

# Christmas tree worms as epibionts of giant clams at Koh Tao, Gulf of Thailand

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Christmas tree worms are serpulids of the genus *Spirobranchus* (Polychaeta: Serpulidae). These sedentary animals are common on shallow coral reefs, where they usually live in close association with scleractinian and milleporid corals (Dai and Yang 1995). In most studies concerning the taxonomy and phylogeny of *Spirobranchus* worms, little or no attention is given to their host's identity (e.g., Kupriyanova et al. 2015; Willette et al. 2015). Therefore, it is not unexpected that new host species can still be discovered (Hoeksema and Ten Hove 2014).

During a survey of the distribution and host specificity of *Spirobranchus* species around Koh Tao, Gulf of Thailand (January 2015), two small individuals of *Spirobranchus corniculatus* (Grube, 1862) were found as epibionts on the shells of two fluted giant clams, *Tridacna squamosa* Lamarck, 1819 (both of them ~35 cm long). No epibiotic corals were present on the shells. Identification of the

worms was based on recently updated information on *S. corniculatus* (Kupriyanova et al. 2015; Willette et al. 2015).

The clams and their worms were observed during two dives at 5 m depth off the southern coastline of Koh Tao: Hin Ngam (10°04'02.1"N, 99°50'24.9"E) and Chalok Bay (10°03'41.6"N, 99°49'37.0"E). Both tube worms had settled on the ventral side of their host's shell, close to the mantle edge. One of the worms was hidden straight underneath the clam's mantle edge, which was extended outward over the shell's upper valve margin (Fig. 1a). When the mantle retracted, the worm became exposed (Figs. 1b and c). The worm on the second host was ca. 3 cm away from the mantle edge. These observations are noteworthy because previously giant clam shells were reported to host tubeworms but not specifically *Spirobranchus* species (Vicentuan-Cabaitan et al. 2014; Neo et al. 2015).

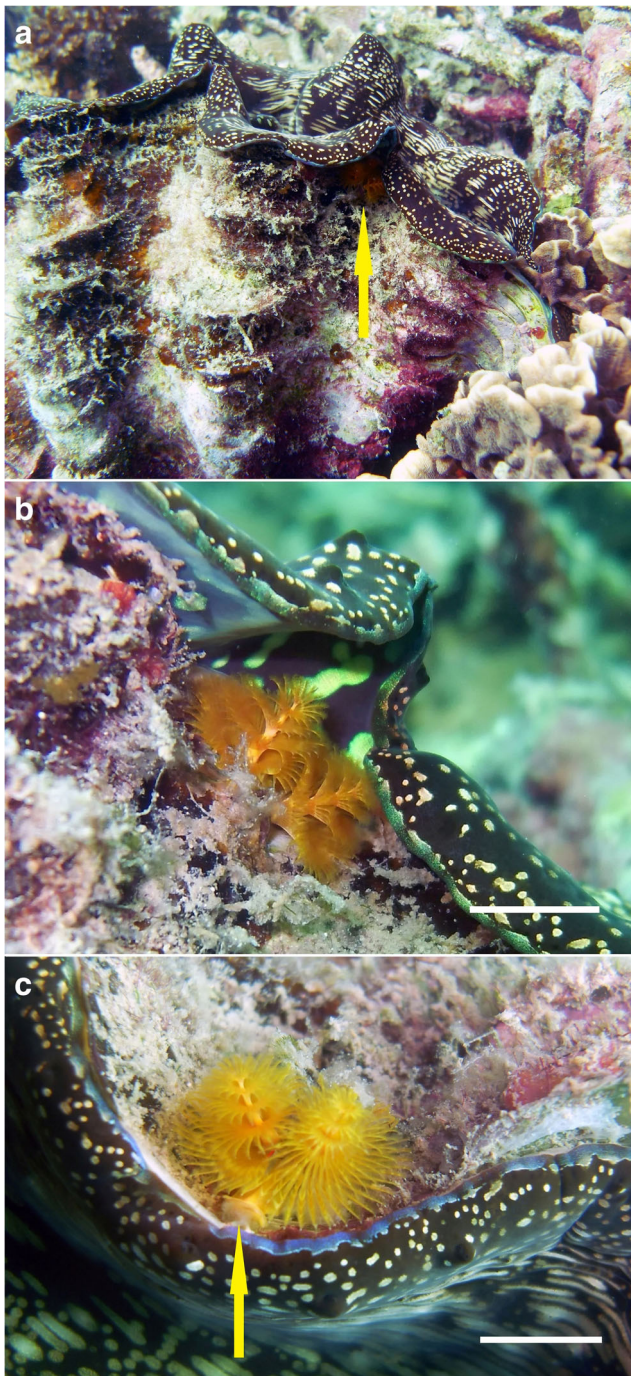
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**Fig. 1** *Spirobranchus corniculatus* as an associate of *Tridacna squamosa* at Chalok Bay (scale bars: 1 cm). **a** Worm underneath the clam's extended mantle edge (arrow). **b** Mantle slightly retracted, exposing the worm. **c** Mantle sufficiently retracted to reveal the worm's operculum (arrow)

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## References

- Dai CF, Yang HP (1995) Distribution of *Spirobranchus giganteus corniculatus* (Hove) on the coral reefs of southern Taiwan. *Zool Stud* 34:117–125
- Hoeksema BW, ten Hove HA (2014) First record of a christmas tree worm in a mushroom coral (Loyalty Islands, Southwest Pacific). *Coral Reefs* 33:717
- Kupriyanova EK, Sun Y, ten Hove HA, Wong E, Rouse GW (2015) Serpulidae (Annelida) of Lizard Island, Great Barrier Reef, Australia. *Zootaxa* 4019:275–353
- Neo ML, Eckman W, Vicentuan K, Teo SLM, Todd PA (2015) The ecological significance of giant clams in coral reef ecosystems. *Biol Conserv* 181:111–123
- Vicentuan-Cabaitan K, Neo ML, Eckman W, Teo SLM, Todd PA (2014) Giant clam shells host a multitude of epibionts. *Bull Mar Sci* 90: 795–796
- Willette DA, Iñiguez AR, Kupriyanova EK, Starger CJ, Varman T, Toha AH, Maralit BA, Barber PH (2015) Christmas tree worms of Indo-Pacific coral reefs: untangling the *Spirobranchus corniculatus* (Grube, 1862) complex. *Coral Reefs* 34:899–904