



Principal findings:

- 1 *Noctiluca* (and *Amphidinium*) early-branching
 - 2 Gymnodiales paraphyletic to thecate, and *Togula* sister group of Gymnodiniaceae s.s.
 - 3 *Akashiwo* sister group to thecate
 - 4 Thecate monophyletic (unambiguous support)
 - 5 *Heterocapsa* with other Peridiniaceae (not early-branching)
 - 6 Symbiodiniaceae nested within thecate (not intermediate)
- Cellulosic thecal plates

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Clade	Matrix	Species presence			
		All	All - Din	All - Pro	All - Din & Pro
Noc + other core dino.	R1	●	●	●	●
	R2	100/100/dt	100/100/dt	100/100/dt	100/100/dt
1	R1	dt/dt/dt	dt/dt/dt	dt/dt/dt	dt/dt/dt
	R2	dt/dt/99	dt/dt/99	dt/dt/99	dt/dt/99
Noc+Amp	R1	●	●	●	●
	R2	100/100/95	100/100/94	100/100/82	100/100/94
2	R1	100/100/98	100/100/98	100/100/92	100/100/92
	R3	●	●	●	●
Kar + Gym, Tog Aka+thecates	R1	●	●	●	●
	R2	●	●	●	●
3	R1	72/64/1	68/62/1	62/54/1	56/48/1
	R2	88/85/1	86/86/1	86/84/1	84/87/1
4	R1	90/87/1	90/87/1	85/88/1	84/84/1
	R2	●	●	●	●
5	R1	97/95/1	97/95/1	97/95/1	97/95/1
	R2	99/100/1	99/100/1	99/100/1	99/100/1
6	R1	●	●	●	●
	R2	●	●	●	●
Het + other Per	R1	99/99/1	98/98/1	●	●
	R2	100/99/1	97/99/1	●	●
Sym + Per	R1	51/54/dt	dt/dt/dt	100/100/1	99/98/1
	R2	dt/dt/dt	dt/dt/dt	99/99/1	96/96/1
6	R1	dt/dt/1	dt/dt/1	98/99/1	93/93/1
	R2	57/48/1	80/67/1	not applicable	not applicable
Sym + Pro	R1	84/87/1	84/79/dt	not applicable	not applicable
	R2	57/65/dt	84/79/dt	not applicable	not applicable

