The National Marine Biological Analytical Quality Control Scheme

Intertidal Macroalgal Ring Test
RT03

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Dr Emma Wells
Wells Marine Surveys
1 North Lynn Business Village
Bergen Way
Kings Lynn
Norfolk
PE30 2JG

emma@wellsmarine.org

ALGAL RING TEST (RT03) RESULTS SUMMARY

RING TEST DETAILS
Ring Test – RT03
Type/Contents – intertidal macroalgae
Circulated – 01/08/08
Completion Date – 15/09/08
Number of participating Laboratories – 11
Number of Results Received – 20

Table 1: Summary of Differences

Specimen	Genera	Species	Total differences for 23 laboratories	
			Genus	Species
RT0301	Chlorochytrium	cohnii	10	8
RT0302	Dilsea	carnosa	0	0
RT0303	Phyllophora	crispa	11	10
RT0304	Ceramium	echionotum	1	0
RT0305	Desmarestia	ligulata	4	2
RT0306	Gigartina	pistilata	3	3
RT0307	Osmundea	pinnatifida	2	0
RT0308	Fucus	vesiculosus	0	0
RT0309	Elachista	fucicola	0	0
RT0310	Aglaothamnion	hookeri	3	2
RT0311	Alaria	esculente	0	0
RT0312	Calliblepharis	jubata	6	5
RT0313	Pterosiphonia	complanata	3	1
RT0314	Chaetomorpha	meditteranea (ligustica)	0	0
RT0315	Polysiphonia	brodiaei	11	0
RT0316	Bonnemaisonia	hamifera	0	0
RT0317	Pilayella	littoralis	13	13
RT0318	Heterosiphonia	plumosa	2	2
RT0319	Pterocladia	capillacea	15	15
RT0320	Enteromorpha/Ulva	linza	9	5
		total differences	93	66
		Average differences/lab.	4.650	3.300

Identification of species RT0313 was accepted as either Pterosiphonia complanata or Borgeseniella thyoides (or derivatives of the two species) as insufficient material was provided to confidently distinguish between the two species.

Table 2: The identification of intertidal macroalgae made by participating laboratories for RT03. Names are given where different from the AQC identification or where misspelt.

	RT0301	RT0302	RT0303	RT0304	RT0305
Lab Code	Chlorochytrium cohnii	Dilsea carnosa	Phyllophora crispa	Ceramium echionotum	Desmarestia ligulata
6b	–	–	Rhodophyllis divaricata	–	[Desmerestia]
6a	–	–	Rhodophyllis divaricata	–	–
8a	–	–	–	–	–
14a	–	–	Palmaria palmata	–	–
9d	Halochlorococcum moorei	–	–	–	–
7b	–	–	[Phyllphora]	–	–
14c	– moorei	–	–	–	–
13b	–	–	Palmaria palmata	–	–
8c	–	–	–	–	–
5a	Sykidion moorei	–	Mastocarpus stellatus	[Ceraium]	– aculeata
11a	– sp.	–	Palmaria palmata	– nodulosum	–
8b	–	–	–	–	–
9c	Sykidion (Halochlorococcum) moorei	–	–	–	–
15a	Acrochaete ?	–	– ?	–	–
10a	Acrochaete wittrickii	–	–	–	Hypoglossum hypoglossoides
7a	–	–	–	–	–
14e	–	–	Palmaria palmata	–	Calliblepharis jubata
12a	Derbesia marina	–	Haraldiophyllum bonnemaisonii	–	–
5b	Sykidion moorei	–	Palmaria palmata	[Ceraium]	– aculeata
14d	Blastophysa rhizopus	–	Palmaria palmata	–	–

Table 2 continued

	RT0306	RT0307	RT0308	RT0309	RT0310	RT0311
Lab Code	Gigartina pistillata	Osmundea pinnatifida	Fucus vesiculosus	Elachista fucicola	Aglaothamnion hookeri	Alaria esculente
6b	–	–	–	–	–	–
6a	–	–	–	–	–	–
8a	–	–	–	–	–	–
14a	Gastroclonium ovatum	–	–	–	–	–
9d	–	–	–	–	–	–
7b	–	–	–	–	–	–
14c	–	–	–	–	–	–
13b	–	–	–	–	− sp.	–
8c	–	–	–	–	–	–
5a	–	–	–	–	–	–
11a	Polyides rotundus	[Osmundia]	–	–	Callithamnion corymbosum	–
8b	–	–	–	–	–	–
9c	–	–	–	–	–	–
15a	–	–	–	–	–	–
10a	–	–	–	–	–	–
7a	–	− osmunda	–	–	–	–
14e	–	–	–	–	–	–
12a	Gymnogongrus griffithsiae	− osmunda	–	–	–	–
5b	–	–	–	–	–	–
14d	–	–	–	–	Callithamnion tetricum	–

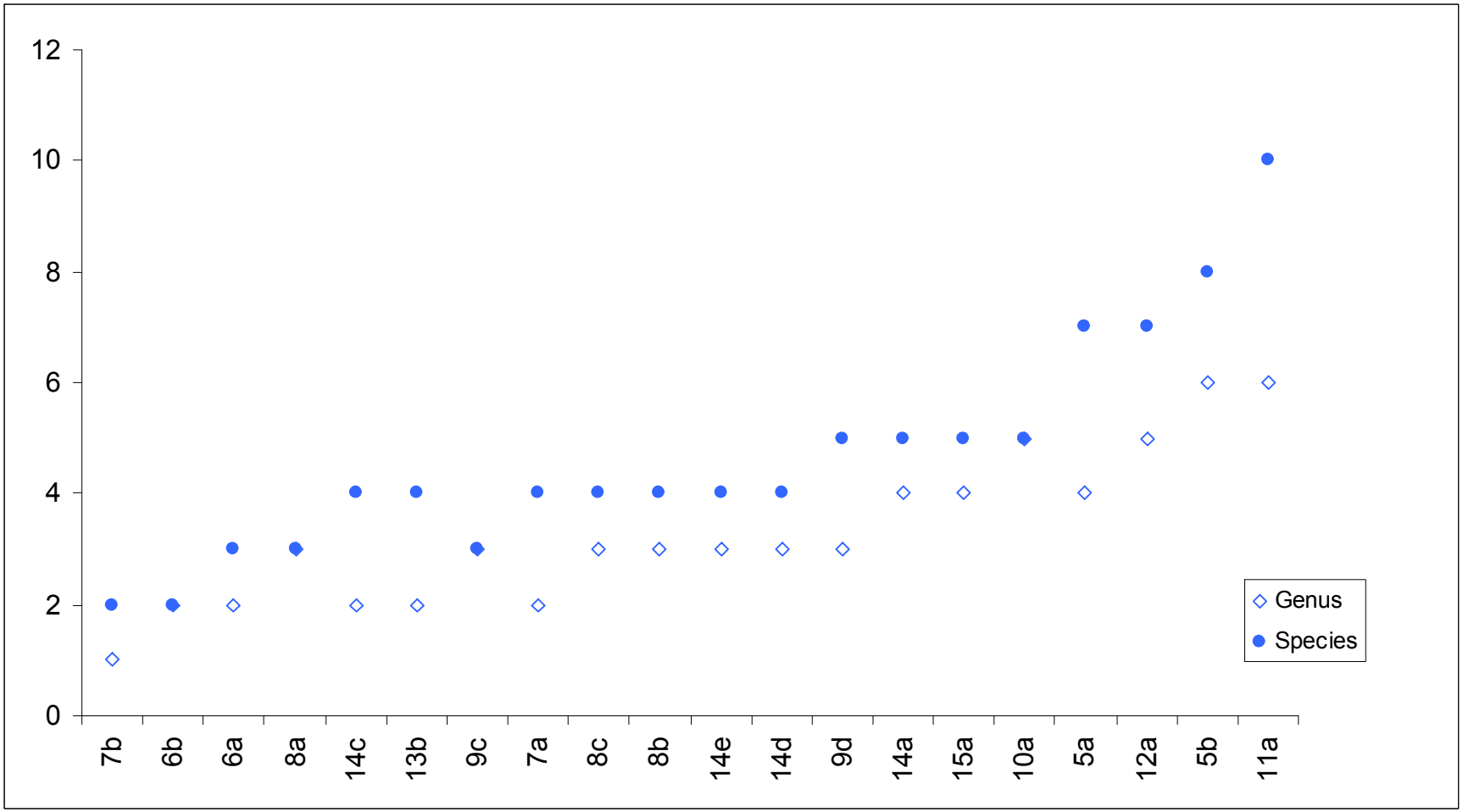
Table 2 continued

	RT0312	RT0313	RT0314	RT0315	RT0316
Lab Code	Calliblepharis jubata	Pterosiphonia complanata	Chaetomorpha meditteranea (ligustica)	Polysiphonia brodiaei	Bonnemaisonia hamifera
6b	–	–	–	–	–
6a	–	–	–	– stricta	–
8a	–	Polysiphonia fucoides	–	[brodiei]	–
14a	–	[Boegeseniella] fructiculosa	–	[Brodiei]	–
9d	–	–	–	– denudata	–
7b	–	–	–	–	–
14c	– ciliata	–	–	–	–
13b	–	–	–	[brodiei]	–
8c	–	[Pterosiphonia thyoides]	–	– fucoides	–
5a	Gelidium pusillum	–	–	– fucoides	–
11a	Desmarestia ligulata	– parasitica	–	– fucoides	–
8b	–	–	–	– fucoides	–
9c	–	–	–	–	–
15a	–	[Boergeseniella thyoides]	–	–	–
10a	–	–	–	[brodiei]	–
7a	Gelidium spinosum	–	–	– fucoides	–
14e	Chondracanthus teedei	–	–	– fucoides	–
12a	–	–	–	– fucoides	–
5b	Gelidium pusillum	–	–	– stricta	–
14d	–	–	–	– fucoides	–

Table 2 continued

	RT0317	RT0318	RT0319	RT0320
Lab Code	Pilayella littoralis	Heterosiphonia plumosa	Pterocladia capillacea	Enteromorpha/Ulva linza
6b	Spongonema tomentosum	–	–	–
6a	Spongonema tomentosum	–	–	–
8a	Spongonema tomentosum	–	Gelidium latifolium	–
14a	–	–	Gelidium pusillum	Monostroma grevillei
9d	Spongonema tomentosum	–	Chondria dasyphylla	– lactuca
7b	–	–	Gelidium pusillum	– prolifera
14c	Spongonema tomentosum	–	Gelidium pusillum	–
13b	–	–	Lomentaria clavellosa	– intestinalis
8c	Spongonema tomentosum	–	Gelidium latifolium	Monostroma grevillei
5a	–	–	Gelidium latifolium	– lactuca
11a	Spongonema tomentosum	–	Gelidium pusillum	–
8b	Spongonema tomentosum	–	Gelidium latifolium	Monostroma grevillei
9c	Spongonema tomentosum	–	Gelidium sesquipedale	–
15a	Spongonema tomentosum	Callithamnion tetragonum	Gelidium sesquipedale	–
10a	Spongonema tomentosum	Callithamnion tetragonum	–	Monostroma grevillei
7a	[Pylaiella]	–	Chondria dasyphylla	–
14e	[Pylaiella]	–	–	–
12a	Erythrotrichia carnea	–	Gelidium sesquipedale	–
5b	Ectocarpus sp.	–	Gelidium latifolium	Monostroma grevillei
14d	–	–	–	–

Figure 1: The number of differences from the AQC identification of intertidal macroalgae specimens, for each of the participating laboratories for RT02, arranged in order of increasing number of differences.



Detailed breakdown of specimen identifications

RT0301 – Chlorochytrium cohnii
Eight generic and ten specific differences recorded. Labs 14c, 5a and 5b , 9c and 9d recorded as Chlorochytrium, Halochlorococcum or Sykidion moorei, this species host is Blidingia and not Schyzonema. Labs 15a and 10a recorded as Acrochaete sp. and Acrochaete wittrockii which is multicellular growing within other algal species. Lab 12a identified as Derbesia marina which is a much larger plant, filamentous and coenocytic, very dissimilar to Chlorochytrium. Lab 14d identified as Blastophysa rhizopus which is also coenocytic, irregular in shape (not spherical), with hairs and found living endophytically in larger algae generally not within Schyzonema. Lab 11a identified to Genus level only.

RT0302 – Dilsea carnosa
No differences recorded.

RT0303 – Phyllophora crispa
Ten generic and eleven specific differences recorded. Labs 14a, 13b, 11a, 14e, 5b, 14d identified as Palmaria palmata and Labs 6a and 6b identified as Rhodophyllis divaricata both of which lack the conspicuous short terete stipe found on P. crispa. Lab 12a identified as Haraldiophyllum bonnemaisonii which is thinner, more ribbon-like and less coarse in its general morphology and Lab 5a identified as Mastocarpus stellatus which has a distinctly channelled frond.

RT0304 – Ceramium echionotum
One specific difference recorded. Lab 11a identified as C. nodulosum which lack the distinct spines present on C. echionotum.

RT0305 – Desmarestia ligulata
Two generic and 4 specific differences recorded. Lab 10a identified as Hypoglossum hypoglossoides which is a red species consisting of small thin leaf-like bladelets, Desmarestia is a large brown species. Lab 14e identified as Calliblepharis jubata which is a red species with a distinct main wide frond with many proliferations and lacks the regular branching pattern of Desmarestia. Labs 5a and 5b identified as D. aculeata which has regularly alternate branching compared with the opposite branching of D. ligulata which also has much wider bladelets.

RT0306 – Gigartina pistillata
Three Generic and three specific differences recorded. Lab 11a identified as Polyides rotundas and Lab 21a identified as Gymnogongrus griffithsiae both of which possess a completely terete frond and lack the reproductive branchlets bearing spherical cystocarps and the compressed nature of the upper plant although does strongly resemble Polyides. Lab 14 a identified as Gastroclonium ovatum which does not display regular dichotomous branches and possesses distinct sacs/vesicles which are usually elongated.

RT0307 – Osmundea pinnatifida
Two specific differences recorded. Lab 7a and 12a recorded as Osmundea osmunda which lacks the stoloniforous base.

RT0308 – Fucus Vesiculosus
No differences recorded.

RT0309 – Elachista fucicola
No differences recorded.

RT0310 – Aglaothamnion hookeri
Two generic and 3 specific differences recorded. Lab 13b identified to genus level only. Lab 11a and 14d identified as Callithamnion corymbosum and C. tetricum respectively both lack the bone shaped cells C. corymbosum is dichotomously branched rather than alternatively as displayed by A. hookeri. The general morphology of C. tetricum is also much more tangled and rope like compared with the bushy nature of A. hookeri.

RT0311 – Alaria esculenta
No differences recorded

RT0312 – Calliblepharis jubata
Five generic and six specific differences recorded. Labs 5a and 5b identified as Gelidium pusillum which has a finer and much narrower frond than C. jubata which displays slightly broader fronds and can have numerous proliferation on the margins. Lab 11a identified as Desmarestia ligulata which displays regular opposite branches along a more distinct narrow main frond not seen in C. jubata. Lab 14e identified as Chondracanthus teedei which has a more terete frond and lacks the wider blade of C. jubata. Lab 14c identified as C. ciliate which usually has a much wider blade with numerous proliferations.

RT0313 – Pterosiphonia complanata (Boergeseniella thyoides)
One generic and three specific differences recorded. Insufficient material was provided to adequately identify this species therefore variations of Pterosiphonia and Boergeseniella have been allowed. Labs 14a and 11a identified as B. fructiculosa and P. parasitica respectively. B. fructiculosa lacks the regular branching pattern of B. thyoides and P. parasitica lacks the cortication found in P. complanata. Lab 8a identified as Polysiphonia fucoides, this also lacks the regular alternate branching pattern

RT0314 – Chaetomorpha mediterranea (ligustica)
No differences recorded.

RT0315 – Polysiphonia brodiaei
Eleven specific differences recorded. Labs 5a, 7a, 8b, 8c, 11a, 12a, 14d and 14e identified as P. fucoides which lacks the cortication found in P. brodiaei

and has 12-20 primary siphon compared with P. brodiaei which has 6-8 primary siphons and 6-8 secondary siphons. Lab 6a and 5b identified as P. stricta which only has 4 primary siphons and lab 9d identified as P. denudate, this is a lot more hair like in its overall morphology and lacks cortication.

RT0316 – Bonnemaisonia hamifera
No differences recorded

RT0317 – Pilayella littoralis
Thirteen generic and thirteen specific differences recorded. Lab 6a, 6b, 8a, 8b, 8c, 9c, 9d, 10a, 11a, 14c and 15a identified as Spongonema tomentosum and Lab 5b identified as Ectocarpus species, these both have plurilocular sporangia that are elongated and present on terminal or short branches unlike the intercalary sporangia found in Pilayella, this is a distinct characteristic of this species. Lab 12a identified as Erythrotrichia carnea which is a filamentous and unbranched red species found epiphytically on a variety of other algal species.

RT0318 – Heterosiphonia plumosa
Two generic and two specific differences recorded. Labs 10a and 15a identified as Callithamnion tetragonum. The main difference between these species is C. tetragonum is uniseriate and H. plumosa is polysiphonous.

RT0319 – Pterocladia capillacea
Fifteen generic and fifteen specific differences recorded. Labs 5a, 5b 8a, 8b and 8c identified as Gelidium latifolium, labs 7b, 11a, 14a, 14c, identified as Gelidium pusillum and labs 9c, 12a and 15a identified as Gelidium sesquipedale which has short ultimate axes. All of these species are slightly more coarse in appearance lack the regular club like terminal branches of P. capillacea which also has a markedly triangular outline. Labs 7a and 9d identified as Chondria dasyphylla, this has much more marked constrictions at the base of the branchlets with a cylindrical main thalli. Lab 13a identified as lomentaria clavellosa which has a much pinker frond is more terete and fleshy clothed with more bulbous branchlets

RT0320 – Enteromorpha/ Ulva linza
Five generic and nine specific differences recorded. Labs 5b, 8b, 8c, 10a and 14c identified as Monostroma grevillei which is monostromatic (1 cell think) whereas Enteromorpha/Ulva is two cells thick. Labs 5a and 9d identified as U. lactuca which is completely flattened compared with the tubular form of E/U. linza. Lab 7b identified as prolifera and Lab 13b identified as E/U. Intestinalis. The plastids of E/U. linza completely fill the cells compared with E/U. intestinalis which are apical and cap-like in appearance. E/U. prolifera is branched whereas E/U. linza is unbranched.

The number of correct answers ranged from 24 to 37 based on 1 point awarded for correct species name and 1 point awarded for correct genus name. The maximum possible total was 40. Six species were correctly identified by all 20 participants. The table below indicates the total scores awarded to each laboratory based on the results submitted.

Table 3: Individual laboratory scores

Lab Code	Total Score
5a	29
5b	26
6a	35
6b	36
7a	34
7b	37
8a	34
8b	33
8c	33
9c	34
9d	32
10a	30
11a	24
12a	28
13b	34
14a	31
14c	34
14d	33
14e	33
15a	31