Dr Travis Park PhD, BBSc (Hons)

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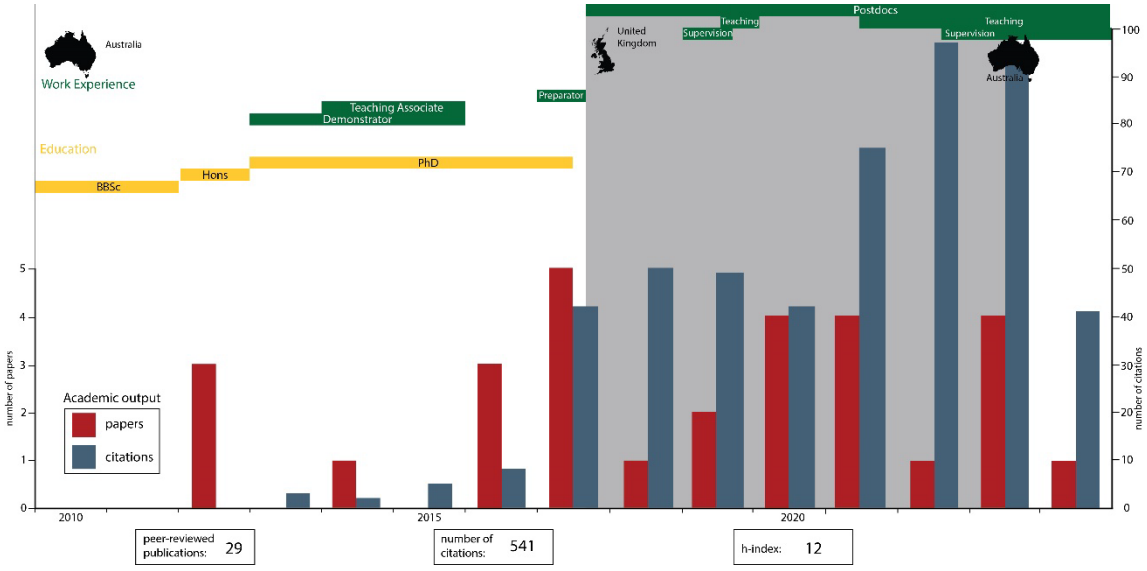
Publications
travisparkpalaeo.com/publications

I am a palaeobiologist interested in the evolutionary history of vertebrate diversity. My research spans from quantitative studies of macroevolution and 3D scanning/morphometrics to more traditional palaeontological descriptions, phylogenetics, behavioural and anatomical research.

My major research interest is secondarily aquatic tetrapods, primarily marine mammals. I aim to understand the patterns and processes driving the evolution of animals who have returned to an aquatic lifestyle, using them as an evolutionary experiment to test biological hypotheses. My current research is a project analysing macroevolutionary patterns in marine mammals.

Graphical Summary



Employment

09/2023 – current	ARC DECRA Fellow. Monash University, Melbourne, Victoria, AU. Project: Diving into deep-time: macroevolutionary patterns of aquatic tetrapods.
08/2020 – 08/2023	Researcher/Co-Investigator. Natural History Museum, London. Project: Back to the water (Leverhulme Research Project Grant). This project is quantifying and explaining macroevolutionary patterns in marine mammals.

11/2019 – 08/2020	Postdoctoral Research Assistant. University of Oxford, Oxford. Project: TEMPO (Terrestrial vertebrates and the evolutionary origins of morphological diversity) (ERC Starting Grant). This project aims to quantify rates and modes of phenotypic evolution, and their relationship with disparity across terrestrial tetrapods.
10/2017 – 10/2019	Marie Skłodowska-Curie Postdoctoral Fellow. Natural History Museum, London. Project: ECHO (Evolution of the Cochlea and Hearing in Odontocetes). This project explores how the echolocation abilities of toothed whales has changed over time using cochlear shape as a proxy. CT scans of inner ears were used to segment 3D models in Avizo, with the landmarked models being used in convergence, diversification and disparity analyses.
03/2017 – 09/2017	Laboratory technician. Museums Victoria, Melbourne

Education

02/2013 – 02/2017	PhD (Palaeontology), Monash University, Melbourne, Victoria, AU, Thesis title: The evolution of hearing in Neoceti, with an emphasis on toothed mysticetes. Supervisors: Dr. Alistair Evans and Dr. Erich Fitzgerald. Funding: Australian Postgraduate Award. My thesis examined how the dichotomous hearing abilities of the two extant groups of whales evolved by examining hearing in the earliest fossil representatives of the groups.
02/2012 – 10/2012	BSc of Biological Science Honours, Deakin University & Museum Victoria, Melbourne, Victoria, AU, Grade: 88 (H1), Thesis title: Tracing the evolution of modern penguins (Aves: Spheniscidae) using fossils from Australia
03/2009 – 02/2012	BSc of Biological Science, Deakin University, Melbourne, Victoria, AU, Grade: 86, Major: Evolutionary biology, graduated with distinction

Grants & Awards

2023 – 2026	ARC DECRA Fellowship ($397,908.00)
2017 – 2019	Marie Skłodowska-Curie Postdoctoral Fellowship. (€195,494.80)
2015	University of California Berkeley Welles Fund Travel Grant. (AU$1,000)
2014	Australian Geographic Seed Grant. (AU$3,000)
2014	Monash University Postgraduate Travel Grant. (AU$3,000)
2013	Museum Victoria 1854 Scholarship. (AU$1,500)
2013	Australian Postgraduate Award. (AU$75,000)
2012	Granted membership to the Golden Key International Honour Society, an invitation-only international honour society for the top 15% of students in the >400 member universities
2011	Exceptional Achievement Award in Vertebrate Structure and Function at Deakin University
2010	Outstanding Achievement Award in Animal Biology at Deakin University

Publications

I have 29 peer-reviewed papers in internationally recognised journals. Ten of these are as first author, two as joint first author, one as senior author and sixteen as co-author. My h-index is 12. In total, my papers have been cited 541 times.

Coombs, EJ, Knapp, A, **Park, T,** Bennion, RF, McCurry, MR, Lanzetti, A, Boessenecker, RW, McGowen, MR. 2024. Drivers of morphological evolution in the toothed whale jaw. **Current Biology.** 34, 273–285. (1 citation)

Burin, G, **Park, T,** James, TD, Slater, GJ, Cooper, N. 2023. The dynamic adaptive landscape of cetacean body size. **Current Biology**. 33, 1787–1794. (6 citations)

McCurry, MR, **Park, T,** Coombs, EJ, Hart, LJ, Laffan, S. 2023. Latitudinal gradients in the skull shape and assemblage structure of delphinoid cetaceans. **Biological Journal of the Linnean Society**, 138, 170–180. (3 citations)

Park, T, Ekdale, EG, Racicot, RA, Marx, FG. 2023. Testing for Convergent Evolution in Baleen Whale Cochleae. In **Convergent Evolution: Animal Form and Function,** 65–78. Springer International Publishing. (1 citation)

Marx, FG, Hocking, DP, **Park, T,** Pollock, TI, Parker, WM, Rule, JP, Fitzgerald, EM, Evans, AR. 2023. Suction causes novel tooth wear in marine mammals, with implications for feeding evolution in baleen whales. **Journal of Mammalian Evolution**, 1–13. (10 citations)

Coombs, EJ, Felice, RN, Clavel, J, **Park, T,** Bennion, R, Churchill, M, Geisler, J, Beatty, B, Goswami, A. 2022. The tempo of cetacean cranial evolution. **Current Biology,** 32, 2233–2247. (26 citations)

Hocking, D, **Park, T,** Rule, J, Marx, FG. 2021. Prey capture and processing in fur seals, sea lions and walruses. In Campagna, C, Harcourt, R (eds), **Ethology and Behavioral Ecology of Otariids and the Odobenid,** 101–121, Springer. (4 citations)

McCurry, MR, Marx, FG, Evans, AR, **Park, T,** Pyenson, ND, Kohno, N, Castiglione, S, Fitzgerald, EMG. 2021. Brain size evolution in whales and dolphins: new data from fossil mysticetes. **Biological Journal of the Linnean Society**, 133, 990–998. (12 citations)

Hocking, DP, Marx, FG, Wang, S, Burton, D, Thompson, **Park, T,** Burville, B, Richards, HL, Sattler, R, Robbins, J, Portela Miguez, R, Fitzgerald, EMG, Slip, D, Evans, AR. 2021. Convergent evolution of forelimb-propelled swimming in seals. **Current Biology** [Impact factor: 10.834], 31, 2404–2409. (10 citations)

Viglino, M, Gaetan, M, Buono, M, Fordyce, RE, **Park T.** 2021. Hearing from the ocean and into the river: the evolution of the inner ear of Platanistoidea (Cetacea: Odontoceti). **Paleobiology** [Impact factor: 2.892, 4/54 in Paleontology], 1–21. (8 citations)

Coombs, EJ, Clavel, J, **Park, T,** Churchill, M, Goswami, A. 2020. Wonky whales: the evolution of cranial asymmetry in cetaceans. **BMC Biology** [Impact factor: 8.18], 18, 1–24. (31 citations)

de Lavigerie GD, Bosselaers , M, Goolaerts, S, **Park, T,** Lambert, O, Marx, FG. 2020. New Pliocene right whale from Belgium informs balaenid phylogeny and function. **Journal of Systematic Palaeontology,** 18, 1141–1166. (9 citations)

Martins, MCI, Pa**rk, T,** Racicot, R, Cooper, N. 2020. Intraspecific variation in the cochleae of harbour porpoises (*Phocoena phocoena*) and its implications for comparative studies across odontocetes. **Peer J**, 8, e8916. (11 citations)

Hocking, D, Burville, B, Parker, WMG, Evans, AR, **Park, T,** Marx, FG. 2020. Percussive underwater signaling in wild grey seals. **Marine Mammal Science**, 36, 728–732. (16 citations)

Park, T, Mennecart, B, Costeur, L, Grohé, C, Cooper, N. 2019. Convergent evolution in toothed whale cochleae. **BMC Evolutionary Biology**, 19, 195. (19 citations)

Robbins, JR, **Park, T,** Coombs, EJ. 2019. Supernumerary teeth observed in a live True's beaked whale in the Bay of Biscay. **PeerJ,** 7, e7809. (3 citation)

Marx, FG, **Park, T**, Fitzgerald, EMG, Evans, AR. 2018. A Miocene pygmy right whale fossil from Australia. **PeerJ,** 6, e5205. (4 citations)

Hocking, DP, Marx, FG, **Park, T**, Fitzgerald, EMG, Evans, AR. 2017. Reply to comment by Kienle et al 2017. **Proceedings of the Royal Society B: Biological Sciences,** 284, 20171836. (16 citations)

Park, T, Fitzgerald, EMG, Evans, AR. 2017. The Tympanal Recess of the Cetacean Cochlea: Function and Evolution. **Acoustics Australia,** 1–6. (7 citations)

Park, T, Marx, FG, Fitzgerald, EMG, Evans, AR. 2017. The cochlea of the enigmatic pygmy right whale Caperea marginata informs mysticete phylogeny. **Journal of Morphology,** 278, 801–809. (13 citations)

Hocking, DP, Marx, FG, **Park, T**, Fitzgerald, EMG, Evans, AR. 2017. A behavioural framework for the evolution of feeding in predatory aquatic mammals. **Proceedings of the Royal Society B: Biological Sciences,** 284, 20162750. (115 citations)

Park, T, Evans, AR, Gallagher, SJ, Fitzgerald, EMG. 2017. Low-frequency hearing preceded the evolution of giant body size and filter feeding in baleen whales. **Proceedings of the Royal Society B: Biological Sciences** [Impact factor: 4.82, 9/96 in Biology]**,** 284: 20162528. (25 citations)

Marx, FG, Hocking, DP, **Park, T**, Ziegler T, Evans, AR and Fitzgerald, EMG. 2016. Suction feeding preceded filtering in baleen whale evolution. **Memoirs of Museum Victoria,** 75: 71–82. (66 citations)

Park, T, Fitzgerald, EMG and Evans, AR. 2016. Ultrasonic hearing in the earliest toothed whales. **Biology Letters,** 12: 20160060. (64 citations)

Park, T, Fitzgerald, EMG, Gallagher, S, Tomkins, E and Allan, T. 2016. New Miocene fossils and the history of penguins in Australia. **PLoS ONE,** 4: e0153915. (13 citations)

Park, T. 2014. Redescription of the Miocene penguin *Pseudaptenodytes macraei* Simpson (Aves: Sphenisciformes) and redefinition of the taxonomic status of ?*Pseudaptenodytes minor* Simpson. **Alcheringa,** 38: 450-454. (4 citations)

Park, T and Fitzgerald, EMG. 2012. A review of Australian fossil penguins (Aves: Sphenisciformes). **Memoirs of Museum Victoria,** 69: 309-325. (23 citations)

Fitzgerald, EMG, **Park, T** and Worthy, TH. 2012. First giant bony-toothed bird (Pelagornithidae) from Australia. **Journal of Vertebrate Paleontology,** 32: 971-974. (11 citations)

Park, T and Fitzgerald, EMG. 2012. Late Miocene - early Pliocene Mihirung bird (Aves: Dromornithidae) from Victoria, southeast Australia. **Alcheringa,** 36: 419-422. (9 citation)

Invited talks & Keynote Presentations

Park, T. 2021. Convergent evolution in toothed whale cochleae. UNESCO 'Ear and Sound' scientific workshop.

Park, T. 2021. Marie Skłodowska-Curie Fellowships. Oxford Department of Earth Sciences Fellowship Information Day.

Viglino, M, Gaetan, M, Buono, M, Fordyce, RE, **Park T.** 2021. Hearing the puzzle: The inner ear evolution of Platanistoidea (Cetacea: Odontoceti). Ninth triennial meeting on the secondary adaptations of marine tetrapods to life in water.

Park T, Mennecart, B, Costeur, L, Grohé, C and Cooper, N. 2019. Convergent evolution in toothed whale cochleae. 12th triennial Congress of the International Society of Vertebrate Morphologists.

Coombs, EJ, Churchill, M, Geisler, J, Beatty, B, **Park, T,** Goswami, A. 2019. 12th triennial Congress of the International Society of Vertebrate Morphologists.

Park, T. 2018. Listening to the waves beneath the waves: the evolution of hearing in Cetacea. Cambridge University Sedgwick Club Conference.

Park, T. 2016. On the Origin of Theses: surviving postgraduate research. Victorian Universities Earth and Environmental Sciences Conference.

Supervising experience

02/2024 – present PhD, Ruairidh Duncan, New toothed mysticetes from Victoria, Australia.
02/2024 – present Honours project, Christopher Vournazos, The palaeobiology of new river dolphin from the Late Oligocene of South Australia.
10/2022 – 03/2023 Master of Research, Clement Prieul, Basilosaurids and the origins of modern whales.
04/2022 – 08/2022 Master of Science, Melina Lenk, Drivers of the Modern Pinniped Fauna.
01/2019 – 05/2019 Master of Research, Maria Clara Iruzun Martins, Intraspecific variation in the inner ear of the harbour porpoise (*Phocoena phocoena*).

Teaching/Mentoring experience

01/2023	Lecturing, Natural History Museum, NHM Masterclass course
11/2021	Lecturing, Natural History Museum, London DTP Cohort Evolution and Adaptation course
02/2019	Lecturing, Imperial College London, Methods in Macroecology and Macroevolution
07/2016	Lecturing, Deakin University, SLE136 History of Life
07/2015 – 10/2015	Demonstrator, Deakin University, SLE136 History of Life
07/2015 – 10/2015	Teaching Associate, Monash University, ESC3232 The dynamic biosphere: Changing fauna and flora through geological time
07/2014 – 10/2014	Demonstrator, Deakin University, SLE136 History of Life
07/2014 – 10/2014	Teaching Associate, Monash University, ESC3232 The dynamic biosphere: Changing fauna and flora through geological time
02/2014 – 06/2014	Demonstrator, Monash University, BMS2011 Structure of the human body: An evolutionary and functional perspective
02/2013 – 06/2013	Demonstrator, Deakin University, SLE102 Physical Geography

Reviewed conference proceedings

Park, T, Lazo-Cancino, D, Rees, J, Rule, J, Slater, G, Cooper, N. 2023. Patterns of pinniped macroevolution. 18th Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics.

Coombs, E, **Park T,** McCurry, M, Knapp, A, Boessenecker, R, Bennion, R, Lanzetti, A, Collado, L, McGowen, M. 2023. Functional tradeoffs: Quantifying mandible shape in echolocating whales. Society for Integrative and Comparative Biology Annual Meeting.

Burin, G, **Park, T,** James, T, Slater, G, Cooper, N. 2022. Body size shows a flat adaptive landscape in fossil and living cetaceans. Evolution Meeting 2022.

Rule, JP, **Park, T,** Evans, AR, Adams, J, Richards, HL, Scofield, P, Buckeridge, J, Fitzgerald, EMG. 2021. An archaic New Zealand seal (Family Phocidae) and the evolution of multiple morphologies for underwater hearing in “earless” seals. Ninth triennial meeting on the secondary adaptations of marine tetrapods to life in water.

Hocking, DP, Marx, FG, Wang, S, Burton, D, Thompson, **Park, T,** Burville, B, Richards, HL, Sattler, R, Robbins, J, Portela Miguez, R, Fitzgerald, EMG, Slip, D, Evans, AR. 2021. Convergent evolution of forelimb-propelled swimming in seals. Ninth triennial meeting on the secondary adaptations of marine tetrapods to life in water.

Coombs, EJ, Clavel, J, Felice, R, Bennion, R, Beatty, B, Goswami, A, **Park, T,** Churchill, M, Geisler, J. 2021. Influences on cranial morphology in whales: Investigating the evolutionary history and diversity of the cetacean skull. Society of Integrative and Comparative Biology Annual Meeting.

Park, T, Guillerme, T, Cooper, N. 2019. Examining the Evolution Of Echolocation in Odontocetes (Mammalia: Cetacea) via Morphological Disparity of the Cochlea. 79th Annual Meeting of the Society of Vertebrate Palaeontology.

Park T, Mennecart, B, Costeur, L, Grohé, C and Cooper, N. 2018. Convergent evolution in toothed whale cochleae. Palaeontological Association Annual Meeting.

Cooper, N, **Park T**. 2018. Convergent evolution in the odontocete inner ear. XII Reunion Annual Sociedad Chilena de Evolución.

Park, T, Cooper, N. 2018. The beginnings of echolocation in odontocetes. Crossing the Palaeontological – Ecological Gap.

Park, T, Cooper N. 2018. Inner ear evolution in odontocetes. 5th International Palaeontological Congress.

Park, T, Evans, AR, Fitzgerald, EMG. 2017. Get low: The evolution of the baleen whale auditory pathway. Palaeontological Association Annual Meeting.

Marx, FG, Hocking, DP, **Park, T**, McCurry, MR, Ziegler, T, Evans, AR, Fitzgerald, EMG. 2017. Sucking up to the big boys: insights from a 'missing link' in the evolution of baleen whale feeding. 16th Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics.

Fitzgerald, EMG, Francischelli, BSJ, Gallagher, SJ, Marx, FG, McCaffrey, JC, McCurry, MR, **Park, T**, Ziegler, T. 2017. Marine tetrapods of the Oligocene–Miocene Torquay Group, Victoria, Australia. 16th Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics.

Hocking, DP, Marx, FG, **Park, T**, Fitzgerald, EMG, Evans, AR. 2017. A behavioural framework for feeding evolution. Eighth triennial meeting on the secondary adaptations of marine tetrapods to life in water.

Park, T, Evans, AR, Fitzgerald, EMG and McHenry, CR. 2014. Toothed mysticete cochlear morphology provides evidence for a gradual specialisation toward low frequency hearing with inability to echolocate. 74th Annual Meeting of the Society of Vertebrate Palaeontology.

Park, T, Evans, AR, Fitzgerald, EMG and McHenry, CR. 2014. Auditory biology of the earliest baleen whales inferred from cochlear morphology of fossil toothed mysticetes (Cetacea). 60th Annual Scientific Meeting of the Australian Mammal Society.

Park, T, Fitzgerald, EMG, Gallagher, SJ, Tomkins, E and Allan T. 2013. Complex Evolution of Australian Penguins Driven by Southern Ocean Restructuring. 14th Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics.

Book reviews

Park, T. 2018. How mammals conquered the oceans. Review of the ‘The rise of marine mammals: 50 million years of evolution. Journal of Mammalian Evolution.

Posters

Laurens, F, **Park, T,** Gilbert, Charlène and Mennecart, B. 2019. Nouvelles données sur les dauphins et les cachalots (Odontoceti, Cetacea, Mammalia) du Miocène Moyen du Centre de la France. Congrès Association Paléontologique Française.

Coombs, EJ, Churchill, M, **Park, T,** Geisler, J, Beatty, BL and Goswami, A. 2018. Ecological influences on cranial morphology in odontocete whales. 78th Annual Meeting of the Society of Vertebrate Palaeontology.

Park, T and Arman, S. 2013. The legacy of RA Stirton via academic ancestry.

Popular writing

07/2021	Museum Staff Profile. Beer N Bones magazine.
04/2018	Palaeo Penguins. Australian Age of Dinosaurs Journal, issue 15
03/2017	When mammals took to the water they needed a few tricks to eat
11/2016	their underwater prey. The Conversation
	How 'Alfred' the whale lost its teeth to become a giant filter feeder. The Conversation

Science communication & outreach

In addition to the most recent five years of outreach below, I have been involved in numerous national and international media articles, television and radio interviews that have covered my published research.

01/2013 – current	Active Twitter user (@Blogozoic) (>1,900 followers and >5,000 tweets)
10/22	Nice Genes! Podcast interview on whale hearing
07/2021	NHM Nature Live Online: What's so special about the Ganges river dolphin?
05/2019	NHM Lates: Ancestors (talking with public about whale ancestors)
05/2019	Generate: Scientists of the future program (NHM and Orsted)
04/2019	BBC Breakfast Show interview
04/2018	Palaeo Penguins. Australian Age of Dinosaurs Journal, issue 15
02/2018	Wonderful Whales. Natural History Museum Oceans Family Festival
10/2017	Wonderful Whales. Natural History Museum Oceans Family Festival
07/2017	Masters of the Ocean: How the whale became a giant of the sea. Natural History Museum Nature Live hosted talk series
11/2013 – 12/2016	Scilogs Science Blog Network Blog: (www.scilogs.com/blogozoic/) [57 posts]. Previously hosted at www.blogozoic.wordpress.com
09/2015	Tyrannosaurs Exhibition Family Science Night
07/2015	Living Dinosaurs: How we know the surprising ancestry of birds. Museum Victoria Scienceworks Palaeontology Seminar Series
01/2015	We are dinosaurs: Birds are living dinosaurs. Banyule City Council
05/2014	Science on Show, outreach event at Museum Victoria

Relevant Skills

- Experienced in the use of R to perform a range of phylogenetic comparative methods.
- Expertise in the use of Avizo (>10 years) to segment and visualise 3D models of skeletal elements.

- Experienced in phylogenetic analysis, using primarily parsimony-based techniques, also have working knowledge of Bayesian phylogenetics.
- Expertise in cetacean and general mammalian osteology and marine mammal dissection, e.g. *Berardius arnuxii*, *Caperea marginata*, *Phocoena dioptrica, Tasmacetus shepherdi, Halichoerus grypus*.
- Extensive experience in vertebrate and invertebrate fossil preparation methods, including working with pneumatic tools and acid preparation.

Additional training

- Bayesian phylogenetics workshop (SVPCA 2018)
- Analysing macroevolutionary processes using RevBayes course (Bristol University)
- Avizo users workshop (NHM)
- Grant writing workshop (NHM)
- Diversity and inclusion training (NHM)

Grant reviewing

ARC Discovery Project (DP230101438)
ARC DECRA Fellowship (DE240100501)

Editorial Experience

01/2024 – present Associate Editor, Journal of Vertebrate Paleontology

Journal Reviewing

Acta Palaeontologica Polonica, Alcheringa, Behaviour, Biological Journal of the Linnean Society, Biology Letters, Current Biology, Frontiers in Marine Science, Journal of Anatomy, Journal of Mammalian Evolution, Journal of Vertebrate Paleontology, Journal of Zoology, Marine Mammal Science, Memoirs of Museum Victoria, Nature Communications, New Zealand Journal of Geology and Geophysics, New Zealand Journal of Zoology, New Zealand Inventory of Marine Biodiversity, Palaeontologia Electronica, Papers in Palaeontology, PeerJ, Proceedings of the Royal Society B, Science Advances, Scientific Reports, Smithsonian Contributions to Paleobiology, Systematic Palaeontology, Transactions of the Royal Society of South Australia. (27 total)

Collections Visited for Research Purposes

Australia (4), Belgium (1), France (1). Germany (1), Switzerland (1), New Zealand (3), United Kingdom (2), United States (8)

Field Experience

Australia, New Zealand, United Kingdom, United States

Scientific Committees

SECAD 2024, Liege, Belgium

Professional Committees

NHM Athena Swan Committee (2017–2018)

Society Memberships

The Palaeontological Association
Society of Marine Mammalogy
Society of Vertebrate Paleontology