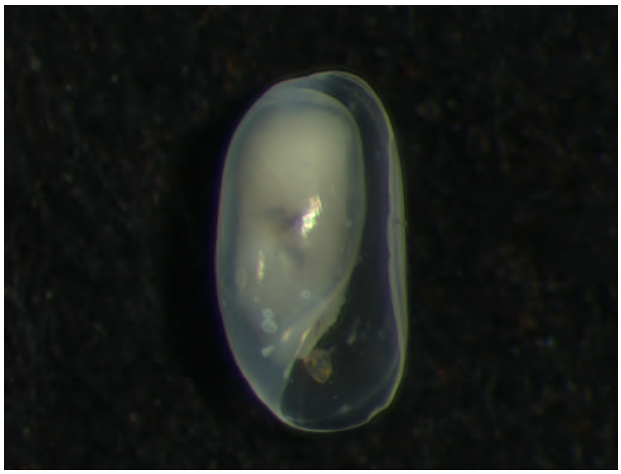


Fig. 4a. *Cylichnina umbilicata* (RT4304) – L

Five generic and four specific differences:
Labs 04 and 22 identified as *Retusa truncatula* (Figure 4b) (which has a more cylindrical shell, narrower across the centre);
Lab 09 identified as *Retusa obtusa* (no photograph available) (which is broader and usually has a visible spire, the aperture is shorter than the last whorl, whereas in *Cylichnina umbilicata* the aperture is longer than the last whorl);
Lab 26 identified as *Roxania utriculus* (Figure 4c) (which is broader and has a spiral sculpture).
Lab 13 identified as *Retusa umbilicata* (which is a synonym of *Cylichnina umbilicata).*

Fig. 4b. *Retusa truncatula* - L

Fig. 4c. *Roxania ultriculus* - L

RT4305 – *Diastylis rathkei* (Figure 5a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S.W. England. Condition: Good, Large.

Fig. 5a. *Diastylis rathkei* (RT4305) – L

Six specific differences:

Labs 04, 18, 19, 26, 50 and 56 identified as *Diastylis bradyi* (Figure 5b) (which lacks the rows of teeth on the frontal lobe; the rows of teeth in *Diastylis rathkei* run from anterior to posterior).

Fig. 5b. *Diastylis bradyi* – L

RT4306 – *Asterias rubens* (Figure 6a).

Substratum: Hard. Salinity: Full. Depth: Lower Shore. Geography: S. England. Condition: Poor, Medium.

Fig. 6a. *Asterias rubens* (RT4306) – D

Three generic and three specific differences:
Lab 01 identified as *Leptasterias muelleri* (Figure 6b) (which has a firm dorsal surface with a strong internal skeleton, whereas *Asterias rubens* has a flexible dorsal surface;
Lab 16 identified as *Echinaster sepositus* (no photograph available) (which has two rows of tube feet, whereas *Asterias rubens* has four rows);
Lab 07 identified as *Leptasterias nivelleri* (which is a misspelling of *Leptasterias muelleri*).

Fig. 6b. *Leptasterias muelleri* – D

RT4307 – *Macoma balthica* (Figure 7a).

Substratum: Mixed. Salinity: High. Depth: Infralittoral. Geography: Orkney. Condition: Good, Medium (2-3 mm).

Fig. 7a. *Macoma balthica* (RT4307) – L

Six generic and six specific differences:
Labs 13 and 14 identified as *Arcopagia crassa* (Figure 7b) (which is broadly oval, has a quite coarse sculpturing and the beak is situated just behind the midline, whereas *Macoma balthica* is more circular in outline, the shell surface is nearly smooth and the beak is central);
Lab 04 identified as *Mactra glauca* (no photograph available) (which has a slightly more tumid shell of broadly triangular appearance, the anterior dorsal margin is lower and shorter than the more straight posterior margin and the beaks are slightly in front of the midline);
Lab 11 identified as *Abra tenuis* (Figure 7c) (which has a more triangular outline, the shoulders of the shell dropping away from the beaks sharply, unlike *Macoma balthica*);
Lab 19 identified as *Angulus tenuis* (no photograph available) (which has a shiny shell with the beak just behind the midline, while in *Macoma balthica* the shell is more solid, not shiny, and the beak is central;

Lab 61 identified as *Diplodonta rotundata* (no photograph available) (which is almost perfectly circular in outline while *Macoma baltica* has the anterior half rounded and the posterior somewhat asymmetrically attenuated, almost triangular and slightly twisted to the right .

Fig. 7b. *Arcopagia crassa* – L

Fig. 7c. *Abra tenuis* – L

RT4308 – *Nucula nucleus* (Figure 8a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: North Sea. Condition: Good, Large.

Fig. 8a. *Nucula nucleus* (RT4308) – L

One generic and six specific differences:
Labs 11, 56 and 61 identified as *Nucula sulcata* (Figure 8b) (which has a more strongly sculptured shell);
Labs 14 and 50 identified as *Nucula nitidosa* (Figure 8c) (which is more triangular in outline, more glossy and has a less prominent lunule);
Lab 19 identified as *Nucula hanleyi* (Figure 8d) (which has a more elongate shell, usually with radiating colour bands).

Lab 09 incorrectly spelt the genus.

Fig. 8b. *Nucula sulcata* – L

Fig. 8c. *Nucula nitidosa* – L

Fig. 8d. *Nucula hanleyi* – L

RT4309 – *Aricidea wassi* (Figure 9a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: North Sea. Condition: Good, Medium.

Fig. 9a. *Aricidea wassi* (RT4309) – AL

Eight specific differences:
Labs 11, 14, 18 and 22 identified as *Aricidea minuta* (Figure 9b) (which has branchiae of similar length and slightly pointed appearance, the prostomial antenna with a single articulation not reaching the 2nd setiger, whereas in *Aricidea wassi*, the prostominal antenna is multiarticulate reaching the 3rd setiger);
Lab 09 identified as *Aricidea* (*Aricidea*) *capensis* (no photograph available) (which has bidentate hooks with hoods on the concave side of the shaft (Day 1961:482) and a modified setal arista inserted under the main tooth. *Aricidea wassi* has pseudocompound neurosetae, rather than acicular);
Lab 26 and 61 identified as *Aricidea* (*Aricidea*) *capensis bansei* (no photograph available) (which has acicular neurosetae with the distal hook having 1 – 3 accessory teeth. A long arista arises from the concave side of the setal shaft).
Lab 56 did not submit data for this specimen.

Fig. 9b. *Aricidea minuta* – AL

RT4310 – *Mytilus edulis* (Figure 10a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: East Anglia. Condition: Good, Medium (1-2 cm).

Fig. 10a. *Mytilus edulis* (RT4310) – D

Seven generic and seven specific differences:
Labs 04 and 19 identified as *Modiolula phaseolina* (Figure 10b) (which has a more fragile shell and the periostracum has fringes carrying long, smooth, fine spines, while *Mytilus edulis* has a more solid shell and a periostracum without spines.
Labs 13, 18, 26, 50 and 61 identified as *Modiolus modiolus* (Figure 10c) (which has a solid shell and young specimens have a periostracum drawn into long, smooth spines, frequently with attached detritus, lost as the shell grows, represented then only by a roughened area at the posterior end).

Fig. 10b. *Modiolula phaseolina* – D

Fig. 10c. *Modiolus modiolus* – D

RT4311 – *Spiophanes bombyx* (Figure 11a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: N. E. England. Condition: Good (whole), Medium.

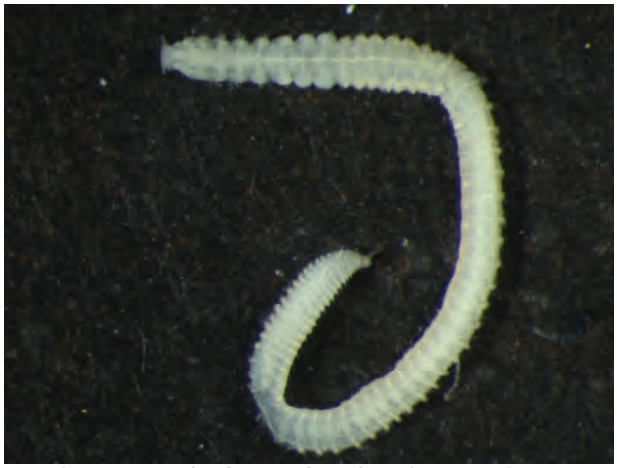


Fig. 11a. *Spiophanes bombyx* (RT4311) – AD

No generic or specific differences.

RT4312 – *Urothoe brevicornis* (Figure 12a).

Substratum: Sand. Salinity: Full. Depth: Circalittoral. Geography: East Anglia. Condition: Good, Large.

Fig. 12a. *Urothoe brevicornis* (RT4312) – L

One specific difference:
Lab 20 identified as *Urothoe pulchella* (Figure 12b) (in which the carpus of pereopod 5 is much broader than the merus, whereas in *Urothoe brevicornis* the carpus is not or only slightly broader).

Fig. 12b. *Urothoe pulchella* – L

RT4313 – *Urothoe poseidonis* (Figure 13a).

Substratum: Mud. Salinity: Full. Depth: Infralittoral. Geography: S. E. England. Condition: Good, Small.

Fig. 13a. *Urothoe poseidonis* (RT4313) – L

Three specific differences:
Lab 04 identified as *Urothoe elegans* (Figure 13b) (in which the carpus of perepod 5 is not or only slightly broader than the merus);
Lab 61 identified as *Urothoe grimaldii* (Figure 13c) (in which the carpus of pereopod 5 is about 3 times broader than long. In *Urothoe poseidonis* the carpus of pereopod 5 is more than twice as broad as long).
Lab 13 identified this species only as *Urothoe* Spp. Juv.

Fig. 13b. *Urothoe elegans* – L

Fig. 13c. *Urothoe grimaldii* – L

RT4314 – *Mediomastus fragilis* (Figure 14a).
Substratum: Mixed. Salinity: Full. Depth: Circainfralittoral. Geography: E. Anglia. Condition: Good, Medium.

Fig. 14a. *Mediomastus fragilis* (RT4314) – D

Two generic and two specific differences:
Lab 1950 identified as *Pseudonotomastus southerni* (Figure 14b) (which has a distinctive colour pattern in some specimens and 10 thoracic segments bearing capillaries, while *Mediomastus fragilis* has no distinct colour pattern and only four thoracic segments with capillaries);
Lab 1956 identified as *Capitella minima* (no photograph available) (which has a blunt prostomium and the first segment with chaetae, while in *Mediomastus fragilis* the prostomium is pointed and the first segment is achaetous).

Fig. 14b. *Pseudonotomastus southerni* – L

RT4315 – *Hippolyte varians* (Figure 15a).
Substratum: Algae. Salinity: Full. Depth: Lower Shore. Geography: Wales. Condition: Good, Variable.

Fig. 15a. *Hippolyte varians* (RT4315) – L

One generic and one specific difference:
Lab 22 identified only to the infraorder Caridea.

RT4316 – *Caecum glabrum* (Figure 16a).

Substratum: Mixed. Salinity: Full. Depth: Circalittoral. Geography: S. W. England. Condition: Good, Medium.

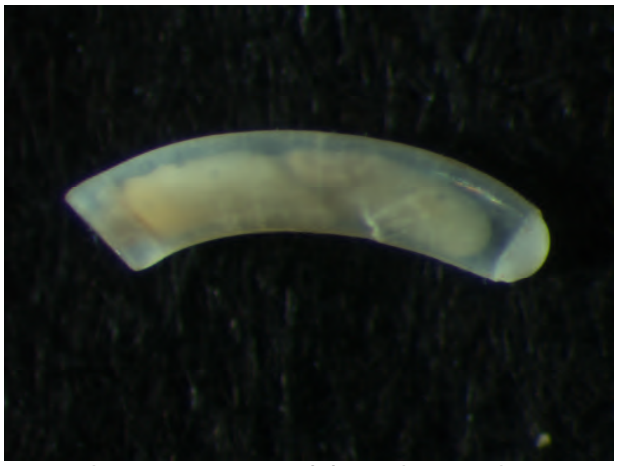


Fig. 16a. *Caecum glabrum* (RT4316) – L

One generic and one specific difference:
Lab 22 identified only to family level (Oweniidae) (no photograph available) (which is a polychaete family whose members often have characteristic tubes with stones and sand particles attached. *Caecum glabrum* however is a mollusc that lives in a more or less crescentic, smooth shell, with one end closed by a rounded plate).

RT4317 – *Cerastoderma edule* (Figure 17a).

Substratum: Mud. Salinity: Full. Depth: Infralittoral. Geography: Wales. Condition: Good, Large.

Fig. 17a. *Cerastoderma edule* (RT4317) – L

Fig. 17b. *Cerastoderma glaucum* – L

Three specific differences:
Labs 20, 50 and 61 identified as *Cerastoderma glaucum* (Figure 17b) (which has a shorter ligament and a smoother shell).
The shells of the two species are difficult to tell apart and the species are usually identified by habitat. *Cerastoderma glaucum* is a brackish water species, whereas *Cerastoderma edule* is exclusively marine.

RT4318 – *Heteromastus filiformis* (Figure 18a).

Substratum: Mud. Salinity: Full. Depth: Circalittoral. Geography: N. North Sea. Condition: Good, Medium.

Fig. 18a. *Heteromastus filiformis* (RT4318) – D

Two generic and two specific differences:
Lab 18 identified as *Notomastus latericeus* (no photograph available) (which has 11 thoracic segments, all of which bear capillary chaetae, while in *Heteromastus filiformis* only the first 5 thoracic chaetigers bear capillaries);
Lab 50 identified as *Mediomastus fragilis* (Figure 18b) (which has only 10 thoracic segments and only the first four bearing capillary chaetae).

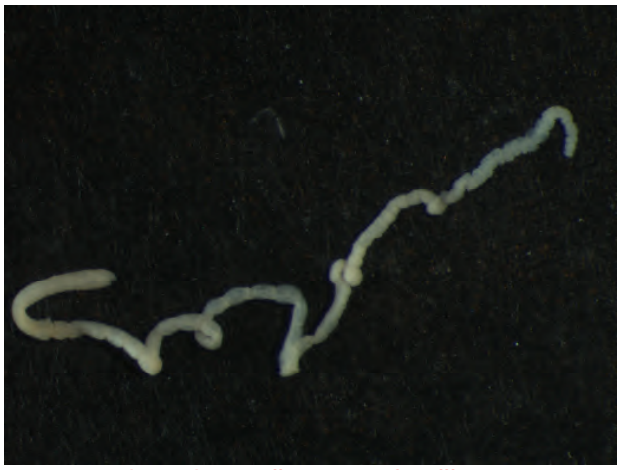


Fig. 18b. *Mediomastus fragilis* - D

RT4319 – *Gammarellus homari* (Figure 19a).

Substratum: Mixed. Salinity: Full. Depth: Lower Shore. Geography: N. E. England. Condition: Good, Medium.

Fig. 19a. *Gammarellus homari* (RT4319) – L

Sixteen specific differences:
Labs 01, 02, 05a, 05b, 07, 08, 10, 11, 13, 14, 16, 22, 26, 50, 56 and 61 identified as *Gammarellus angulosus* (no photograph available) (which has only moderately developed dorsal carinae, while in *Gammerellus homari* dorsal carinae are strongly developed (Figure 19a). The size of the eyes is variable in *G. homari* and there is no consensus in the literature about the usefulness of this character for separating the two species).

RT4320 – *Asellus aquaticus* (Figure 20a).

Substratum: Gravel. Salinity: Low. Depth: Infralittoral. Geography: S. E. England. Condition: Good, Small.

Fig. 20a. *Asellus aquaticus* (RT4320) – L

Seven generic and eight specific differences:
Labs 01, 13 and 19 identified as *Janira maculosa* (Figure 20b) (which has well developed eyes, anterior peraeon somites with concave sides and a differently shaped pleotelson);
Labs 04 and 61 identified as *Proasellus meridianus* (no photograph available) (which has a single, band-shaped unpigmented area near the posterior margin of the head, while *Asellus aquaticus* has two unpigmented areas near the posterior margin);
Lab 08 identified as *Asellus meridianus* (which is a synonym of *Proasellus meridianus*);
Lab 20 identified as *Janiropsis breviremis* (no photograph available) (which has well developed eyes and lateral parts of segments sightly expanded, while in *Asellus aquaticus* eyes are small and lateral parts of segments are not expanded).
Lab 56 did not submit species data for this specimen.

Fig. 20b. *Janira maculosa* – L

RT4321 – *Stenopleustes latipes* (Figure 21a).

Substratum: Mud. Salinity: Full. Depth: Circalittoral. Geography: N. North Sea. Condition: Fair, Variable.

Fig. 21a. *Stenopleustes latipes* (RT4321) – L

Six generic and seven specific differences:
Lab 09 identified as *Maera loveni* (Figure 21b) (which has no accessory flagellum, a peraeon without dorsal processes and in pereopod 5-7 the elongate basis is not expanded);
Lab 19 identified as *Callopius laeviusculus* (Figure 21c) (which has very large eyes, antennae 1 and 2 of similar size, as are gnathopods 1 and 2, and an elongate telson);
Lab 26 identified as *Liljeborgia pallida* (Figure 21d) (which has antennae 1 shorter than antennae 2 and a very long accessory flagellum; large, oval eyes; gnathopods 1 and 2 of similar shape, but 1 smaller than 2; and telson twice as long as broad and cleft to base);
Lab 61 identified as *Stenopleustes malmgreni* (no photograph available) (which has gnathopods 1 and 2 of almost similar size, whereas in *Stenopleustes latipes* gnathopod 2 is much larger than gnathopod 1);
Labs 13, 18 and 56 did not submit species data for this specimen.

Fig. 21b. *Maera loveni* – L

Fig. 21c. *Callopius laeviusculus* – L

Fig. 21d. *Liljeborgia pallida* – L

RT4322 – *Angulus tenuis* (Figure 22a).

Substratum: Sand. Salinity: Full. Depth: Infralittoral. Geography: W. Scotland. Condition: Good, Medium.

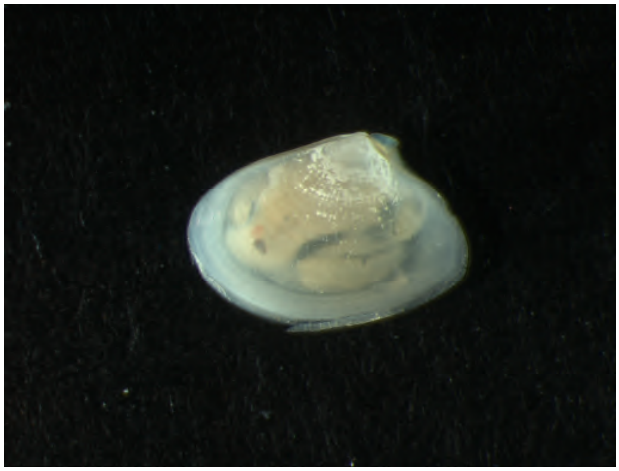


Fig. 22a. *Angulus tenuis* (RT4322) – L

Two generic and one specific difference:
Lab 11 identified as *Angulus pygmaeus* (Figure 22b) (which is broadly oval, has the posterior margin smoothly rounded and is usually found offshore; *Angulus tenuis* is slightly more circular in outline, has a posterior attenuation and usually occurs intertidally).
Lab 13 identified as *Tellina tenuis* (which is a synonym of *Angulus tenuis*).
Lab 56 identified as T*enllina tenuis*, (which is a mis-spelling of the previous taxon).

Fig. 22b. *Angulus pygmaeus* – L

RT4323 – *Hesionura elongata* (Figure 23a).

Substratum: Sand. Salinity: Full. Depth: Infralittoral. Geography: North Sea. Condition: Good, Medium.

Fig. 23a. *Hesionura elongata* (RT4323) – AD

One generic and one specific difference:
Lab 13 identified as *Microphthalmus sczelkowii* (Figure 23b) (which is a member of Hesionidae and is characterised by 6 pairs of tentacular cirri, one pair on each of the first three segments. *Hesionura elongata* in contrast is a member of Phyllodocidae and has 3 pairs of tentacular cirri, one pair on the first segment and two on the second segment).

Fig. 23b. *Microphthalmus sczelkowii* – L

RT4324 – *Cirriformia tentaculata* (Figure 24a).

Substratum: Mixed. Salinity: Full. Depth: Infralittoral. Geography: S. E. England. Condition: Fair, Medium/Large.

Fig. 24a. *Cirriformia tentaculata* (RT4324) – L

Two generic and three specific differences:
Lab 18 identified as *Ophelia borealis* (Figure 24b) (which is a member of the Opheliidae and has no long appendages at the anterior end, while *Cirriformia tentaculata* is a member of the Cirratulidae which have numerous long tentacles and cirri at the anterior end);
Lab 26 identified as *Cirratulus cirratus* (Figure 24c) (which has two transverse rows of eyes, while *Cirriformia tentaculata* has no distinct eyes in adults or only one pair in juveniles);
Lab 50 identified as *Cirratulus norvegica* (no photograph available) (which is a synonym of *Aphelochaeta filiformis* and has only one pair of feeding tentacles while *Cirriformia tentaculata* has numerous feeding tentacles.

Fig. 24b. *Ophelia borealis* – L

Fig. 24c. *Cirratulus cirratus* – L

RT4325 – *Chaetozone setosa* (Figure 25a).

Substratum: Mud. Salinity: Full. Depth: Circalittoral. Geography: N. North Sea. Condition: Good, Small.

Fig. 25a. *Chaetozone setosa* (RT4325) – L

Ten specific differences:
Labs 01, 08, 12, 14, 16, 18, 20, 26 and 61 identified as *Chaetozone christiei* (Figure 25b) (which differs by the palps on the last achaetous segment being alongside the first pair of gills and by the posterior end being strongly flattened in cross section and having discrete rows of spines);
Lab 22 identified as *Chaetozone* Type 'B', which is considered *Chaetozone christiei* today.
Labs 05 and 25b did not submit data for this specimen.

Fig. 25b. *Chaetozone christiei* – L

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Additional keys used:
Unicomarine Workshop keys to Capitellidae (2000) and Cirratulidae (2004).

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Ring Test Specimen Return Instructions

Please return all ring test specimens by: 1st May 2013.
These are reference specimens and must be returned to our collection. Your laboratory may be ineligible for future ring tests if specimens are not returned.

Return address: **Ruth Barnich, Thomson Unicomarine Ltd., Business Centre East, Fifth Avenue, Letchworth, Hertfordshire SG6 2TS, UK**