Capulus ungaricus and friends

by David W. McKay

Capulus ungaricus (Linnaeus, 1758) [**Fig. 1**], when collected long dead, is a drab white limpet shaped shell and I would not be surprised by anyone asking why write about it at all. Even when collected alive, with its periostracum intact, it is not particularly interesting as a shell, but in recent years during my trips to sea I have been trying to find it as often as possible. In doing so I have found it to be much more interesting alive than dead. Fretter and Graham (1981) describe it as being occasionally found free-living but more often in association with large bivalves such as the horse mussel *Modiolus modiolus* [**Fig. 2**], the scallop *Pecten maximus*, and the queenie, *Aequipecten opercularis*. They also indicate that it has been found in association with the gastropod *Turritella communis* and *Pometoceros tubes*.


Fig. 1


Fig. 2

I had always found it living in association with the three species noted by Fretter and Graham (1981), largely I suspect because those were the only places that I ever looked for it. Though I had closely examined large numbers of stones for other mollusc species I have never found it free-living. In November 2011 I found a single specimen attached to a *Pseudamussium septemradiatum* and about the same time found it living attached to or in very close association with *Arca tetragona*. This prompted me to try and see just how many species of bivalves I could find it on.

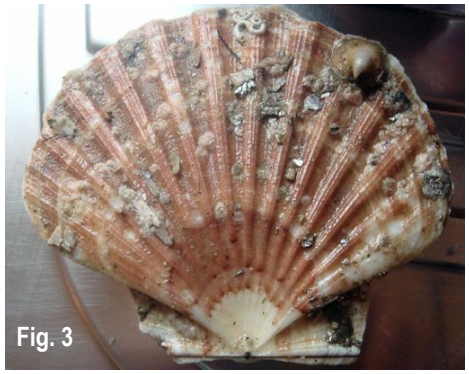
Fig. 3

I have since found it attached to *Pecten maximus* [**Fig. 3**], *Aequipecten opercularis* [**Fig. 4**], *Palliolum tigerinum* [**Fig. 5**], *Chlamys distorta*, *Arca tetragona*, *Modiolus modiolus*, *Monia patelliformis* [**Fig.**6**]**, and most surprisingly of all, *Circomphalus casina*. The *C. ungaricus* found on pectinids are attached to the edge of the shell. On *Pecten maximus,* which lives with its cupped valve buried in the substrate, it is most often on the flat upper valve, and on *Pseudamussium septangularis* the only two specimens that I have seen were attached to the upper (coloured) valve. On the other pectinid species they were attached to both upper and lower valves. On bivalves with symmetrical shells it is found straddling both valves.


Fig. 4


Fig. 5

The finding of a *Capulus* attached to a burrowing bivalve, such as *Circomphalus casina* [**Fig. 7**], at first intrigued me, but I find many large *Chamelea gallina* living happily on the surface, particularly on gravel beaches, and have come to the conclusion that adult venerids which become removed from the substrate find it very difficult to rebury in some substrates and live quite happily lying on their side on the surface. I assume that this is the case for *Circomphalus casina* in deeper water. Incidentally, while collecting bivalves on a gravel beach on Skye last year, I observed that both *Dosinia exoleta* and *Venerupis senegalensis* were lying on their sides in the gravel, not vertically as I had mistakenly thought. I had always been aware that *Tellins* lay on their sides but had thought that they were unusual amongst bivalves. I also have very large dead collected specimens of *Capulus* from the Bay of Biscay and I think that these live on *Atrina fragilis* but so far I have never seen any *Capulus* attached to the few live *Atrina* that I have seen from Scottish waters. The only time I have caught large numbers of *Atrina* (all dead) was before my interest in *Capulus* had arisen and I was more interested in checking the catch in the hope of finding a live *Atrina* than anything else. So I can only see this as an opportunity missed.


Fig. 6

The search for the 'friends' of *Capulus* has left me with more questions than it has answers. First I am sure that there are still more friends to be discovered and I will be looking even more assiduously than ever to find them. Two candidate species immediately come to mind, *Chlamys varia* and *Chlamys nivea*, but I see so few of either that I must hope that readers who see this species on a regular basis can inform me if they have ever seen *Capulus* living on then. And after the discovery of *Capulus* on *Circomphalus casina* [**Fig.** 7], I shall be looking more closely at all the specimens of large bivalves that I am lucky enough to encounter in the future.


Fig. 7

According to Fretter and Graham (1981) *Capulus* is a protandrous consecutive hermaphrodite and that females brood the eggs within their mantle cavity before releasing planktonic veligers. They however give no information as to whether the animals actually mate. I suspect that this is unlikely as most hosts only carry one *Capulus* and individual *Capulus* appear to stay attached at the same place on the host shell making a pronounced mark on the shell. Thorson (1965) describes small *Capulus ungaricus* living on *Turritella communis* and achieving sexual maturity at a small size without developing the adult form of the species and he considers that these neotonous forms are ecologically dictated by the small amount of space on the *Turritella* shell. Finding *Capulus* on such a wide size range of bivalve hosts leads me to wonder whether *Capulus* living on small species of bivalves such as *Palliolum tigerinum* and *Arca tetragona* **[Fig. 8]** also show this neotonous behaviour.

The finding of *Capulus* on *Pseudamussium septemradiatum* **[Fig. 9]** and *Turritella communis*, both of which live on soft mud, would lead me to believe that individuals spend all their lives on a single host. As the life expectancy of the different bivalve host species varies considerably, is the life expectancy of the *Capulus* determined by the host it settles on, with the whole ecology of the animal being determined by its choice of host? Or is there a whole complex of *Capulus* species that are outwardly similar in appearance but specific to a particular host species? Being a confirmed lumper I make this suggestion very unwillingly but recently it has been suggested that there are two species of *Simnia* in European waters based on the species that they predate rather than anatomical differences in the animals themselves (Lorenz & Melaun, 2011).


Fig. 8

Finally is *Capulus ungaricus* a parasite or a commensal? It certainly causes marks on the shell of its hosts but does it do them harm so that it would be a parasite, or does it happily coexist with its host, which may be the only piece of hard material that it can settle on, on a wide expanse of unsuitable soft substrate making it a commensal?

So many questions, but so few answers about this enigmatic gastropod.


Fig. 9

References

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David W. McKay lives in Scotland and wrote this article for *Pallidula,* the magazine of *The British Shell Collector's Club*, Vol. 45 No. 1, April 2015, pp. 12-14.