

## Research outputs

### **Dietary shifts may underpin the recovery of a large carnivore population**

Campbell, M. A., Vinay, U., Jardine, T., Fukuda, Y., Kopf, R. K., Bunn, S. & Campbell, H. A., 1 Apr 2022, In: *Biology Letters*. 18, 4, p. 1-6 6 p.

### **Environmental resistance and habitat quality influence dispersal of the saltwater crocodile**

Fukuda, Y., Moritz, C., Jang, N., Webb, G., Campbell, H., Christian, K., Lindner, G. & Banks, S., Feb 2022, In: *Molecular Ecology*. 31, 4, p. 1076-1092 17 p.

### **Uncrewed Surface Vessel Technological Diffusion Depends on Cross-Sectoral Investment in Open-Ocean Archetypes: A Systematic Review of USV Applications and Drivers**

Patterson, R. G., Lawson, E., Udyawer, V., Brassington, G. B., Groom, R. A. & Campbell, H. A., 6 Jan 2022, In: *Frontiers in Marine Science*. 8, p. 1-13 13 p., 736984.

### **Crocodile social environments dictated by male philopatry**

Baker, C. J., Frère, C. H., Franklin, C. E., Campbell, H. A., Irwin, T. R. & Dwyer, R. G., 1 Jan 2022, In: *Behavioral Ecology*. 33, 1, p. 156-166 11 p.

### **Seasonal space use and habitat selection in magpie geese: implications for reducing human-wildlife conflicts**

Corriveau, A., Klaassen, M., Garnett, S. T., Kaestli, M., Christian, K., Crewe, T. L., Loewensteiner, D. A. & Campbell, H. A., 2022, (E-pub ahead of print) In: *Journal of Wildlife Management*. p. 1-21 21 p.

### **Sympatric finches increase trophic and spatiotemporal partitioning to enable coexistence through periods of low resource availability**

Collett, S. J., Crewe, T. L., Radford, I. J., Garnett, S. T. & Campbell, H., 2022, (E-pub ahead of print) In: *Functional Ecology*. p. 1-14 14 p.

### **Quantifying movement of multiple threatened species to inform adaptive management of environmental flows**

Espinoza, T., Burke, C. L., Carpenter-Bundhoo, L., Marshall, S. M., McDougall, A. J., Roberts, D. T., Campbell, H. A. & Kennard, M. J., 1 Oct 2021, In: *Journal of Environmental Management*. 295, p. 1-12 12 p., 113067.

### **Continental-scale acoustic telemetry and network analysis reveal new insights into stock structure**

Lédée, E. J. I., Heupel, M. R., Taylor, M. D., Harcourt, R. G., Jaine, F. R. A., Huveneers, C., Udyawer, V., Campbell, H. A., Babcock, R. C., Hoenner, X., Barnett, A., Braccini, M., Brodie, S., Butcher, P. A., Cadiou, G., Dwyer, R. G., Espinoza, M., Ferreira, L. C., Fetterplace, L., Fowler, A. & 15 others, Harborne, A. R., Knott, N. A., Lowry, M., McAllister, J., McAuley, R., Meekan, M., Mills, K., Peddemors, V. M., Pillans, R., Semmens, J., Smoothey, A. F., Speed, C., Stehfest, K., van der Meulen, D. & Simpfendorfer, C. A., Sep 2021, In: *Fish and Fisheries*. 22, 5, p. 987-1005 19 p.

### **Rocky escarpment versus savanna woodlands: Comparing diet and body condition as indicators of habitat quality for the endangered northern quoll (*Dasyurus hallucatus*)**

Thomas, H., Cameron, S. F., Campbell, H. A., Micheli-Campbell, M. A., Kirke, E. C., Wheatley, R., Wilson, R. S. & Thomas, H., Jul 2021, In: *Wildlife Research*. 48, 5, p. 434-443 10 p.

### **Seasonal movements and site utilisation by Asian water buffalo (*Bubalus bubalis*) in tropical savannas and floodplains of northern Australia**

Campbell, H. A., Loewensteiner, D. A., Murphy, B. P., Pittard, S. & McMahon, C. R., Mar 2021, In: *Wildlife Research*. 48, 3, p. 230-239 9 p.

### **Motivations and fears driving participation in collaborative research infrastructure for animal tracking**

Crewe, T. L., Kendal, D. & Campbell, H. A., Nov 2020, In: *PLoS One*. 15, 11, p. 1-16 16 p., e0241964.

### **The efficacy of protecting turtle nests as a conservation strategy to reverse population decline**

Campbell, M. A., Connell, M. J., Collett, S. J., Udyawer, V., Crewe, T. L., McDougall, A. & Campbell, H. A., Nov 2020, In: *Biological Conservation*. 251, p. 1-9 9 p., 108769.

**Niche partitioning between river shark species is driven by seasonal fluctuations in environmental salinity**

Dwyer, R. G., Campbell, H. A., Cramp, R. L., Burke, C. L., Micheli-Campbell, M. A., Pillans, R. D., Lyon, B. J. & Franklin, C. E., Oct 2020, In: *Functional Ecology*. 34, 10, p. 2170-2185 16 p.

**ZoaTrack - an online tool to analyse and share animal location data: User engagement and future perspectives**

Newman, P., Dwyer, R. G., Belbin, L. & Campbell, H. A., Oct 2020, In: *Australian Zoologist*. 41, 1, p. 12-18 7 p.

**Using environmental DNA to detect estuarine crocodiles, a cryptic-ambush predator of humans**

Rose, A., Fukuda, Y. & Campbell, H. A., 1 Mar 2020, In: *Human-Wildlife Interactions*. 14, 1, p. 64-72 9 p.

**Opportunities and challenges in using weather radar for detecting and monitoring flying animals in the Southern Hemisphere**

Rogers, R. M., Buler, J. J., Wainwright, C. E. & Campbell, H. A., Feb 2020, In: *Austral Ecology*. 45, 1, p. 127-136 10 p.

**A large-scale automated radio telemetry network for monitoring movements of terrestrial wildlife in Australia**

Griffin, A. S., Brown, C., Woodworth, B. K., Ballard, G. A., Blanch, S., Campbell, H. A., Crewe, T. L., Hansbro, P. M., Herbert, C. A., Hosking, T., Hoyer, B. J., Law, B., Leigh, K., Machovsky-Capuska, G. E., Rasmussen, T., McDonald, P. G., Roderick, M., Slade, C., Mackenzie, S. A. & Taylor, P. D., 2020, In: *Australian Zoologist*. 40, 3, p. 379-391 13 p.

**Broad-scale opportunistic movements in the tropical waterbird *Anseranas semipalmata*: Implications for human-wildlife conflicts**

Corriveau, A., Klaassen, M., Crewe, T. L., Kaestli, M., Garnett, S. T., Loewensteiner, D. A., Rogers, R. M. & Campbell, H. A., 2020, In: *Emu*. 120, 4, p. 343-354 12 p.

**Using individual-based movement information to identify spatial conservation priorities for mobile species**

Dwyer, R. G., Campbell, H. A., Pillans, R. D., Watts, M. E., Lyon, B. J., Guru, S. M., Dinh, M. N., Possingham, H. P. & Franklin, C. E., Dec 2019, In: *Conservation Biology*. 33, 6, p. 1426-1437 12 p.

**Ontogenetic shifts in the nesting behaviour of female crocodiles**

Baker, C. J., Franklin, C. E., Campbell, H. A., Irwin, T. R. & Dwyer, R. G., Apr 2019, In: *Oecologia*. 189, 4, p. 891-904 14 p.

**Early Career Researchers Embrace Data Sharing**

Campbell, H. A., Micheli-Campbell, M. A. & Udyawer, V., Feb 2019, In: *Trends in Ecology and Evolution*. 34, 2, p. 95-98 4 p.

**Development and validation of an environmental DNA test for the endangered Gouldian finch**

Day, K., Campbell, H., Fisher, A., Gibb, K., Hill, B., Rose, A. & Jarman, S. N., 2019, In: *Endangered Species Research*. 40, p. 171-182 12 p., 0987.

**Identifying Assemblages of River Turtles Using a Passive and Systematic Capture Technique in the Mary River, Queensland, Australia**

Connell, M. J., McDougall, A. & Campbell, H. A., 18 Dec 2018, In: *Chelonian Conservation and Biology*. 17, 2, p. 187-196 10 p.

**A standardised framework for analysing animal detections from automated tracking arrays**

Udyawer, V., Dwyer, R. G., Hoenner, X., Babcock, R. C., Brodie, S., Campbell, H. A., Harcourt, R. G., Huvaneers, C., Jaine, F. R. A., Simpfendorfer, C. A., Taylor, M. D. & Heupel, M. R., 13 Dec 2018, In: *Animal Biotelemetry*. 6, 1, p. 1-14 14 p., 17.

**Continental-scale animal tracking reveals functional movement classes across marine taxa**

Brodie, S., Lédée, E. J. I., Heupel, M. R., Babcock, R. C., Campbell, H., Gledhill, D. C., Hoenner, X., Huvaneers, C., Jaine, F. R. A., Simpfendorfer, C. A., Taylor, M. D., Udyawer, V. & Harcourt, R. G., 27 Feb 2018, In: *Scientific Reports*. 8, 1, p. 1-9 9 p., 3717.

**Australia's continental-scale acoustic tracking database and its automated quality control process**

Hoenner, X., Huveneers, C., Steckenreuter, A., Simpfendorfer, C., Tattersall, K., Jaine, F., Atkins, N., Babcock, R., Brodie, S., Burgess, J., Campbell, H., Heupel, M., Pasquer, B., Proctor, R., Taylor, M. D., Udyawer, V. & Harco, R., 30 Jan 2018, In: Scientific Data. 5, p. 1-10 10 p., 170206.

**Why do people donate to conservation? Insights from a 'real world' campaign**

Verissimo, D., Campbell, H. A., Tollington, S., MacMillan, D. C. & Smith, R. J., 25 Jan 2018, In: PLoS One. 13, 1, p. 1-15 15 p., e0191888.

**Distribution, seasonal movements and habitat utilisation of an endangered shark, *Glyphis glyphis*, from northern Australia**

Lyon, B. J., Dwyer, R. G., Pillans, R. D., Campbell, H. A. & Franklin, C. E., 21 Jun 2017, In: Marine Ecology - Progress Series. 573, p. 203-213 11 p.

**Identifying critical habitat for freshwater turtles: integrating long-term monitoring tools to enhance conservation and management**

Micheli-Campbell, M. A., Connell, M. J., Dwyer, R. G., Franklin, C. E., Fry, B., Kennard, M. J., Tao, J. & Campbell, H. A., Jun 2017, In: Biodiversity and Conservation. 26, 7, p. 1675-1688 14 p.

**Integrating research using animal-borne telemetry with the needs of conservation management**

Mcgowan, J., Beger, M., Lewison, R. L., Harcourt, R., Campbell, H., Priest, M., Dwyer, R. G., Lin, H. Y., Lentini, P., Dudgeon, C., McMahon, C., Watts, M. & Possingham, H. P., Apr 2017, In: Journal of Applied Ecology. 54, 2, p. 423-429 7 p.

**Using an acoustic telemetry array to assess fish volumetric space use: A case study on impoundments, hypoxia and an air-breathing species (*Neoceratodus forsteri*)**

Roberts, D. T., Udyawer, V., Franklin, C., Dwyer, R. G. & Campbell, H. A., 9 Feb 2017, In: Marine and Freshwater Research. 68, 8, p. 1532-1543 12 p.

**Using citizen-collected wildlife sightings to predict traffic strike hot spots for threatened species: a case study on the southern cassowary**

Dwyer, R. G., Carpenter-Bundhoo, L., Franklin, C. E. & Campbell, H. A., 1 Aug 2016, In: Journal of Applied Ecology. 53, 4, p. 973-982 10 p.

**Cardiorespiratory responses in an Antarctic fish suggest limited capacity for thermal acclimation**

Egginton, S. & Campbell, H. A., 1 May 2016, In: Journal of Experimental Biology. 219, 9, p. 1283-1286 4 p.

**A plea for standards in reporting data collected by animal-borne electronic devices**

Campbell, H. A., Urbano, F., Davidson, S., Dettki, H. & Cagnacci, F., 6 Jan 2016, In: Animal Biotelemetry. 4, 1, p. 1-4 4 p., 1.

**Finding our way: On the sharing and reuse of animal telemetry data in Australasia**

Campbell, H., Beyer, H. L., Dennis, T. E., Dwyer, R., Forester, J. D., Fukuda, Y., Lynch, C., Hindell, M., Menke, N., Morales, J. M., Richardson, C., Rodgers, E., Taylor, G., Watts, M. & Westcott, D., 15 Nov 2015, In: Science of the Total Environment. 534, p. 79-84 6 p.

**Predicting the probability of large carnivore occurrence: A strategy to promote crocodile and human coexistence**

Campbell, H., Dwyer, R., Wilson, H., Irwin, T. & Franklin, C., Aug 2015, In: Animal Conservation. 18, 4, p. 387-395 9 p.

**Feeding across the food web: The interaction between diet, movement and body size in estuarine crocodiles (*Crocodylus porosus*)**

HANSON, JEFFREY. O., SALISBURY, STEVEN. W., Campbell, H., Dwyer, R., Jardine, T. & Franklin, C., May 2015, In: Austral Ecology. 40, 3, p. 275-286 12 p.

**An open Web-based system for the analysis and sharing of animal tracking data**

Dwyer, R. G., Brooking, C., Brimblecombe, W., Campbell, H. A., Hunter, J., Watts, M. & Franklin, C. E., 29 Jan 2015, In: *Animal Biotelemetry*. 3, 1, p. 1-11 11 p.

**Does the telemetry technology matter? Comparing estimates of aquatic animal space-use generated from GPS-based and passive acoustic tracking**

Dwyer, R., Campbell, H., Irwin, T. & Franklin, C., 2015, In: *Marine and Freshwater Research*. 66, 7, p. 654-664 11 p.

**Love thy neighbour: Automatic animal behavioural classification of acceleration data using the k-nearest neighbour algorithm**

Bidder, O. R., Campbell, H., Gomez-Laich, A., Urge, P., Walker, J., Cai, Y., Gao, L., Quintana, F. & Wilson, R., 21 Feb 2014, In: *PLoS One*. 9, 2, p. 1-7 7 p.

**A Web-based semantic tagging and activity recognition system for species' accelerometry data**

Gao, L., Campbell, H., Bidder, O. R. & Hunter, J., Jan 2013, In: *Ecological Informatics*. 13, p. 47-56 10 p.

**Creating a behavioural classification module for acceleration data: Using a captive surrogate for difficult to observe species**

Campbell, H., Gao, L., Bidder, O. R., Hunter, J. & Franklin, C., 2013, In: *Journal of Experimental Biology*. 216, 24, p. 4501-4506 6 p.

**Hatchling crocodiles maintain a plateau of thermal independence for activity, but at what cost?**

Campbell, H., Sissa, O., Dwyer, R. & Franklin, C., 2013, In: *Journal of Herpetology*. 47, 1, p. 11-14 4 p.

**Home Range Utilisation and Long-Range Movement of Estuarine Crocodiles during the Breeding and Nesting Season**

Campbell, H., Dwyer, R., Irwin, T. & Franklin, C., 2013, In: *PLoS One*. 8, 5, p. 1-9 9 p., e62127.

**Integrating telemetry with a predictive model to assess habitat preferences and juvenile survival in an endangered freshwater turtle**

Micheli-Campbell, M. A., Campbell, H., Connell, M., Dwyer, R. & Franklin, C., 2013, In: *Freshwater Biology*. 58, 11, p. 2253-2263 11 p.

**Selectivity and repeated use of nesting sites in a freshwater turtle**

Micheli-Campbell, M. A., Baumgartl, T., Booth, D., Campbell, H., Connell, M. & Franklin, C., 2013, In: *Herpetologica*. 69, 4, p. 383-396 14 p.

**Shedding light on light: Benefits of anthropogenic illumination to a nocturnally foraging shorebird**

Dwyer, R., Bearhop, S., Campbell, H. & Bryant, D. M., 2013, In: *Journal of Animal Ecology*. 82, 2, p. 478-485 8 p.

**The influence of daily temperature fluctuations during incubation upon the phenotype of a freshwater turtle**

Micheli-Campbell, M. A., Gordos, M. A., Campbell, H., Booth, D. & Franklin, C., Oct 2012, In: *Journal of Zoology*. 288, 2, p. 143-150 8 p.

**Prioritising the protection of habitat utilised by southern cassowaries *Casuarius casuarius johnsonii***

Campbell, H., Dwyer, R., Fitzgibbons, S., Klein, C. J., Lauridsen, G., McKeown, A., Olsson, A., Sullivan, S., Watts, M. & Westcott, D., 2012, In: *Endangered Species Research*. 17, 1, p. 53-61 9 p.

**Short- and long-term movement patterns in the freshwater whipray (*Himantura dalyensis*) determined by the signal processing of passive acoustic telemetry data**

Campbell, H., Hewitt, M., Watts, M., PEVERELL, S. & Franklin, C., 2012, In: *Marine and Freshwater Research*. 63, 4, p. 341-350 10 p.

**V-Track: Software for analysing and visualising animal movement from acoustic telemetry detections**

Campbell, H., Watts, M., Dwyer, R. & Franklin, C., 2012, In: *Marine and Freshwater Research*. 63, 9, p. 815-820 6 p.

**Staying cool, keeping strong: Incubation temperature affects performance in a freshwater turtle**

Micheli-Campbell, M. A., Campbell, H., Cramp, R. L., Booth, D. & Franklin, C., Dec 2011, In: Journal of Zoology. 285, 4, p. 266-273 8 p.

**Branchial osmoregulation in the euryhaline bull shark, *Carcharhinus leucas*: A molecular analysis of ion transporters**

Reilly, B. D., Cramp, R. L., WILSON, J., Campbell, H. & Franklin, C., 2011, In: Journal of Experimental Biology. 214, 17, p. 2883-2895 13 p.

**Estuarine crocodiles ride surface currents to facilitate long-distance travel**

Campbell, H., Watts, M., Sullivan, S., Read, M., Choukroun, S., Irwin, S. R. & Franklin, C., Sep 2010, In: Journal of Animal Ecology. 79, 5, p. 955-964 10 p.

**Ecological and physiological determinants of dive duration in the freshwater crocodile**

Campbell, H., Sullivan, S., Read, M., Gordos, M. A. & Franklin, C., Feb 2010, In: Functional Ecology. 24, 1, p. 103-111 9 p.

**Environmental and ecological factors influencing dive behaviour in the freshwater snake *Acrochordus arafurae*: a field-based telemetric study**

Pratt, K. L., Campbell, H., Watts, M. & Franklin, C., 2010, In: Marine and Freshwater Research. 61, 5, p. 560-567 8 p.

**The relationship between O<sub>2</sub> chemoreceptors, cardio-respiratory reflex and hypoxia tolerance in the neotropical fish *Hoplias lacerdae***

Micheli-Campbell, M. A., Campbell, H. A., Kalinin, A. L. & Rantin, F. T., 1 Oct 2009, In: Comparative Biochemistry and Physiology - A Molecular and Integrative Physiology. 154, 2, p. 224-232 9 p.

**Autonomic control of heart rate exhibits diurnal shifts in a crocodilian**

Micheli, M. A. & Campbell, H. A., 1 Oct 2008, In: Amphibia Reptilia. 29, 4, p. 567-571 5 p.

**A seasonally dependent change in the distribution and physiological condition of *Caiman crocodilus yacare* in the Paraguay River Basin**

Campbell, H. A., Micheli, M. A. & Abe, A., 28 Apr 2008, In: Wildlife Research. 35, 2, p. 150-157 8 p.

**The autonomic control and functional significance of the changes in heart rate associated with air breathing in the jeju, *Hoplerythrinus unitaeniatus***

McKenzie, D. J., Campbell, H. A., Taylor, E. W., Micheli, M., Rantin, F. T. & Abe, A. S., 1 Dec 2007, In: Journal of Experimental Biology. 210, 23, p. 4224-4232 9 p.

**Control of the heart in fish**

Taylor, E. W., Leite, C., Campbell, H., Intanai, I. & Wang, T., 2007, *Fish Respiration and Environment*. Fernandes, M. N., Rantin, F. T., Glass, M. L. & Kapoor, B. G. (eds.). 1 ed. Boca Raton: CRC Press, p. 341-375 35 p.

## Activities

## Awards

## Projects

**HOMB: 2019 Rainmaker Readiness - Improving habitat offsets for migratory shorebirds through adaptive wetland management**

Garnett, S., Campbell, H. & Lilleyman, A.  
1/11/19 → 31/10/21

**2020 Rainmaker Start-Up - Assessing population demographics and viability of Elusor macrurus & Elseya albagula in the Mary River, Queensland**

Campbell, H., Campbell, M. & Crewe, T.  
13/07/20 → 12/05/21

**Assessing population demographics and viability of Elusor macrurus & Elseya albagula in the Mary River, Queensland**

Campbell, H., Campbell, M. & Crewe, T.  
14/09/20 → 1/10/22

**Assessing the costs and benefits of autonomous aircraft integration into healthcare service delivery for remote Indigenous communities in the Northern Territory.**

Bosiocic, V. & Campbell, H.  
1/01/21 → 30/12/23

**Assessing the utility of aerial imaging and remotely piloted aircraft for assessing the abundance and measuring body temperature in enclosed feral pigs in dry season, Northern Territory**

Campbell, H., Ramsey, R., Rogers, R. & Campbell, M.  
8/03/22 → 30/06/22

**Developing local capacity to monitor, evaluate, and communicate the impacts of urban innovation design for the Darwin Living Lab.**

Campbell, H., Mehdizadeh Rad, H., Gautam, D. & Rogers, R.  
1/03/21 → 1/03/24

**DP210103369 The ecological impact of large carnivore restoration**

Campbell, H., Bunn, S., Kopf, R. K., Udyawer, V., Jardine, T., Fukuda, Y., Smith, B. & Campbell, M.  
1/03/21 → 1/03/24

**Emerging billfish fishing grounds in northern Australia: fisheries description, movement patterns and hot-spots (stage 1)**

Kopf, R. K. & Campbell, H.  
31/01/22 → 28/09/25

**Enhancing surveillance of the northern Australian feral pig population for African swine fever and other high impact pests and diseases**

Campbell, H., Banks, S. & Campbell, M.  
27/07/20 → 30/07/21

**Integrating autonomous aircraft into the health care supply chain for remote communities in the Northern Territory**

Campbell, H., Bosiocic, V. & Ramsey, R.  
11/01/21 → 15/12/23

**LP160101716 Movement ecology of granivores: informing fire management of savannas**

Campbell, H. & Garnett, S.  
1/07/17 → 31/12/21

**Scoping the potential of integrating unmanned aerial systems into health care delivery in the Northern Territory**

Campbell, H. & Sangha, K.  
30/09/20 → 1/03/21

**Territory Innovation Challenges pilot project: Drones for Life Supporting the operations of the Innovation Cluster**

Campbell, H. & Ramsey, R.  
7/05/21 → 1/07/22

**Testlab Establishment and Advanced Apprenticeship Pilot – Defence Industries and Aerospace**

Campbell, H., Bosiocic, V. & Ramsey, R.  
25/03/22 → 30/06/24

**Testlab Establishment – Defence Industries and Aerospace**

Campbell, H., Ramsey, R. & Bosicic, V.

10/06/22 → 28/06/24

**Trialling aerial radiography to detect black-footed rock wallabies (*Petrogale lateralis* subsp) in the Western Kimberley**

Campbell, H. & Rogers, R.

5/04/21 → 30/09/21