



Letter to the Editor

Pufferfish nests vs. parasite hooks: A bizarre resemblance



A 'mystery circle' was found on the sandy bottom of the seabed near Japan in 1995. The origin of this circle was discovered in 2013: a small male pufferfish, belonging to the *Torquigener* genus, was its creator (Kawase et al., 2013). By means of the movements of its body and fins he is able to construct geometric circular structures as reproductive niches. These nests consist of radially aligned peaks and valleys and a flat area in the central zone (Kawase et al., 2013).

Curiously, just like planet Pluto seems to have a microscopic 'soul mate' parasite, namely the eggs of *Taenia* tapeworms (Galán-Puchades et al., 2016), this ichthyological strategy seems to have another one: the arrangement of the rows of hooks of certain intestinal tapeworms from humans and mammals.

On the head or scolex, those known as 'armed' tapeworms, have on the rostellum (protuberant apical portion of the scolex), one or more rows of hooks that aid to their attachment to the host's intestine. Fig. 1 shows this curious and anecdotal resemblance between one of these nearly 2 m wide circular structures made by the pufferfish (Fig. 1a,c), and the much smaller (less than 1 mm) rows of hooks of two tapeworms belonging to the *Hymenolepis* (Fig. 1b), and *Taenia* (Fig. 1d) genus. In the nests, the peaks and valleys present a shape and number highly similar to the tapeworm hooks. The design of these radially aligned peaks and valleys allows an effective control of the water flow to gather fine sand particles to improve the nest (Kawase et al., 2013). Similarly, the circular arrangement of the hooks on the scolex of the tapeworms could not only improve the attachment of the worm to the host, but also facilitates the gathering of intestinal fluid containing oxygen as well as nutrients for the parasites.

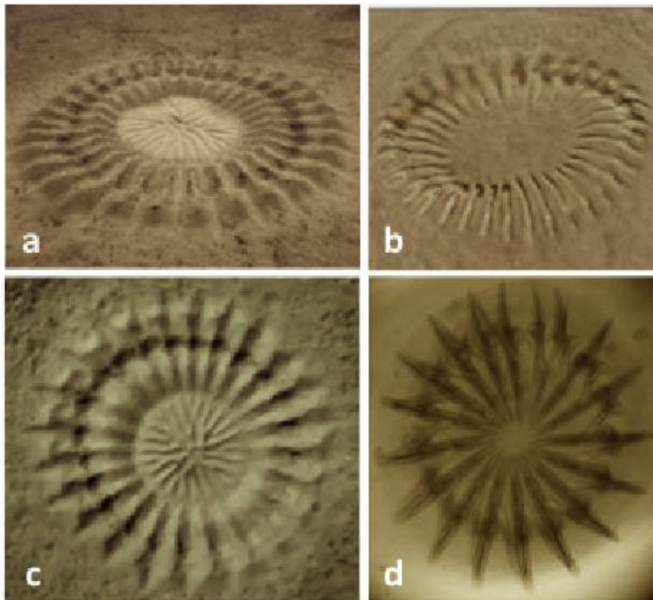


Fig. 1. Two different views of a pufferfish nest is shown in **a** and **c**. A row of hooks of a *Hymenolepis* genus tapeworm can be observed in **b**, and one of *Taenia* in **d**.
a,c: <https://www.youtube.com/watch?v=YWtmSoimhcM>.

References

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7 February 2017