

Matthew James Hansen

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Researcher of animal behaviour and ecology - focusing on marine predator-prey interactions.

Current Position

Post-doctoral researcher at IGB, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin

Project Leader/ Principal Investigator of Deutsche Forschungsgemeinschaft (DFG) funded project (2024-2027)

Project title: *Multi-Predator Aggregations in the Open Ocean*

Research experience (post-doctoral)

2021-2024

- Project Leader/ Principal Investigator of Deutsche Forschungsgemeinschaft (DFG) funded project (2021-2024)
- Project title: *Group hunting behaviour in striped marlin, *Kajikia audax**

2018-2020

- Humboldt Postdoctoral Research Fellowship at IGB, Leibniz-Institute
- Project title: *The Evolution of Collective Cognition: A Comparative Approach*

2016-2018

- Research Associate in the Fänge Laboratory, UC Davis
- Project title: *Behavioural Guidance of Chinook Salmon (*Oncorhynchus tshawytscha*)*

Education

The University of Sydney 2016 PhD, Biology (April 8th, 2016)

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

Supervisors: Prof AJW Ward and Prof SJ Simpson

The University of Sydney 2010 BSc (Hon I)

Thesis: *Collective Movement in Australian Plague Locusts*

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

Teaching experience

IGB, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, 2020-2024

11 student projects (including 4 Master theses)

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

Reviewer

Proceedings of the Royal Society B, Philosophical Transactions B, Journal of Experimental Biology, Animal Behaviour, Behavioural Ecology, Behavioural Ecology & Sociobiology, Behaviour, Ethology, River Research and Applications, Current Zoology

Professional associations

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

Professional awards, grants and fellowships

Deutsche Forschungsgemeinschaft (DFG) grant (2024-2027) – \$758, 919 AUD

Deutsche Forschungsgemeinschaft (DFG) grant (2021-2024) – \$515, 500 AUD

Humboldt Postdoctoral Research Fellowship (2016 - postponed to 2018) – \$106, 199 AUD

NERC Standard/ New Investigator – named *postdoctoral research assistant (PDRA)* (2016 – position not accepted)

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

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

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

Haswell Prize for proficiency in Senior Zoology, University of Sydney (2009)

References

Krause, J., PhD
 Professor Humboldt University
 Head of Department (Dept. 2) Biology and
 Ecology of Fishes, Leibniz Institute of
 Freshwater and Inland Fisheries (IGB)
 Müggelseedamm 310, 12587 Berlin,
 Germany
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Fangue, N. A., PhD
 Professor in the Wildlife, Fisheries and
 Conservation Biology department
 Department Chair
 University of California, Davis
 1088 Academic Surge Building
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King, A. J., PhD
 Associate Professor, Biosciences
 Academic Office – 136
 Wallace Building
 Singleton Campus
 SA2 8PP, Swansea, UK
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Complete list of publications

Publications with peer review process:

- 1.) Pham, D., **Hansen, M.**, Dhellemmes, F., Krause, J., Bideau, P. (2025) Watching Swarm Dynamics from Above” A Framework for Advanced Object Tracking in Drone Videos. *Submitted*
- 2.) Lo, V., **Hansen, M. J.**, Fangue, N. A. (2024) The role of nutritional stress in the relationship between standard metabolic rate and locomotor activity in juvenile white sturgeon (*Acipenser transmontanus*), with implications for anthropogenically-altered food webs, *Conservation Physiology, minor revisions*
- 3.) Steel, A.E., Baird, S.E., **Hansen, M.J.**, Cocherell, D.E., Fangue, N.A (2024) Size mediates relative risk and anti-predation response in juvenile sturgeon, *Transactions of the American Fisheries Society, accepted*
- 4.) Bartashevich, P., Herbert-Read, J. E., **Hansen, M. J.**, Domenici, P., Krause, J., Romanczuk, P (2024). Collective anti-predator escape maneuvers through optimal attack and avoidance strategies, *Communications Biology, minor revisions*
- 5.) Pacher, K., Krause, J., Bartashevich, P., Romanczuk, P., Bideau, P., Pham, D., Burns, A. L., Deffner, D., Dhellemmes, F., Binder, B., Boswell, K. M., Galván-Magaña, F., Domenici, P., **Hansen, M. J.** (2024) Evidence for a by-product mutualism in a group hunter depends on prey movement state, *Functional Ecology*, 10.1111/1365-2435.14638
- 6.) Licht, M. Burns, A. L., Pacher, K., Krause, S., Bartashevich, P., Romanczuk, P., **Hansen, M. J.**, Then, A. Y., Krause, J. (2024) Sailfish generate foraging opportunities for seabirds in multi-species predator aggregations, *Biology Letters*, 10.1098/rsbl.2024.0177
- 7.) Burns, A. B., Licht, M., Heathcote, R., Krause, J., **Hansen, M. J.** (2024) Rapid colour change in a group-hunting pelagic predator when attacking schooling prey. *Current Biology*, 34, R1–R3
- 8.) Pacher, K., Breuker, M., **Hansen, M. J.**, Kurvers, R. H. J. M., Häge, J., Dhellemmes, F., Domenici, P., Steffensen, J. F., Krause, S., Hildebrandt, T., Fritsch, G., Bach, P., Sabarros, P. S., Zaslansky, P., Mahlow, K., Müller, J., González Armas, R., Villalobos Ortiz, H., Galván-Magaña, F., Krause, J. (2023) The rostral micro-tooth morphology of blue marlin, *Makaira nigricans*. *Journal of Fish Biology*, 10.1111/jfb.15608

- 9.) **Hansen, M. J.**, Domenici, P., Bartashevich, P., Burns, A., Krause, J. (2023) Mechanisms of Group-Hunting in Vertebrates. *Biological Reviews*, 10.1111/brv.12973
- 10.) **Hansen, M. J.**, Kurvers, R. H. J. M., Licht, M., Häge, J., Pacher, K., Dhellemmes, F., Trillmich, F., Elorriaga-Verplancken, F. R., Krause, J. (2023) California sea lions interfere with striped marlin hunting behaviour in multi-species predator aggregations. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 10.1098/rstb.2022.0103
- 11.) **Hansen, M. J.**, Krause, S., Dhellemmes, F., Pacher, K., Kurvers, R.H.J.M., Domenici, P., Krause, J. (2022) Mechanisms of prey division in striped marlin, a marine group hunting predator. *Communications Biology*, 10.1038/s42003-022-03951-3
- 12.) Häge, J., **Hansen, M. J.**, Pacher, K., Dhellemmes, F., Domenici, P., Steffensen, J.F., Breuker, M., Krause, S., Hildebrandt, T., Fritsch, G., Bach, P., Sabarros, P.S., Zaslansky, P., Mahlow, K., Müller, J., Krause, J. (2022) Lacunae: A new structure on the rostrum of sailfish *Istiophorus platypterus*. *Journal of Fish Biology*, 10.1111/jfb.15018
- 13.) **Hansen, M. J.**, Burns, A.L., Monk, C.T., Schutz, C., Lizier, J. T., Ramnarine, I., Ward, A.J.W, Krause, J. (2021). The effect of predation risk on group behaviour and information flow during repeated collective decisions. *Animal Behaviour*, 10.1016/j.anbehav.2021.01.005
- 14.) Dhellemmes, F., **Hansen, M. J.**, Bouet, S. D., Videler, J. J., Domenici, P., Steffensen J. F., Hildebrandt T., Fritsch, G., Bach, P., Sabarros P. S., Kruger A., Kurvers, R. H. J. M., Krause J. (2020). Oil gland and oil pores in billfishes: in search of a function. *Journal of Experimental Biology*, 10.1242/jeb.2249
- 15.) **Hansen, M. J.**, Krause, S., Breuker, M., Kurvers, R. H. J. M., Dhellemmes, F., Viblanc, P.E., Muller, J., Mahlow, C., Boswell, K., Marras, S., Domenici, P., Wilson, A. D. M., Herbert-Read, J. E., Steffensen, J. F., Fritsch, G., Hildebrandt, T. B., Zaslansky, P., Bach, P., Sabarros, P. S., Krause, J. (2020) Linking hunting weaponry to attack strategies in sailfish and striped marlin. *Proceedings of the Royal Society B: Biological Sciences*, 10.1098/rspb.2019.2228
- 16.) **Hansen, M. J.**, Ligocki, I. Y., Zillig, K. E., Steel, A. E., Todgham, A. E., Fangue, N. A. (2020) Risk-taking and locomotion in foraging threespine sticklebacks (*Gasterosteus aculeatus*): the effect of nutritional stress is dependent on social context. *Behavioural Ecology and Sociobiology*, 10.1007/s00265-019-2795-4
- 17.) Davis, B. E., **Hansen, M. J.**, Cocherell, D. E., Nguyen, T., Sommer, T., Baxter, R., Fangue, N. A., Todgham, A. E. (2019) Consequences of warming on swimming activity, group structure, and predation of endangered Delta Smelt. *Freshwater Biology*, 10.1111/fwb.13403
- 18.) **Hansen, M. J.**, Steel, A. E., Cocherell, D. E., Patrick, P. H., Sills, M., Cooke, S. J., Fangue, N. A. (2019). Experimental evaluation of the effect of a light emitting diode device on Chinook salmon smolt entrainment in a simulated river. *Hydrobiologia*, 10.1007/s10750-019-04022-1
- 19.) Steel, A. E., **Hansen, M. J.**, Cocherell, D. E., Fangue, N. A. (2019) Behavioural responses of juvenile white sturgeon (*Acipenser transmontanus*) to manipulations of nutritional state and predation risk. *Environmental Biology of Fishes*, 10.1007/s10641-019-00873-8
- 20.) Singer, G. P., **Hansen, M. J.**, Ho, K. V., Lee, K. W., Cocherell, D. E., Klimley, A. P., Rypel, A. L., Fangue, N. A. (2019) Behavioural response of juvenile Chinook Salmon *Onchorhynchus tshawytscha* to surgical implantation of micro-acoustic transmitters. Submitted to *Transactions of the American Fisheries Society*, 10.1002/tafs.10147
- 21.) 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
- 22.) **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
- 23.) **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

- 24.) **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
- 25.) **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
- 26.) **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
- 27.) **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
- 28.) **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, *Melanaenia duboulayi*. *Behavioural Ecology and Sociobiology*, 10.1007/s00265-015-1983-0
- 29.) **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
- 30.) **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

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