

Appendix III. Chromosome number and nuclear DNA content in species of Rhodophyta

Entry number	Species ^(a)	2n ^(b)	Original ref. for 2n	DNA amount				Original ref. for C-value ^(e)	Standard species ^(f)	Method ^(g)
				1C (Mbp) ^(c)	1C (pg) ^(d)	2C (pg) ^(d)	4C (pg) ^(d)			
ACROCHAETIALES ¹										
	Acrochaetiaceae									
	<i>Rhodochorton purpureum</i> (Lightfoot) Rosenvinge (= <i>Rhodochorton tenue</i> Kylin)					0.9*		*	Gallus	MI:DAPI
BANGIALES										
	Bangiaceae									
	<i>Porphyra suborbiculata</i> Kjellman ² (as <i>Porphyra carolinensis</i> Coll et Cox)	8	16	490	0.5*	1.1	2.2	21	Ant	H
BATRACHOSPERMALES										
	Batrachospermaceae									
	<i>Batrachospermum antipodites</i> Entwisle (as <i>Batrachospermum ectocarpum</i> Entwisle et Kraft)	2n = 8	N&C'02				0.52*	*	Gallus	MI:DAPI
	<i>Batrachospermum gelatinosum</i> (L.) De Candolle	n = 3	S&C'93			0.39*				
	<i>Batrachospermum gelatinosum</i> (as <i>Batrachospermum moniliforme</i> Roth)					0.38*	0.51*	*	Gallus	MI:DAPI
	<i>Batrachospermum helminthosum</i> Bory de Saint-Vincent (as <i>Batrachospermum sirodotia</i> Skuja ex Fint)	n=4	S&C'93			0.23*		*	Gallus	MI:DAPI
	<i>Batrachospermum turfosum</i> Bory de Saint-Vincent (as <i>Batrachospermum vagum</i> (Roth) C. Agardh)	2n = 8	N&S'92			0.38*	0.37*	*	Gallus	MI:DAPI
	<i>Batrachospermum vagum</i> (Roth) C. Agardh					0.56*		*	Gallus	MI:DAPI
	<i>Batrachosprum vagum</i>						1.0*	*		
	<i>Sirodotia suecica</i> Kylin (as <i>Sirodotia tenuissima</i> (Collins) Skuja ex L. H. Flint)	2n = 6	N&S'92			0.20*		*	Gallus	MI:DAPI
	<i>Tuomeya americana</i> (Kützing) Papenfuss (as <i>Tuomeya fluviatilis</i> (Linnaeus) C. Agardh)	2n = 16	Web'58				0.35*	*	Gallus	MI:DAPI
						0.30*		*	Gallus	MI:DAPI
	Lemaneaceae									
	<i>Lemanea</i> sp. (Ott #3)						3.1*	*	Gallus	MI:DAPI
	<i>Lemanea</i> sp. (Ott #3)					1.56*		*	Gallus	MI:DAPI
	<i>Lemanea</i> sp. (Ott #4)						3.2*	*	Gallus	MI:DAPI
	<i>Lemanea</i> sp. (Ott #5)						3.2*	*	Gallus	MI:DAPI
	<i>Lemanea fluviatilis</i> (Linnaeus) C. Agardh	n=c18	T&V-e82					*		
	<i>Lemanea fluviatilis</i>									
	<i>Lemanea torulosa</i> (Roth) C. Agardh					1.15*		*	Gallus	MI:DAPI
	<i>Lemanea torulosa</i>						2.2*	*		

	<i>Paralemanea annulata</i> (F. T. Kützing) Vis et Sheath (= <i>Lemanea australis</i> Atkinson)	1n = 10	Mul. '52	3.2*	*	Gallus	MI:DAPI	
	<i>Paralemanea catenata</i> (Kützing) Vis et Sheath (as <i>Paralemanea pleocarpa</i> :Ott 1508)	2n = 30	N&C'02	2.0*	*	Gallus	MI:DAPI	
	<i>Paralemanea catenata</i>			1.1*	*	Gallus	MI:DAPI	
	<i>Paralemanea catenata</i>			2.0*	*			
	<i>Paralemanea catenata</i> (CZ-10)			1.1*	*			
	<i>Paralemanea catenata</i> (CZ-10)			1.9*	*			
	BONNEMAISONIALES							
	Bonnemaisoniaceae							
	<i>Asparagopsis armata</i> Harvey	20	Sved.'33					
	(= <i>Falkenbergia rufolanosa</i> (Harvey) Schmitz)			1.3*	*	Gallus	MI:DAPI	
	<i>Asparagopsis taxiformis</i> (Delile) Trevisan (= <i>Falkenbergia hillebrandii</i> (Bornet) Falkenberg)							
	<i>Bonnemaisonia asparagopsis</i> (Woodward) C. Agardh	36-60	R&A '82	0.55*	1.1*	*	Gallus	MI:DAPI
	(= <i>Hymenoclonium serpens</i> (Crouan frat.) Batters)				1.2*	*	Gallus	MI:DAPI
	<i>Bonnemaisonia clavata</i> Hamel (= <i>Hymenoclonium serpens</i> (Crouan frat.) Batters)							
	<i>Bonnemaisonia hamifera</i> Hariot	40+	Magne '64	1.3*		*	Gallus	MI:DAPI
	(= <i>Trailliella intricata</i> Batters)							
	<i>Delisea plumosa</i> Levring				1.03*	*	Gallus	MI:DAPI
	<i>Ptilonia willana</i> Lindauer			0.58*		*	Gallus	MI:DAPI
	CERAMIALES							
	Ceramiaceae							
	<i>Aglaothamnion cordatum</i> (Børgesen)Geldmann-Mazoyer			3.5*	*	Gallus	MI:DAPI	
	<i>Antithamnion nipponicum</i> Yamada et Inagaki (= <i>A. pectinatum</i> (Montagne) Brauner							
?	<i>Antithamnionella floccosa</i> (O.F. Müller) Whittick							
	<i>Callithamnion</i> sp. (as <i>Aglaothamnion halliae</i>)				2.5*	*	Gallus	MI:DAPI
?	<i>Crouania willae</i> R. E. Norris							
	Dasyaceae							
	<i>Dasya rigidula</i> (Kuetzing) Ardissonne			1.4	2.9*	*	Gallus	MI:DAPI
	<i>Heterosiphonia crispella</i> (C. Agardh) Wynne			0.7	1.34*	*	Gallus	MI:DAPI
	Rhodomelaceae							
	<i>Wrightiella tumanowiczii</i> (Gaty) Schmitz			0.7	1.4*	*	Gallus	MI:DAPI
	CYANIDIALES							
	<i>Cyanidioschyzon merolae</i> DeLuca, Taddei et Varamo	20	16.5*			M-04		PFGE
	<i>Cyanidioschyzon merolae</i>		11.7*			M-93		PFGE
	<i>Cyanidium caldarium</i> (Tilden) Geitler		12*			S-92		PFGE

	<i>Cyanidium caldarium</i>	10 (-14)	M-01	0.015*			M-01		Fe
	<i>Galdieria maxima</i> Sentsova	4	M-01	0.025*			M-01	Sac	Fe
	<i>Galdieria partita</i> Sentsova	4	M-01	0.056*			M-01	Sac	Fe
	<i>Galdieria sulphuraria</i> (Galdieri) Merola	4	M-01	0.013*			M-01	Sac	Fe
	<i>Galdieria sulphuraria</i>			9.8*			M-94		PFGE
	<i>Galdieria sulphuraria</i>			16*			B-05		
	GIGARTINALES ³								
	Dumontiaceae								
?	unknown as ' <i>Antithamnionella</i> '			0.6*			*	Gallus	MI:DAPI
	<i>Dudresnaya crassa</i> Howe			0.46*			*	Gallus	MI:DAPI
	<i>Dudresnaya georgiana</i> Searles			0.46*			*	Gallus	MI:DAPI
	Nemastomaceae								
	<i>Predaea feldmannia</i> Børgeesen			0.3*			*	Gallus	MI:DAPI
	<i>Predaea masonii</i> (Setchell et Gardner) G. de Toni			0.3*			*	Gallus	MI:DAPI
	Sebdenaceae								
	<i>Sebdenia flabellata</i> (J. Agardh) Parkinson			0.5*			*	Gallus	MI:DAPI
	NEMALIALES								
	Galaxauraceae								
	<i>Cumagloia andersonii</i> (Farlow) Setchell et Gardner			0.8*			*	Gallus	MI:DAPI
	<i>Galaxaura marginata</i> (Ellis et Solander) Lamouroux			2.5*	5.0*		*	Gallus	MI:DAPI
	<i>Galaxaura obtusata</i> (Ellis et Solander) Lamouroux			1.3*			*	Gallus	MI:DAPI
	<i>Nemalion helminthoides</i> (Vellay in Withering) Batters			0.6*			*	Gallus	MI:DAPI
	<i>Scinaia complanata</i> (Collins) Cotton			0.5*			*	Gallus	MI:DAPI
	Liagoraceae								
	<i>Dermonema pulvinatum</i> (Grunow ex Holmes) Fan			0.68*			*		
	PALMARIALES								
	Palmariaceae								
	<i>Devaleraea ramentacea</i> (Linnaeus) Guiry			1.5*			*	Gallus	MI:DAPI
	(= <i>Halosaccion ramentaceum</i> (Linnaeus) J. Agardh)								
	<i>Rhodothamniella floridula</i> (Dillwyn) J. Feldmann								
	in Christensen								
	(= <i>Audouinella floridula</i> (Dillwyn) Woelkerling)								
	PORPHYRIDIALES I								
	<i>Rhodella violacea</i> (Kornmann) Wehrmeyer			0.4*			*	Gallus	MI:DAPI
	PORPHYRIDIALES II (=STYLONEMATALES)								
	<i>Rhodosorus marinus</i> Geitler			0.4*			*	Gallus	MI:DAPI
	<i>Stylonema alsidii</i> (Zanardini) K. Drew			0.5*			*	Gallus	MI:DAPI
	PORPHYRIDIALES III								
	Porphyridiaceae								

<i>Flintiella sanguinaria</i> F. D. Ott			0.4*	*	Gallus	MI:DAPI
<i>Porphyridium cruentum</i> (S.F. Gray) Nägeli	2n = 4	?	0.1*	C-77		DGC
RHODYMENIALES						
Champiaceae						
<i>Champia affinis</i> (J.D. Hooker et Harvey) Harvey				1.0*	Gallus	MI:DAPI
<i>Champia chathamensis</i> V. J. Chapman et Dromgoole			0.6*	*	Gallus	MI:DAPI
Faucheaceae						
<i>Gloioderma saccatum</i> (J. Agardh) Kylin				0.9*		
<i>Hymenocladia sanguinea</i> (Harvey) Sparling			0.37*	*		
Rhodymeniaceae						
<i>Chrysemenia enteromorpha</i> Harvey			0.4	0.75*	Gallus	MI:DAPI
<i>Rhodymenia divaricata</i> Dawson			0.6*	*	Gallus	MI:DAPI
THOREALES						
Thoreaceae						
<i>Thorea riekei</i> Bischoff			0.28*	*	Gallus	MI:DAPI

¹Recent molecular investigations have demonstrated that algae previously referred to as 'acrochaetoid' are not a natural assemblage, but include filamentous forms allied with at least three groups in the Bangiophycideae: 1) the Batrachospermales and sister groups (Pueschelet *et al.*, 2000), the Acrochaetales (Saunders *et al.*, 1995; Harper and Saunders, 1998) which are allied with the Palmariales (Figure 13), and the newly recognized Colaconematales (Harper and Saunders, 2002) which are weakly allied with the Nemaliales.

²The relationship of the Compsopogonales to other Bangiophycidae remains under investigation (Harper and Saunders, 1998; Viset *et al.*, 1998; Müller *et al.*, 2002).

³Kraft and Robbins (1985) proposed merging the Cryptonemiales and Gigartinales. Neither the traditional classification (Kylin, 1956) nor the proposed merger is supported by *rbcL* data (Freshwater *et al.*, 1994). Instead, most families previously included in the Cryptonemiales form a monophyletic clade within the Gigartinales. the central family of the former order Cryptonemiales (*sensu lato*), the Halymeniaceae, is now treated as an order (Huisman *et al.*, 2003).