

Matthew James Hansen

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Current position: Humboldt Research Fellowship (Nov 2018-2020) with Prof Jens Krause at the IGB Leibniz-Institute of Freshwater Ecology and Inland Fisheries

“The Evolution of Collective Cognition”

Education

The University of Sydney

2015 PhD, Biology (April 8th 2016)

Dissertation: *Movement Decisions and Foraging Behaviour in Shoals of Fish*

Supervisors: A/Prof AJW Ward and Prof SJ Simpson

The University of Sydney

2010 BSc (Hon I)

First class honours: *Collective Movement in Australian Plague Locusts*

Supervisors: Prof GA Sword, Dr J Buhl, and Prof SJ Simpson

Research experience

2016-2018

- Post-doctoral Research Associate in the Fangu Laboratory, UC DAVIS
- “Behavioural Guidance of Chinook Salmon (*Oncorhynchus tshawytscha*): Experimental evaluation of the use of a light emitting diode device to reduce entrainment rates of smolts migrating past water diversion infrastructure.”

2012-2015

- Laboratory studies in the Animal Behaviour Lab, University of Sydney:
 - On how changes in internal nutritional state affect individual movement, spatial positioning and group dynamics in *Gambusia holbrooki* and *Melanotaenia duboulayi*.
 - On the effect of nutrient specific changes in the foraging environment on the social behaviour of *Gambusia Holbrooki*.
- Field work at One Tree Island, Great Barrier Reef:
 - On the effect of environmental stimuli on the social escape response of *Dascyllus aruanus* to a model predator.
 - On the interspecific interactions between *Plagiotremus spp.*, the cleaner wrasse *Lambroides dimidiatus*, and their clients.

Honours Research

2009-2010

- Laboratory studies in the Ecology, Physiology and Behaviour Lab, University of Sydney:
- On the role of cannibalism in the group dynamics of *Chortoicetes terminifera* nymphs.
- On the effect of the fungi, *Metarhizium*, on individual and collective behaviour of *Chortoicetes terminifera* nymphs.
- On the effect of crystal light reflecting tags on individual and social behaviour of *Chortoicetes terminifera* nymphs - test of their validity for use in field tracking.

Related professional experience**Visiting Researcher at Swansea University, Wales, 2013**

SHOAL Group

- Assessed the validity of using three-spine sticklebacks, *Gasterosteus aculeatus*, as a new model system for exploring finder-joiner dynamics

Reviewer

Philosophical Transactions B, Behaviour, Behavioural Ecology, Animal Behaviour, Behavioural Ecology & Sociobiology, Ethology, River Research and Applications

Teaching experience**The University of California, Davis, Wildlife Fish and Conservation Biology 2017**

Course coordinator and primary lecturer – Introduction to Ecology and Conservation

The University of Sydney, School of Biological Sciences, 2014-2016

Guest lecturer – Animal Behaviour

The University of Sydney, School of Biological Sciences, 2013-2016

Demonstrator – Animal Behaviour

The University of Sydney, School of Biological Sciences, 2011-2012

Demonstrator & Supervisor – Human Biology Summer School & Semester I

The University of Sydney, School of Biological Sciences, 2009-2010

Demonstrator – Living Systems Semester II

Professional associations

Australian Society for the Study of Animal Behaviour; American Fisheries Society; The Fisheries Society of the British Isles; International Society for Behavioural Ecology; Society for Experimental Biology

Professional awards and grants

Haswell Prize for proficiency in Senior Zoology (2009)

Australian Postgraduate Award, Australian Research Council (2012-2015)

Postgraduate Research Support Scheme, Faculty of Science, University of Sydney (2013/15)

School of Biological Sciences Postgraduate Award Finalist, University of Sydney (2015)

NERC Standard/ New Investigator - named *postdoctoral research assistant (PDRA)* (2016)

Humboldt Postdoctoral Research Fellowship (2016 postponed to 2018)

Academic presentations

- Conference Presentation, Behaviour, Cairns, 2015
“The influence of nutritional state on individual and group movement behaviour in shoals of crimson-spotted rainbowfish, *Melanotaenia duboulayi*”
- Conference Presentation, ECBB, Prague, 2014
“The effect of nutritional state and nutritional environment on movement in shoals of mosquitofish, *Gambusia holbrooki*”
- Departmental Talk, IGB, Leibniz-Institute, Berlin, 2014
- Departmental Talk, Department of Biosciences, Swansea University, 2013

Complete list of publications of Matthew J Hansen

Publications with peer review process:

- 1.) Singer, G. P., **Hansen, M. J.**, Ho, K. V., Lee, K. W., Cocherell, D. E., Klimley, A. P., Rypel, A. L., Fangue, N. A. (2018) Behavioural response of juvenile Chinook Salmon *Onchorhynchus tshawytscha* to surgical implantation of micro-acoustic transmitters. Submitted to *Transactions of the American Fisheries Society*.
- 2.) Steel, A. E., **Hansen, M. J.**, Cocherell, D. E., Fangue, N. A. (2018) Behavioural responses of juvenile white sturgeon (*Acipenser transmontanus*) to manipulations of nutritional state and predation risk. Submitted to *Journal of Applied Ichthyology*
- 3.) Davis, B. E., **Hansen, M. J.**, Cocherell, D. E., Nguyen, T., Sommer, T., Baxter, R., Fangue, N. A., Todgham, A. E. (2018) Consequences of warming on swimming activity, group structure, and predation of endangered Delta Smelt unless warming is simulated in a natural cycle. Submitted to *Freshwater Biology*
- 4.) Davis, B. E., Komoroske, L. M., **Hansen, M. J.**, Poletto, J. B., Miller N. A., Perry E., Ehlman, S., Wheeler, S., Sih, A., Todgham, A. E., Fangue, N. A. (2018). Juvenile rockfish show resilience to CO₂-acidification and hypoxia across multiple biological scales. *Conservation Physiology*, 10.1093/conphys/coy038
- 5.) **Hansen, M. J.**, Cocherell, D. E., Cooke, S. J., Patrick, P. H., Sills, M. Fangue, N. A. (2018). Behavioural guidance of Chinook salmon smolts: the variable effects of LED spectral wavelength and strobing frequency. *Conservation Physiology*, 10.1093/conphys/coy032

- 6.) **Hansen, M. J.**, O'Leary, P. M. Ward, A. J. W. (2017). Interactions between fang blennies, cleaner wrasse and their clients: evidence for behavioural niche partitioning. *Journal of Fish Biology*, 10.1111/jfb.13165
- 7.) **Hansen, M. J.**, Ward, A. J. W., Fürtbauer, I., King, A. J. (2016). Environmental quality determines finder-joiner dynamics in socially foraging three-spined sticklebacks, *Gasterosteus aculeatus*. *Behavioural Ecology and Sociobiology*, 10.1007/s00265-016-2111-5
- 8.) **Hansen, M. J.**, Schaerf, T. M., Krause, J., Ward, A. J. W. (2016). Crimson-spotted rainbowfish, *Melanotaenia duboulayi*, change their position within shoals according to nutritional requirement. *PLoS ONE*, [10.1371/journal.pone.0148334](https://doi.org/10.1371/journal.pone.0148334)
- 9.) **Hansen, M. J.**, Schaerf, T. M. Simpson, S. J., Ward, A. J. W. (2016) Group foraging decisions of *Gambusia holbrooki* in nutritionally differentiated environments. *Functional Ecology*, 10.1111/1365-2435.12646
- 10.) **Hansen, M. J.**, Morrell, L. J., Ward, A. J. W. (2015). The effect of temporally variable environmental stimuli and group size on emergence behaviour. *Behavioural Ecology*, arv237
- 11.) **Hansen, M. J.**, Schaerf T. M., Ward, A. J. W. (2015). The influence of nutritional state on individual and group movement behaviour in shoals of crimson-spotted rainbow fish, *Melanotaenia duboulayi*. *Behavioural Ecology and Sociobiology*, 10.1007/s00265-015-1983-0
- 12.) **Hansen, M. J.**, Schaerf T. M., Ward, A. J. W. (2015). The effect of hunger on the exploratory behaviour of shoals of mosquitofish, *Gambusia holbrooki*. *Behaviour*, 10.1163/1568539X-00003298
- 13.) **Hansen, M. J.**, Buhl, J., Bazazi, S., Simpson, S. J., & Sword, G. A. (2011). Cannibalism in the lifeboat—collective movement in Australian plague locusts. *Behavioural Ecology and Sociobiology*, 10.1007/s00265-011-1179-1

as of November 2018

References

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Simpson, S. J., PhD
Professor of Biology
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