

Patrick Morrison (he/him) is a maritime archaeologist working at the WA Museum. He is working towards a PhD at the University of Western Australia, researching how people responded to 10,000 years of climate change in the northwest of Australia. He is an expert in recording underwater archaeological sites and reconstructing ancient underwater/coastal landscapes. He coordinates the Maritime and Historical Archaeology unit at the University of Western Australia.

In 2019 he was on the team that reported the first submerged Aboriginal archaeological site in Australia. In 2020 and 2021 he worked as a Maritime Archaeologist at the Western Australian Museum, where he recorded the oldest wreck site in Australia (Trial 1622) using 3D photogrammetry. In 2021, he commenced his PhD project, researching the Holocene climate and culture in Murujuga, northwest Australia. In 2023/2024, he discovered several historic wrecks in the Swan River, including the earliest recorded.

EDUCATION

PhD Student — University of Western Australia — 2021 - present

- Thesis by publication: Voyaging in Murujuga: A Study of Holocene Maritime Culture and Climate
- Due for completion in mid-2024
- Investigating the role of climatic, environmental and sea level change on island occupation
- Associated with the ARC Dating Murujuga's Rock Art Project, and the Centre for Rock Art Research + Management.
- Best Student Poster - Australian Archaeology Conference 2022.

Graduate Diploma in Biostatistics (suspended during PhD) — University of Queensland — 2021 - ?

Graduate Certificate in Biostatistics — University of Queensland — 2020

Bachelor of Arts (First Class Honours) — University of Western Australia — Archaeology — 2019.

- Thesis title: *The Geoarchaeology of a Submerged Aboriginal Site in the Intertidal Zone of Dolphin Island, Murujuga.*
- Systematically recorded stone artefacts in the intertidal and on nearby land, contextualised with sediment coring, pXRF, drone photogrammetry and airborne LIDAR.
- Fieldwork in Murujuga during 2019, totalling over a month.

Bachelor of Science — University of Western Australia — Neuroscience and Archaeology. Graduated 2018.

- Class Prize in ARCY1002 Discoveries in Archaeology & ARCY3002 Archaeological Field Skills

EXPERIENCE

Assistant Curator — Maritime Archaeology Department, Western Australian Museum — 2020-2021, 2024-present

- Identification of the earliest shipwreck site in the Swan River.
- Assisting with the preparation of new exhibitions for the WA Museum Boola Bardip, including 3D models of objects, digital labels and graphics.
- Shipwreck inspections, specialising in 3D site recording and including fieldwork for Shipwreck Hunters Australia on Disney+
- Grant writing, with a successful application for \$55,000 of funding in 2021.
- Writing custom software to assist fieldwork and data management.
- Collections and records management, using a Filemaker database and Content Manager.
- Co-organiser of the Principles for Managing Aboriginal Underwater Cultural Heritage workshop.
- Research into pXRF and statistical methods for provenancing glass from historic shipwreck sites.

Archaeological Consulting (Freelance, max 1 day a week during PhD) — 2021-present

- Photogrammetry training and consulting for Terra Australis/VAM Media. 2023-2024.
- Heritage consultant for Wrecksploration, recording deepwater shipwrecks 2022-2024.
- Submerged landscapes heritage consulting for Snappy Gum Heritage 2023-2024.

- Photogrammetry and GIS consulting for Advanced Navigation 2023.
- Photogrammetric recording of the *Zeewijk* shipwreck site - WA Museum 2022.
- Research, writing and map making and for a travel guide to the National Heritage Listed Batavia shipwreck site and survivor camps for WA Museum 2021-2022.
- Photogrammetry training and data processing for archaeological fieldwork for Snappy Gum Heritage 2021.
- Photogrammetric recording of artefacts at the WA Museum for Australia Catholic University 2021.
- Essay writing for art exhibition on the *Zeewijk* shipwreck site for Todd Fuller '1727: Adriaan for Pieter' - M Contemporary

Research Assistant - University of Western Australia — 2021-2024

- GIS support and training for various research projects

Research Assistant — Centre for Rock Art Research and Management - University of Western Australia — 2019

- 3D visualisation of Murujuga rock art, auditing artefact entry into a database.
- Contributing to research papers on the archaeology and heritage management of Murujuga (Benjamin et al. 2020, McDonald et al. 2020).
- Managing an Endnote reference library.
- Producing videos for outreach.

Summer Intern — Pawsey Supercomputing Centre — Dec 2018 - Feb 2019

- Project title: 'Visualising Aboriginal Cultural Features on Rosemary Island, Dampier Archipelago'.
- High Performance Computing to visualise drone imagery, airborne LiDAR data and ground-level photographs.
- Contributed to the ARC Murujuga: Dynamics of the Dreaming, and Deep History of Sea Country projects.
- Finalist for the 2019 Council for the Humanities, Arts and Social Sciences Australia Prize for a Student.

Research Assistant — School of Biological Sciences - University of Western Australia — 2019

- Neuroscience lab assistant throughout the year, monitoring animals.

TEACHING

Guest Lecturer at the Flinders University — 2024

- 2024: The Archaeology of Submerged Cultural Landscapes Short Course.

Unit Coordinator and Tutor at the University of Western Australia — 2022, 2023, 2024 - present

- 2022, 2023, 2024 - ARCY3012 - Historical and Maritime Archaeology.
 - Co-coordinated with Alistair Paterson.
 - Delivery of lectures and tutorials, and the development of new course material.
 - I redeveloped the course to include more field skills, supported by GIS skills. We received excellent student feedback in the formal surveys.

Guest Lecturer at the University of Western Australia — 2018 - present

- 2024: Panel member for STAT4065: Multilevel and Mixed-Effects Modelling
- 2023: Guest Lecturer in GEOG1106 - Climate Change: Environment and Society
- 2021, 2022, 2023, 2024: Guest Lecturer for ARCY1001 - Think Like an Archaeologist.
- 2019, 2020, 2021: Guest Lecturer for ARCY3012 - Historical and Maritime Archaeology.
- 2018, 2019: Guest Lecturer for ARCY3013 - Experimenting with Archaeology.
- 2018, 2019: Guest Tutor for ANIM5501 - Evolution and Development.

VOLUNTEERING AND FIELD SCHOOLS

President — Maritime Archaeological Association of Western Australia — 2022 - 2024

- Following position as Secretary from 2018 to 2021
- Ex-officio member of the the WA Museum's Maritime Archaeology Advisory Committee.
- Discovery of two historic wrecks in the Swan River, including the earliest recorded
- Coordinated field work recording terrestrial and shipwreck sites around Rottnest Island.
- Developed training programs, and run courses on the use of 3D photogrammetric reconstruction for recording underwater cultural heritage / GIRT Scientific Diver training.
- Managing membership, enquires, website and assisting with social media.

- Heritage Advisor to Wrecksploration on the photogrammetry of shipwrecks in the Rottneest Deepwater Graveyard

Lead Developer — Vis.Report — 2020 - present

- Created an interactive database for scuba divers to share site conditions: <https://vis.report/guide>
- 14.4k views and 4.7k visitors in the last year. Now a total of over 900 reports.
- Now using statistical techniques to understand the controls on underwater visibility.
- Data used with permission for the University of South Australia's Masters in Data Science 2024 Capstone Project.

Volunteer — Western Australian Museum — 2016 - 2019

- Volunteer diving and deckhand for a PhD students fieldwork on the *James Matthews* wreck.
- Assisting on the boat undertaking remote sensing of shipwreck sites in the Perth Metro region.
- Underwater 3D photogrammetry for a shipwreck inspection in Albany.
- Structured light scanning of significant artefacts for exhibition.

Murujuga Rock Art and Artefact Recording — 2017, 2019

- 2019: Volunteer recording of rock art sites and stone artefacts scatters in preparation for a boardwalk development.
- 2017: Recorded rock art for two weeks on a UWA field school, with Rio Tinto and the Murujuga Aboriginal Corporation.

Western Australian Debate League — Technical Vice President — 2017-2018, Adjudicator/Committee Member 2016-2018

- Managed a team of ~40 volunteers for a competition of more than 2000 high school students.
- Setting topics, writing resources and managing feedback from parents and teachers.
- Adjudicated debates, and gave workshops to hundreds of students.
- Week-long residency in Alice Springs teaching debating, public speaking and critical thinking.
- Demonstrates my passion for critical thinking and communication, and my well-developed project management skills.

UWA 3rd Year Archaeology York Field School — April 2018

- Excavated and surveyed the Convict Depot, and recording the York Cemetery.

Vietnam Maritime Archaeology Project (VMAP) Field School — January 2018

- Led a team of students in sidescan sonar recording, and taught a workshop on 3D photogrammetry.
- Field school participant

SKILLS

- Expert in 3D photogrammetry and visualisation (Agisoft Metashape, Blender)
- Very proficient in statistics and the R statistical language
- Proficient in the Python programming language
- Proficient in GPS survey and Geographic Information Systems (principally QGIS, R, PostgreSQL spatial databases, Leaflet.js)
- Experienced with the use of databases for cultural heritage
- Report writing and reference management
- Excellent public speaking skills
- Excellent photography skills, including artefact photography, underwater photography and drone photography.
- Experienced in leading teams
- Proficient with the Microsoft Office Suite (Word, Powerpoint, Excel)

CERTIFICATIONS AND LICENCES

- ADAS Part 1 / Certificate IV in Hyperbaric Operations (Occupational SCUBA Diving to 30m)
- Remote Pilot Licence (RePL) Multirotor up to 7kgs.
- Current Senior First Aid, CPR and Oxygen Provider Qualifications (HLTAID001, HLTAID002, HLTAID003, HLTAID006).
- Class C Drivers License
- PADI Rescue Diver

PUBLICATIONS

- He, S., M. Hughes, Z. Gilani, P. Morrison, and J. McDonald. 2024. Pilbara Fat-Tailed Kangaroos: Using Multivariate and Morphometric Analyses to explore Spatial and Stylistic Variability. Research Square Preprint (Version 1), 22 May 2024. <https://doi.org/10.21203/rs.3.rs-4422125/v1>.
- Morrison, P., M. O'Leary, and J. McDonald 2023 The evolution of Australian island geographies and the emergence and persistence of Indigenous maritime cultures. *Quaternary Science Reviews* 308:108071.
- Leach, J., C. Wiseman, M. O'Leary, J. McDonald, J. McCarthy, P. Morrison, P. Jeffries, J. Hacker, S. Ulm, G. Bailey, and J. Benjamin 2021 The integrated cultural landscape of North Gidley Island: Coastal, intertidal and nearshore archaeology in Murujuga (Dampier Archipelago), Western Australia. *Australian Archaeology* 1–17.
- McDonald, J., K. Mulvaney, E. Beckett, J. Fairweather, P. Morrison, S. de Koning, J. Dortch, and P. Jeffries 2021 Seeing and managing rock art at Nganjarli: A tourist destination in Murujuga National Park, Western Australia. *Australian Archaeology* 1–26.
- McDonald, J., Beckett, E., Hacker, J., Morrison, P., O'Leary, M. 2020 Seeing the Landscape: Multiple Scales of Visualising Terrestrial Heritage on Rosemary Island (Dampier Archipelago) *Open Quaternary* 6(1) <https://dx.doi.org/10.5334/oq.81>
- Benjamin, J., O'Leary, M., McDonald, J., Wiseman, C., McCarthy, J., Beckett, E., Morrison, P., Stankiewicz, F., Leach, J., Hacker, J., Baggaley, P., Jerbić, K., Fowler, M., Fairweather, J., Jeffries, P., Ulm, S., Bailey, G. 2020 Aboriginal artefacts on the continental shelf reveal ancient drowned cultural landscapes in northwest Australia *PLOS ONE* 15(7), e0233912. <https://dx.doi.org/10.1371/journal.pone.0233912>

REPORTS

- Anderson, R., P. Morrison, D. Jackson, and A. Philpin. 2024. Site Inspection Report: Dyoondalup/ Point Walter Stone Barge, Dearden's flat (1882), Derbal Yerrigan/ Swan River. Report No. 340 — Western Australian Museum, Department of Maritime Heritage. February 2024.
- Anderson, R., Duivenvoorde, W. van, Morrison, P., Shefi, D., Paterson, A., Manders, M., 2023. Report on 'Mapping the Old with the New: Re-Imaging The 1727 Zeewijk Shipwreck Site with New Recording Technology Project'. Grant GCE-2019-03.
- Morrison, P., Shefi, D., 2020. Elvie (1900-1921) and other sites Whaler's Beach, Albany. Wreck Inspection Report – 13th to 14th of August 2020.

PUBLIC WRITING

- Weekly writing over summer on snorkelling and diving in Perth. 2022-onwards. 2.6k views and 1.6k visitors in the last 6 months: <https://writing.padmorrison.com/>
- Academic blog, mainly on statistics in R and GIS. 2020 onwards 1.6k views and 900 visitors in the last year: <https://padmorrison.com/posts>
- Morrison, P., 2021. Must we believe the words that killed them?, in: 1727: Pieter 4 Adriaan Exhibition Catalogue. .M Contemporary Gallery, Sydney.

CONFERENCE PRESENTATIONS

- Morrison, P., 2024 Seasonal Shellfish Harvesting in Late Holocene Murujuga: high-resolution palaeoenvironmental reconstruction from stable isotope analyses of *Tegillarca Granosa*. Royal Society of Western Australia Conference. Perth.
- Morrison, P., McDonald J., O'Leary, M. 2024 Open-source software to estimate the submerged landscapes of Western Australia (Poster). Royal Society of Western Australia Conference. Perth.
- Morrison, P., McDonald J., O'Leary, M. 2023 The persistence and emergence of maritime culture: from the evolution of Australian island geographies to the islandisation of Murujuga. Australasian Institute of Maritime Archaeology Conference. Canberra.
- Morrison, P., Green J., McCann, I. 2023 Searching for shipwrecks in the Swan and Canning rivers using open multi-beam sonar data (Poster). Australasian Institute of Maritime Archaeology Conference. Note: Joint winner of best poster.
- Morrison, P., McDonald J., O'Leary, M. 2022 (Poster) Voyaging in Murujuga Chapter 1: Were there geographical influences on the persistence and emergence of Australian Aboriginal maritime cultures? (Poster). AAA Conference. Darwin. note: Winner of Best Student Poster AAA 2022

- Morrison, P., McDonald J., O'Leary, M. 2019 Exploring the Archaeological Implications of Submerged Indigenous Heritage in Flying Foam Passage, the Dampier Archipelago. AAA Conference. Surfers Paradise.
- Teschendorff, M., Edwards, K., Morrison, P., and McCann, I. 2019 The Litter(al) Shore: rivers, wrecks and wastescapes in Perth, Western Australia. AIMA Conference. Brisbane.
- Morrison, P., Edwards, K., Bigourdan, N., Cecchi, J., Familton, R., Jackson, D., Reid, S., Sargeant, N., & Stamos, K 2017 SCRIMSHAW project: A case study of Cultural heritage, Community engagement and Holistic recording on the Swan and Canning Rivers (Perth, Western Australia). AIMA Conference Adelaide

MEDIA

Television and Film:

- MAMMUNG (2023). Documentary on Aboriginal memories of sea level rise, following Noongar Elder Dr Noel Nannup. My role was to provide scientific advice, visualisation, and underwater footage.
- Shipwreck Hunters Australia (2022) on Disney+. Episode 4: Australia's Oldest Shipwreck. My role was to record the *Trial (1622)* shipwreck, and discuss the process of photogrammetry for site recording.

Podcasts:

- Morrison, P., Matsumoto, R. B., Renones, F., 2023 Delving into Australia's Depths: Archaeology and Technology Combined with Patrick Morrison. Sky Perth. Podcast. Available: <https://youtu.be/gottd9Vzyes>
- Morrison, P., Huckstep, K., Huckstep, M., 2020 Submerged Landscapes (ft. Patrick Morrison). Curiosity Killed the Rat. Podcast. Available: <https://podcasts.apple.com/au/podcast/submerged-landscapes-ft-patrick-morrison/id1494102544?i=1000491767390>

News:

- ABC News (2024). Earliest known shipwreck uncovered in Perth's Swan River identified. <https://www.abc.net.au/news/2024-08-21/perth-swan-river-shipwreck-identified/104250540>
- ABC News (2023). 3D maps of Swan River lead maritime archaeologists to unexplored wreck in Perth. <https://www.abc.net.au/news/2023-09-02/shipwreck-found-perth-swan-river-maritime-archaeologists/102798982>

RECENT TALKS

- Morrison, P., 2024 Finding the earliest wreck in the Swan River with open multibeam data. AusSeabed Showcase 2024, Australia.
- Morrison, P., 2024 Finding shipwrecks in the 21st century – using open data and 3D photogrammetry. Institute of Marine Engineering, Science and Technology, Australia.
- Morrison, P., 2024 Maritime Archaeology in Western Australia. Western Australian Underwater Photographic Society, Perth.
- Morrison, P., 2024 The past, present and future of maritime archaeology. City of Perth Library Careers in Heritage, Perth.
- Morrison, P., 2024 What's going on in shipwreck archaeology?. Archaeological Society of Western Australia. University of Western Australia, Perth.
- Morrison, P., McDonald J., O'Leary, M. 2023 Voyaging in Murujuga: A Study of Holocene Maritime Culture and Climate. Science at Murujuga Symposium. University of Western Australia, Perth.
- Mather, C., Morrison, P., 2023 Dating Murujuga's Rock Art: Reconstructing climate and landscapes through time to understand human occupation and rock art production. School of Geography, Earth and Atmospheric Sciences Seminar Series. University of Melbourne, Melbourne.
- Mather, C., Morrison, P., 2022 Dating Murujuga's Rock Art: Reconstructing climate and landscapes through time to understand human occupation and rock art production. SAGE Seminar Series. University of Western Australia, Perth.
- Morrison, P., 2022 3D Recording of Rottneest Island Shipwrecks. Rottneest Voluntary Guides Association. Dalkeith.
- Morrison, P., 2022 Voyaging in Murujuga: A Study of Holocene Maritime Climate and Culture. UWA Archaeology. University of Western Australia, Perth.
- Morrison, P., 2021 WA Museum Albany Shipwreck Inspections. Maritime Archaeological Association of Western Australia. Fremantle.
- Morrison, P., 2021 Submerged Landscapes in Murujuga. Western Australian Museum Boola Bardip. Perth.
- Morrison, P., 2021 Recording Objects in 3D. Western Australian Museum Boola Bardip. Perth.

- Anderson, R., Morrison, P., 2020 Principles for Managing Aboriginal Underwater Cultural Heritage. Principles for Managing Aboriginal Underwater Cultural Heritage Forum. Fremantle.
- Morrison, P., 2020 Maritime Archaeology in Western Australia: Shipwrecks to Submerged Landscapes. St Mary's Anglican Girl's School Scientist in Residence: Careers in Marine Science Presentations. Fremantle.