

The habitat preferences of *Idiosepius pygmaeus* and their use of conspecific cues

Tess L. Jenkins¹, Jan Strugnell¹, and Blake Spady¹

¹James Cook University College of Science and Engineering

January 30, 2024

Abstract

The two-toned pygmy squid (*Idiosepius pygmaeus*, Streenstrup, 1881) is a small, tropical cephalopod that inhabits seagrass meadows and is known to attach to blades of seagrass using a specialised adhesive organ. A global decline in seagrass habitat due to anthropogenic disturbances may threaten the species that rely on seagrass meadows for shelter, foraging and other crucial activities. It is unclear if *I. pygmaeus* can utilise alternative habitats in the absence of seagrass. Here, we test the effect of habitat type, material and composition type, and the presence of conspecifics on the settlement preferences of *I. pygmaeus*. Individuals each underwent three separate experiments: 1) testing the preference between their known habitat, *Zostera muelleri* subsp. *Capricorni* and potential substitute, *Sargassum*, 2) testing the preference to attach to a natural or artificial structure of similar shape and size, and 3) testing the preference of identical habitats, one with a conspecific adhered to and one without. We found that *I. pygmaeus* did not have a strong preference for either *Zostera* or *Sargassum*. However, a strong preference was found for attachment to the natural structure over the artificial one. There was also strong evidence for the use of conspecific cues in habitat choice, with 75% of individuals selecting the habitat that contained a conspecific. As habitat loss is the leading cause of species extinction, the knowledge of habitat preferences for *I. pygmaeus* is vital in order to assess their risk of population decline. The findings of this study suggest that *I. pygmaeus* could utilise an alternative habitat in the presence of seagrass meadow reduction, which is under threat from human activity.

Hosted file

Jenkins, Strugnell and Spady.docx available at <https://authorea.com/users/723883/articles/708207-the-habitat-preferences-of-idiosepius-pygmaeus-and-their-use-of-conspecific-cues>