

ASSAB Newsletter

August 2006

Annual Conference

Welcome reception

The 33rd Annual Conference of the Society was held at Macquarie Uni from the 20th to the 23rd of April. There were sixty-four oral and twenty-seven poster presentations. As usual, the conference kicked off with the welcoming reception on the evening of the 20th followed by a bright start the next morning.

Day 1

The first speaker was Steve Simpson from Sydney Uni who gave the first plenary talk "Understanding nutrition: from cannibal crickets to human obesity." He started off by saying that the glamour areas in the study of biology were sex and death and that nutrition is usually regarded as the poor cousin and then went on to enthral us for the next forty-five minutes.

Steve's premise is that nutrition is a balance between carbohydrate on the one hand (and fat) and protein on the other. The challenge for animals is to remain roughly on the track that is their correct balance. One of the species that got him onto this idea is the mormon cricket. These little critters migrate in such large numbers that motorists have to be warned of the hazards of hitting a stretch of road covered in their squished little bodies. But the big question was why they migrate at all when they have not stripped bare the areas on which they have been foraging.

The answer turned out to be protein. The crickets were migrating from their original foraging area because it was too rich in carbohydrate and they were attempting to locate a more protein-dense area. They also had to keep moving because they are cannibalistic and are, themselves, an attractive source of protein to conspecifics.

He then applied this principle to human obesity. It appears that people on a diet high in carbohydrate and fat overeat to compensate for the lack of protein. However, if the diet remains too high in carbohydrate and fat, they continue to overeat in an attempt to rectify the balance.

I spoke to Steve after his talk and asked him if this knowledge could be dangerous in the hands of unscrupulous food suppliers. His response was that they do it intuitively, anyway. He also explained that salt is perceived by the human body as indicative of protein intake, hence the attractiveness of salted snack foods.

The plenary talk was then followed by a series of contributed papers. The first was presented by David Raubenheimer who continued along the line of Steve Simpson's plenary paper. He showed that a species of marine fish that was thought to eat macroalgae by accident actually targets it in order to get protein. Sarah Lambert then did particularly well to present her paper showing that concealment of nests decreased depredation while a technician tried to fix the sound gear. Michael Anderson then showed that abiotic factors such as tide and weather affect foraging in New Zealand shorebirds and Jennifer Germano's paper indicated that placing translocated New Zealand frogs with neighbours did not stop them from trying to get back home.

After morning tea, Todd Dennis presented his paper on tracking animals in time and space and presented a beautiful slide of satellite-tracked flight paths of pigeons over the North Island of New Zealand. Raphael Freire then presented work that showed that rotating the magnetic field disrupted the success with which chickens could find a ball hidden behind a screen and Ajay Narendra gave an overview on how ants change their navigational strategy from path integration to landmark use depending on the usefulness of cues. Still on ants, Ken Cheng suggested that path integration is highly useful since it does not use memory, which is energetically costly. Wiebke Ebeling presented proposed work on learning in tammar wallabies using colour discrimination, Shao Wu Zhang presented data that suggest that honeybees can plan their activities and Gisela Kaplan showed that the learning of song in Australian magpies roughly corresponds to human language development.

Following lunch, Bob Kilgour presented data suggesting that the self-grooming behaviour seen in domestic cattle has an evolutionary basis as it is seen in other species of ungulates. Margot Oorebeek showed that ticks have a negative effect on the fitness of avian hosts and Diane Colombelli-Négre showed that haemoglobin levels reflect parasite prevalence in fairy wrens. Mariella Herbestein presented more information on the sexual conflict story of cannibalistic orb-weaving spiders showing this conflict can be resolved when the intervention of the female is prevented. Greg Holwell then showed us that male genital morphology does affect mating behaviour in praying mantids after which Kate Barry showed that hungry

female mantids were highly likely to devour their mate than satiated females.

Kate's paper left us all in a jolly mood for afternoon tea, after which Nansi Richards spoke to us on social organisation in *Spinifex* hopping mice. In two studies on Queensland fruit flies, Preethi Radhakrishnan told us that peptides from the male accessory gland secretions affect female remating inhibition and Diane Perez-Staples showed us that the probability of mating and oviposition were higher in bigger females and the number of sperm stored increased with male size.

The next paper was given by Jeremy Robertson as Rebekeh Christensen had not made it back from the Galapagos Islands (poor thing!). This paper showed that, even though bill morphology affects song in tree finches, it does not affect those components that determine mating success. Suzi Zajitschek presented data to indicate that inbreeding depression in guppies was affected by male attractiveness and, to a certain extent by ornamentation and Matt Hall rounded out the day by showing us that, in Australian ground crickets under a high-quality nutritional environment, the females are highly fecund and live long lives.

The days proceedings were then followed by the AGM which was the best attended that most of us can remember. This, in turn, was followed by a barbecue dinner, which was significantly more sophisticated than a couple of burnt snags on a plate and a film on domesticating ungulates in Mongolia, introduced by Natasha Fijn.

Day 2

Day 2 of the conference kicked off with a plenary talk by Simon Griffith

from the Uni of New South Wales. Simon spoke about the evolution of colour in birds, pointing out that they are a most spectacularly-coloured group of animals. While we humans can appreciate most of this, there is a bit we cannot see. Avian plumage is highly reflective of ultra-violet light and birds have a retinal cone that is u-v sensitive. One of the major reasons appears to be good old sexual attraction. Females appear to be fascinated by colour, so much so that banding of male birds may alter this attraction. Simon then went on to discuss publication bias relating to the theory of the evolution of colour in birds along with the complexity of unravelling it. Such complexity includes inaccurate knowledge of parentage due to extra-pair copulations and the social organisation of different species.

Ximena Nelson then spoke of mimicry in ants, explaining that they have a huge number of mimics (more than 200 species of jumping spiders alone). She was followed by Misha Vorobyev who showed that the principles of chromatic and chromatic vision also apply to bees, finches and fish. Jochen Zeil then let us see more into the lives of fiddler crabs by indicating that they appear to change their carapace colour as an anti-predator strategy. Martin How kept us going with fiddler crabs, explaining that the flamboyant vertical claw-wave is territorial and the even more flamboyant lateral wave is for courtship. These papers usually provoke weird, arm waving behaviour among the delegates, by the way.

After morning tea, Richard Peters and then Daniel van Dyk continued along the line of signalling in, this time in jacky lizards and Kevin Woo used a really neat technique to show that these lizards are good at discerning fast but

not slow movement. Angela McGuire reported a study of diamond firetails; those in the Mt Lofty ranges adorn their nests with flowers but other groups do not and this behaviour is related to reproductive success.

The presentations then turned from visual to acoustic signalling, where Chris Evans imitated the call of his study species, the jungle fowl (“Who needs a wanker audio track?”). Rob McGrath showed that nestlings and fledglings of scrub wrens respond differentially to different alarm calls from their parents. Vic Peddemors finished up the pre-lunch session with a talk on the use of pingers on shark nets and the possibility of using them to overcome the 300,000 annual cetacean deaths as a result of bycatch.

After lunch, Simone Hartwig presented work aimed at understanding the individual voice patterns of African painted hunting dogs. Two of the sites were in Zimbabwe, which had to be abandoned due to the political situation. David Wilson then reported a study of Richardson’s ground squirrels, which use ultrasonic alarm calls to warn kin and near neighbours and Dianne Brunton’s study of counter-calling by female bellbirds showed that it was directed at neighbours rather than strangers.

Jean Drayton’s study of inbreeding in black field crickets showed that it changed their call characteristics and Brenda Kranz presented data on egg size and gall size in eusocial thrips. Michael Jennions completed the session with a presentation that showed that an immune challenge had no effect on call rate in Australian field crickets.

Before we broke for afternoon tea, Phil Taylor asked us to all wear our name badges, in order to sort out the good

guys from the intruders. Apparently the intruders, chiropractors it appears, were snaffling our victuals. Not just the odd biscuit, mind you, but bottles of orange juice and anything else that they could carry! They pinched so much that Phil missed most of the papers leading up to afternoon tea in order to go and replenish stocks and then stand guard over them.

The final session opened up with Diana Fisher explaining that brown antechinus females practise polyandry in order to bias paternity towards males of high fitness. She had started her talk with an article from the *Daily Telegraph*, which claimed that male antechinus copulate once, explode and die. In Greg Johnston's presentation on siblicide in Australian pelicans, he found no evidence of a biased sex-ratio, nor did he wager one of those valuable bits of his anatomy.

Jacqueline Guerts then presented work on the feeding ecology of blue penguins, Anne Goldizen described the restricted mating dispersal among brush-tailed rock wallaby females and Ed Minot finished up the day by asking the Question "Why divorce?" of female savannah sparrows as it appears to confer no advantage in terms of surviving offspring.

The conference dinner was held that evening and it was a whirlwind of food, wine, music, animal behaviour, memories of past conferences, PhD studies and post-docs, all while we floated around under the Sydney Harbour Bridge and Opera House.

Day 3

The final day opened with Rick Shine from the University of Sydney. Rick has subsequently been awarded the Botanic Gardens Trust Eureka Prize

for Biodiversity Research. But, I digress. In his presentation, Rick proposed ways to overcome people's apprehension about field work. His responses were:

- It's too hard to control stimuli and conditions; keep it simple, record the prevailing conditions.
- We can't use large or fragile equipment; do without it.
- Encounter rates with study species are too low; pick the right system.
- It's too hot, messy, dirty, smelly; LIVE WITH IT!

He then went on to present in more detail the advantages of field work by citing examples of his own. One is that field work can overturn current paradigms. His work on pit vipers showed that they are very good at integrating information to catch prey. The older the snake, the bigger the (avian) prey, they preferably strike at the head and they prefer a moving target. Other advantages are that field studies can determine variables that matter to animals, can reveal phenomena at a greater scale than lab work and can identify errors in lab work.

Aaron Harmer followed the plenary talk and presented a plausible hypothesis for the construction of ladder webs by spiders that was not supported by his data. His talk concluded with the question "Why build a web against a tree at all?" Weihong Ji's study of tui (New Zealand honeyeaters) showed that not only do they aggressively defend nectar-rich flowers but also use different strategies against different types of competitor. Jan Hemi then

took us back into the world of fiddler crabs to show that they scan the horizon and react defensively to anything that is above the horizon and moving. Jochen Smolka then took us inside the fiddler crab carapace to show us exactly what these crabs see, which will then allow him to determine their defence strategy.

After morning tea, Mary Whitehouse demonstrated one of the principles presented by Rick Shine earlier in the morning. The relationships between lynx spiders, damsel bugs and mirids that were demonstrated in the laboratory were not the same in the complex environment of a cotton field. Mary was followed by Andrea Griffin who explained that the unusual tolerance of zenaida doves for carib grackles is that the doves have learnt the antipredator language of the grackles.

Adam Koberoff then showed that the anti-predator behaviour of Australian magpies varied depending on the predator followed by Rachel Sims whose data indicate that a form of neighbourhood watch exist in dusky woodswallows, but only for very special neighbours. Toby Galligan's paper explored the significance of the false cup in the nests of thornbills, indicating that it is a predator defence through deception.

These presentations were followed by Melanie Massaro who showed that the introduction of mammalian predators to New Zealand over the last thousand years has provoked changes in clutch size and nest vigilance and Beth Schlotfeldt showed that mainland and island superb fairy wrens differed in morphology and foraging behaviour.

The final session of the conference kicked off with David Sinn presenting

information on personality in squid, particularly the shy/bold trait. Leann Reaney followed this up with an exploration of the shy/bold personality trait in fiddler crabs. Teneal Cope then described her proposed studies on the relationships between New Zealand bellbirds and Australian honeyeaters and Stefan Klose showed differences in the corticosterone response in male and female fruit-eating bats. Russell Bondurainsky's study of Australian flies showed a strong link between condition and sexual dimorphism and Michelle Lemon showed that social isolation of two groups of bottlenose dolphins was associated with some variations in vocalisations.

We then came to the last two oral presentations of the conference. Dinesh Rao showed us that stingless bees are attracted to dark centres and radiating stripes, structures that also occur in the webs of orb web spiders and Mattias Hagman showed that cane toad tadpoles and metamorphs do not like the scent of crushed tadpoles, indicating a possible means of control.

Posters

The following is a summary of the posters.

Jo McEvoy will be assessing "personality" in velvet-furred rats.

Ximena Nelson and then Duane Harland informed us that jumping spiders have amazing eyes.

Karin Nordström – hoverflies can small, rapidly moving targets against a complex background.

Catherine Prabhu showed us that honeybees use recent memory when foraging.

Kim Delaney examined chemical communication in ancient living frog species that have no eardrums or vocal sacs.

Anne Wignall explained how assassin bugs fool spiders by making the spiders think that they have caught something.

Kevin Woo presented evidence of syntactical signal structure in visual displays of jacky gragons.

Michelle Lemon – irradiation treatment to sterilise fruit flies may alter their acoustic courtship.

Hou-Chun Chen showed differences in marmoset behaviour in isolation compared to groups.

Gisela Kaplan – aerial predator alarm calls of magpies elicit a looking up response almost exclusively with the left eye. Also, magpies appear to use referential signalling.

Adam Koboroff – dominant zebra finches are the ones that signal the presence of predators.

Danielle Sulikowski showed that enclosure design affects the behaviour of captive rock rats.

Joanna Wiszniewski indicated that male bottlenose dolphins form alliances to improve reproductive success.

Mary Whitehouse used the Functional Social Theory to contrast the group characteristics of eusocial insects with those of social spiders.

Samuel Collins studied the sperm precedence pattern of the Queensland fruit fly.

Aaron Harmer showed that the sexual performance of Queensland fruit flies can be enhanced using protein supplements.

Luciana Möller will determine if female seals and dolphins gain genetic benefits from multiple mating because they seem to get little else.

Robyn Ison studied the nest-visiting frequency and defensive aggression of a pair of willy wagtails.

Brenda Kranz studied idolothropine thrips, which choose between egg laying and live birth.

Claire Winnick presented proposed research in three honours projects aimed at studying Queensland mantids.

Luis Ortiz Catedral demonstrated the success of translocation of kakakiri to a predator-free site.

Natalie Schmidt described how camera traps can assist in observational research.

K Pillay studied the ranges of tiger sharks off South Africa.

Janine Buist studied the oral delivery of vaccines to macropods.