NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

SEMINAR

Thurs, 17 Oct 2019 | 2 pm | DBS Conference Room 1

Hosted by A/P Peter Todd



By **Sam Smithers**

My main area of interest relates to sensory and behavioural ecology, and evolution. I am fascinated by the diversity of sensory systems that have evolved to allow animals to perceive the world. I did a MSc by research within Dr Martin Stevens's Sensory Ecology and Evolution research group, where I investigated the colour changing and background matching ability of common rockpool fish, and how they appear to models of predator vision. For my PhD I investigated how and why crustaceans use polarized light. The majority of my work focused on shore crabs, fiddler crabs, and stomatopods (mantis shrimp).

Polarization vision in crabs

Humans are sensitive to differences in light intensity (brightness) and wavelength (colour). However, their is a third property of light that is (almost) invisible to us humans, polarization. While it may be invisible to us, many animals are sensitive to the polarization of light and use this visual information for a variety of behavioural tasks such as navigation, communication and habitat localisation. One group in particular, decapod crustaceans, are sensitive to the polarization of light across their whole visual field and use this information for object-based visually guided behaviours.

In my talk I will discuss how fiddler crabs use polarization information, in combination with intensity, to detect objects and control visually guided behaviours. My talk will cover three main areas of my research: 1) How are polarization and intensity information processed within the visual system of fiddler crabs, 2) what forms of visual motion are detectable by crabs (i.e. first- and second-order motion), and 3) I will show that fiddler crabs are able to use their polarization vision to detect objects under natural conditions within their environment.