Swimming ants don shades to save their eyesight

December 17 2013

Australia's unusual swimming ants take their own 'sunglasses' when they go to the beach – to shield their sensitive eyes from bright sunlight.

Scientists at Australia's Vision Centre (VC) have discovered how the world's only swimming ants manage to cope with extremes of light and darkness, and how they navigate between their nest and food sources.

"These ants are found in North Queensland, where they establish nests in the mangrove swamps where ocean and land meet," says Dr Ajay Narendra of The VC and the Research School of Biology (RSB) at the Australian National University (ANU).

"They are the only ants that we know of whose daily activity is tidal-dependent. Instead of relying on temperature or light intensities like most ants, their foraging activities are based on the tides."

Dr Narendra explains that the ants are active during low tides with most ants returning to the nest before the water level rises: "So they're faced with the task of being active at a wide range of light intensities and as a result, developed striking visual adaptations to cope with it."

The researchers first found that the ants' eye structure is similar to those of strictly night-active ants. To capture more light, they developed larger lenses and wider vision cells compared to the day-active ants.

Due to their wider vision cells, the swimming ants also have a special

way to protect the cells from burning out when they are active in bright light during the day, Dr Narendra says.

"In bright conditions, they restrict the amount of light that reaches their retina," he says. "The cells in their eyes move closer, forming a 0.5 micrometre wide aperture – 500 times thinner than a human hair. This makes their eyes less sensitive during the day.

"And at night, the cells move away, opening up the aperture to nearly 5.0 micrometres in width, making their eyes more sensitive at low light."

Dr Narendra says that the formation of such a narrow aperture for the swimming ants is quite extreme, and scientists know of no other ant that does the same.

"This method is similar to how humans protect their eyes," he says. "Our pupils dilate in the dark and narrow when it's bright.

"Something similar happens in the ants' eyes. This technique is crucial for all animals that experience a wide range of light intensities to protect their vision."

The group is at present studying the swimming behaviour in these ants.

More information: Narendra A, Alkaladi A, Raderschall CA, Robson SKA, Ribi WA (2013) Compound Eye Adaptations for Diurnal and Nocturnal Lifestyle in the Intertidal Ant, Polyrhachis sokolova. *PLoS ONE* 8(10): e76015. DOI: 10.1371/journal.pone.0076015

Provided by Science Network WA

Citation: Swimming ants don shades to save their eyesight (2013, December 17) retrieved 26 April 2024 from https://phys.org/news/2013-12-ants-don-eyesight.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.