

Hydroides sanctaecrucis

Description: *Hydroides sanctaecrucis* is a sedentary fouling serpulid worm that constructs calcareous tubes approximately 20 mm long on hard substrata. Like other serpulids it is a filter feeder and uses a branchial crown of tentacles to filter plankton and organic matter out of the water column. It is able to establish large agglomerations, under some conditions. It is a "classic" fouling species and is very similar in habit to *H. elegans*, which has infested many temperate harbours around the world. Its reproductive biology is unknown, however most *Hydroides* have separate sexes (*H. elegans* is hermaphroditic), external fertilisation and a larval duration of 6-60 days.



photograph courtesy of John Lewis DSTO

Distribution: *H. sanctaecrucis* is native to muddy coastal lagoons in the Caribbean and was originally described from Sainte Croix. Reliable scientific records indicate its range extends from South Florida (possibly South Carolina) to Brazil, including French Guiana. Unconfirmed records suggest that it may be present in Oahu, Hawaii. It has been found on fouling panels in Panama but not with the fouling fauna of ships, although there are records of the related species *H. cf. brachyacanthus* and *H. dianthus* on ships in the Caribbean and Eastern Pacific. Based on its native range excluding the unconfirmed South Carolina data point, its potential Australian distribution extends south to Newcastle and Perth on the east and west coasts respectively. If the South Carolina data point is included its southern range extends as far south as Tasmania.

Impacts: *Hydroides* are considered nuisance species because of the excessive proliferation of calcareous tubes that can form extensive "reefs" on submerged structures, including wharves, pontoons, mariculture equipment and slow moving vessels. Similar to *H. elegans*, *H. sanctaecrucis* has a propensity for settling on substrata with low copper concentrations such as slow release antifouling paints and copper alloys including bronze propellers and cupro-nickle pipe work. It can therefore shorten the lifetime and effectiveness of antifouling paint. Direct economic impacts of other *Hydroides* species and possibly *H. sanctaecrucis*, are mainly attributed to the cost of cleaning fouled surfaces, the increased drag on fouled vessels and blockages or inefficiencies in seawater cooling systems, for example in submarines. In addition it has the potential to modify ecosystem dynamics and species assemblages through competition for space and food. For example, *H. dianthus* has been known to smother juvenile oysters in its native range of North America. Similarly, competition by *H. elegans* for food and oxygen has been implicated in up to 60% mortality for cultured oysters in its native range in Japan.



photograph courtesy of John Lewis DSTO

Current Status: *H. sanctaecrucis* has recently been found in Trinity Harbour, Cairns. It was first found on two Cairns based Navy Landing Craft that had been moored in Cairns for more than five months. Settlement probably occurred there as *H. sanctaecrucis* was subsequently found on a number of vessels and on metal wharves and marina structures, suggesting that the species is well established in Trinity Harbour. Reexamination of fouling plates prove that it was present in Trinity Harbour by January 1999. Most, if not all, introduced serpulids have been subtropical or temperate species. Although there is an account of the transport of a tropical serpulid from Mexico via hull fouling into Sydney Harbour, this incident did not result in successful establishment.

Distribution Vectors: Initial means of introduction into Cairns is unknown. As with the related species, *H. dianthus* (introduced into the Mediterranean and Atlantic coasts of Southern Europe) and *H. elegans* (introduced into Northern Europe and Australia) introduction could have occurred via a number of ways including hull fouling, ballast water or associated with aquaculture species such as oysters. Further introductions within Australia are most likely to occur via hull fouling and possibly ballast water depending on its larval duration.