

## CALLING FOR POTENTIAL STUDENTS, VOLUNTEERS & COLLABORATORS

### PLANT-POLLINATOR RELATIONSHIPS, FOCUSING ON FLORAL NECTAR

Prof Graham H. Pyke

Plant-pollinator relationships constitute an important research topic, especially as about 85% of flowering plants are animal-pollinated and about one-third of everything we humans eat arises, directly or indirectly, from plant pollination. Central to the majority of plant-pollinator interactions is floral nectar, which is an important energy source to a large number of nectar-feeding animals.

Understanding patterns of floral nectar production requires multi-disciplinary research, as adopted by Prof Pyke and his team, in terms of ecology, behaviour, physiology, evolution, chemistry and mathematics. Ecological issues include: benefits and costs to individual plants; and trade-offs with other plant activities, such as seed production. Behaviour is important, both in terms of pollinator foraging behaviour and plant nectar secretion. Physiology is important, both for plants (e.g., energetics; processes of production, translocation, secretion and reabsorption) and animal pollinators (e.g., sugar digestion). Evolution provides the best explanation for observed plant and animal traits, through pointing to: the adaptive nature of observed patterns of nectar production, concentration & composition; and adaptive nature of foraging behaviour. Chemistry is essential in terms of understanding plant chemical mechanisms and providing methods for analysis of nectar composition. Mathematics enable models of plant-pollinator interactions to be developed, thus leading to development and testing of evolutionary predictions.

Presently, Prof Pyke and his team are focussing on plants of the genus *Blandfordia*, also known as Christmas Bells, with access to large numbers - growing in the field and cultivated in a large shade-house. They are investigating both the plants and the foraging behaviour of nectar-feeding honeyeaters that visit and pollinate these plants. As the plants exhibit fire-stimulated flowering, they are also interested in how fire affects them.

This research program provides opportunities for involvement as student, volunteer or collaborator, with field trips scheduled to Pt Macquarie during Nov/Dec 2019 (i.e., 1 to 10 Dec 2019, possibly starting a few days earlier) and Jan 2020 (i.e., 13 to 31 Jan 2020).

If interested, please contact Prof Pyke at [Graham.Pyke@mq.edu.au](mailto:Graham.Pyke@mq.edu.au). If you give him your email address, he can send further details.