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Murujuga: Dynamics of the Dreaming

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Introduction to the Project

The Dampier Archipelago on the Pilbara coast of Western Australia, known as Murujuga to its Aboriginal custodians, is a land- and seascape with some of the world's most abundant and diverse petroglyphs (engraved rock art). In addition to Murujuga's extraordinarily high densities of rock art and stone structures, the islands have myriad other archaeological evidence for Aboriginal occupation, comprising stone artefact scatters, grinding patches and grindstones, quarries and shell middens. It is recognised as one of Australia's most culturally and scientifically significant rock art regions and is a cultural landscape of great importance to the Ngarda-Ngarli people, who are represented by Murujuga Aboriginal Corporation (MAC). It has been included on Australia's National Heritage List (NHL) since 2007 and on UNESCO's World Heritage Tentative List since February 2020, and the Murujuga Cultural Landscape nomination was lodged in Paris in early 2023.

Formed through a state-based Burrup and Maitland Industrial Estates Agreement (BMIEA), MAC represents the Yaburara, the Mardudunhera, the Ngarluma, the Yinjibarndi and the Wong-goo-tt-oo Native Title claimant groups who lodged, in the late 1990s, overlapping Native Title claims for the Dampier Archipelago (MAC 2023). The BMIEA was agreed prior to the individual Native Title determinations and extinguished Native Title across the Dampier Archipelago. As one of the BMIEA conditions, Murujuga National Park (Murujuga NP) was declared in January 2013 – Western Australia's 100th national park. It was the first in the state to be co-managed by the Aboriginal community with the WA Department of Biodiversity, Conservation and Attractions. There are also lands zoned for industrial uses in the National Heritage Listed Place (Figure 1.1), although over the last five years a number of these have been returned to MAC for inclusion in Murujuga NP.

Murujuga: Dynamics of the Dreaming ARC Linkage Project (MLP) was the first collaboration between this Aboriginal community, the academy and industry to research the deep time and contemporary social values of this National Heritage Listed Place. After 40 years of passive inactivity by the state government on the cultural and scientific values of this place (Vinnicombe 2002), this project provided the opportunity to undertake groundbreaking research into this rock art province's contemporary Aboriginal and scientific values. It explicitly addressed two areas identified by the Australian Heritage Council (Lawrence 2012) as being poorly understood for assessing the Outstanding Universal Values of this place.

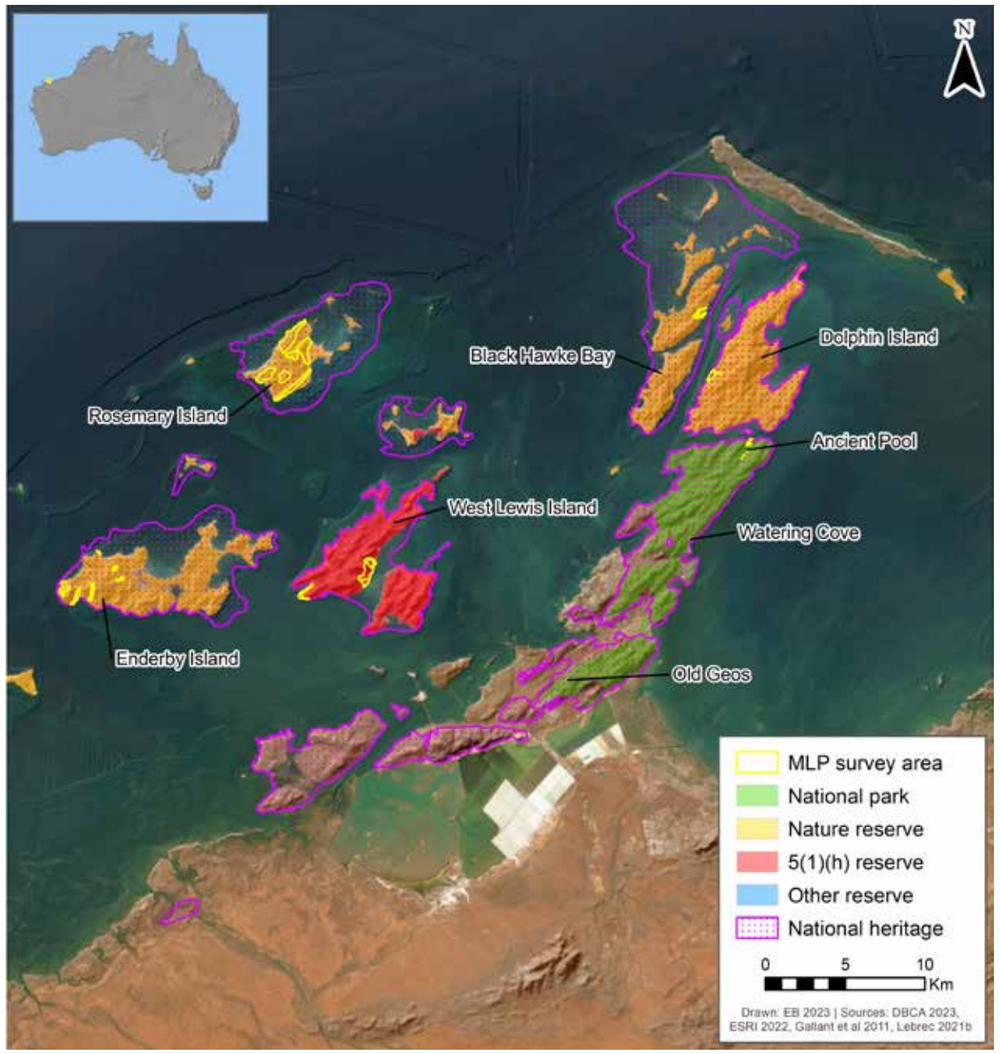

Figure 1.1. Murujuga (the Dampier Archipelago) showing the National Heritage Listed boundary and the land tenure across this.

The project's two overriding aims were to:

1. better understand the diversity, abundance and context of Murujuga rock art produced through time;
2. explore contemporary social connections to this place through a better understanding of first contact with historical seafarers, pearlers, whalers and colonial settlers.

These temporal frames were purposely targeted to increase our understanding of the human use of Murujuga from its first peopling through to Indigenous co-management of this rock art estate. At the start of the project, initial occupation was assumed to be more than 30,000 years ago (Mulvaney 2010, 2015). We were interested in evidence for continued use of this inland range during the last Ice Age (Last Glacial Maximum (LGM), between 30,000-18,000 years ago; Williams et al. 2013), through the ameliorating Late Pleistocene / Early Holocene Transition and on after the sea created the archipelago.

We envisaged that an important part of understanding contemporary values would involve a re-theorising of the contact era by exploring the contact histories of the archipelago:

- revisiting historical accounts from 1688 (William Dampier) through to colonial-era archives;
- exploring archaeological evidence of Aboriginal reactions to and participation in whaling, pastoral and pearling activities (Mulvaney 2018);
- collecting narratives from traditional custodians about memories of the early contact phase.

Collaboration with Murujuga custodians and the MAC's Land and Sea Unit Rangers was seen as an opportunity to bring contemporary social values and traditional knowledge to the project, and to develop a collaborative two-way approach to the project. We aimed to use archaeological, historical and anthropological methods, working with contemporary communities to provide new knowledge of these intercultural histories and to situate social values of place in a heritage framework. We hoped to mobilise materials collected for the various Native Title determinations for the coastal Pilbara to repatriate this information into our interpretive frameworks as well as providing this information to the Rangers managing this vast cultural estate. Accessing Native Title documentation after the determination processes continues to be difficult for many Aboriginal communities (Lourie et al. 2019) and we sought, for instance, the combined Ngarluma-Yinjibarndi anthropological report (Robinson 1999) to augment Veth's (1999) archaeological statement. While this component of the project was not fully realised, it did achieve many of its goals to better highlight the evidence for the contact period in this part of north Western Australia (see chapters 9, 11, 13 and 18).

To locate the extended, deep time archaeological evidence, the project targeted geomorphic landscapes considered to have high potential to retain Pleistocene evidence. We focused on thick sand bodies in the hope of encountering Pleistocene dunes buried beneath Holocene sands. We also excavated the only large rockshelter known across the archipelago (McDonald et al. 2018b), this in an interior valley on the southern Burrup. Geomorphically suitable landscapes associated with the earliest rock art assemblages (Mulvaney 2015) were also targeted and given preference over landscapes where there was predominantly more recent art. The outer islands of Enderby and Rosemary Island were considered the most likely places for early sites to remain, without an overprinting of the more recent Holocene evidence, a situation that proliferates on the Burrup and intermediate islands (Bradshaw 1995; Vinnicombe 1987a, 2002). And, indeed, our early predictive modelling suggested that the rock art and occupation on the outer islands would be comparatively older than found on the Burrup and other inner islands (McDonald 2009a, 2015; McDonald and Veth 2006, 2009; Veth et al. 2020).

When the project application was lodged at the end of 2013, Australia was understood to have been initially populated more than 50,000 years ago (Balme et al. 2009), and that occupation of the Dampier Archipelago was thought likely to be of a similar antiquity to the broader Pilbara and Carnarvon bioregions (Mulvaney 2015). At that time, there were 15 Pilbara rockshelter sites with evidence of occupation between 20,000 and 37,000 cal. BP (e.g. Morse et al. 2014; Slack et al. 2009), the oldest published site being Djadjiling on the Hamersley Plateau (Law et al. 2010), with tantalising occupation from c. 40,000 cal. BP. In the Montebello Islands (c. 125 km west of the archipelago), Noala Cave revealed occupation dating to 40,000 cal. BP (Manne and Veth 2015; Veth et al. 2007), while two sites in the Cape Range dated from 40,000 cal. BP (Morse 1993b; Przywolnik 2005). Mulvaney's extensive analysis of the archipelago's rock art (2010, 2015) developed a temporal sequence for the extreme stylistic diversity recorded here and proposed that art was produced here as soon as humans occupied this landscape. This stylistic chronology charts a dynamically changing landscape from the terminal Pleistocene (and see McDonald 2015; McDonald and Veth 2009, 2013).

When our project finally started in 2015, the earliest chronometric determination for the archipelago was the *Syrinx* shell, dated to 22,000 BP, this found jammed amongst the engraved blocks at Skew Valley (Lorblanchet 1992, 2018). Elizabeth Bradshaw had received dates of 7,000 BP at Wadjuru Pool on Rosemary Island (Bradshaw 1995). Our logic for trying open deeper geomorphic landscapes was that we considered the general lack of Pleistocene evidence across the archipelago was likely due to the absence of deep limestone caves (like Boodie Cave on Barrow Island; see Veth et al. 2017), but also because most previous archaeological excavations had targeted shell midden sites that post-date Holocene sea-level rise (Vinnicombe 1987a, 2002). Soon after our fieldwork was under way, the Barrow Island Archaeology Project (Veth et al. 2017) uncovered a 50,000-year-old sequence 100 km west of Murujuga; in addition, the Madjedbebe dates in the Northern Territory pushed back our understanding of the initial settlement of Australia to at least 65,000 years ago (Clarkson et al. 2017). There were then a number of occupation sites in the Pilbara biogeographic region dated to between 40,000 and 50,000 years ago (Dortch et al. 2019b). Thus our modelling for the earliest occupation and rock art production across Murujuga was, by implication, also pushed further back in time. In the absence of known limestone rockshelters in this archipelago, our chances of finding well-preserved occupation evidence were still thought to be slim.

One of the major questions to be answered by the project was: How had people living – and creating art – in this landscape adapted to changing conditions and extreme environmental shift?

Before the LGM some 30,000 years ago, the archipelago would have been low rocky ranges within a vast coastal (limestone) plain. When sea levels were at their lowest (20,000 years ago) this would have been an arid landscape devoid of marine resources sitting about 160 km from the sea. Depositional hiatuses during the LGM have been identified in many rockshelter sites throughout the arid zone and this has been interpreted as representing abandonment of these regions or major shifts in residential mobility (see Hiscock and Wallis 2005; Smith 2013; Veth 1993). The Pilbara has long been described as an LGM refuge where groups persisted (see Veth 1993), and smaller areas within the Pilbara (Smith's 2013 'cryptic refugia') such as Murujuga being likely candidates for specific human focus during periods of extreme aridity. Certainly the presence of style markers at Murujuga which demonstrate connection into the Pilbara and further east, into the sandy deserts (McDonald and Veth 2013; Mulvaney 2013, 2015), have long suggested that Murujuga was such a refuge. By identifying and investigating potential Pleistocene deposits we hoped to be able to explore the changing role of rock art as a social signalling system within economies and settlement patterns as Murujuga was transformed from an inland range system to an isthmus in the subtropical waters of the Indian Ocean.

Tom Whitley's visualisation of sea-level change throughout the period of eustatic sea-level rise was created using geographical information systems (GIS) and digitised marine charts data and sea-level curves (Chapter 19). After 15,000 BP there was a rapid rise in sea level and by about 9,000 years ago the coastline was close to Murujuga's outer islands. The stylistic chronology models that the oldest marine motifs on Murujuga probably date to this period (McDonald 2015; McDonald and Veth 2006, 2009; Mulvaney 2010, 2015). After 7,000 years ago, sea levels stabilised, and the archipelago took its present form. At this time mangrove forests were more widespread than today (Morse 2009). By 4,000 years ago, it has been recognised that there was a major economic shift in shellfishing behaviours, with mangrove species declining, to be replaced by a range of rocky shore, mudflat and sandy beach shellfish (Clune and Harrison 2009; Lorblanchet 1992). It has been variously argued that changes in marine dietary suites result from progradation of shorelines (Semeniuk and Wurm 1987); a late Holocene high stand; climatic instability i.e. due to El Niño/La Niña Southern Oscillation (ENSO); increasing aridity and social intensification (Clune and Harrison 2009; Lorblanchet 1992, 2018; McDonald and Veth 2009; Mulvaney 2015; Vinnicombe 1987a). This project aimed to understand the influencing factors by comparing how rock art was distributed across the archipelago during the Pleistocene and late Holocene to add to our understanding of the post-transgression evidence.

As a result of this project we can now demonstrate that Murujuga provides a full Holocene archaeological record, filling the Early Holocene gap that is missing from many parts of the Pilbara coastline and further inland.

This project also addressed another urgent need within the Murujuga conservation estate: this being for systematic rock art recording and analysis across the islands of the archiplego (McDonald 2009b). Prior to National Heritage Listing, most systematic survey and documentation focused on existing and proposed industrial development (Mulvaney 2022; cf. Veth et al. 1993). A heritage inventory of the NHL area (McDonald 2009b) identified that a range of representative landscapes across the archipelago were in need of sampling (see also McDonald and Veth 2009; Vinnicombe 2002).

Our systematic and detailed recording of rock art assemblages has targeted the outer islands and several intermediate islands as well as other potentially older assemblages. We have built on previous research,

including Ken Mulvaney's PhD research (2010, published in 2015); the heritage inventory at Deep Gorge (e.g. McDonald 2009a) and the NEGP project (Veth et al. 1993); stylistic analyses done for the 2007 NHL (McDonald and Veth 2005, 2006, 2009) and Outstanding Universal Values report (McDonald and Veth 2011); and several honours and masters theses (Green 1982; Harper 2010; Mattner 1989; J. Turner 1981; K. Turner 2008; Veth 1982).

This documentation allows us to examine the role of the art in the occupation of this arid environment through deep time and extreme climatic events. This also provides vital baseline data to assist in the appropriate management of this extraordinary cultural estate, and in support of the World Heritage dossier prepared by Murjuga Aboriginal Corporation with the state and Commonwealth support.

Project Personnel

This ARC Linkage project (LP140100393; referred to throughout the monograph as the MLP) was applied for in late 2013 and approved in June 2014. This three-year project began in March 2015, with fieldwork taking place between March 2015 and May 2018. The completion date was extended with the ARC to December 2018. The MLP was administered by the University of Western Australia and co-funded by partner organisation Rio Tinto working with Murujuga Aboriginal Corporation as the collaborating Aboriginal community. The original project team included chief investigators (CIs) and partner investigators (PIs):

- Jo McDonald (Lead CI): rock art, archaeology and management (also an ARC Future Fellow for the first year of the project);
- Ken Mulvaney (PI, Rio Tinto): rock art expert and Principal of Rio Tinto's heritage program, responsible for being the project conduit on the ground and full participation in the field recording program;
- Peter Veth (CI): arid zone archaeologist, with long-term research interest in Murujuga and excavation expertise, concurrently Lead CI on the Barrow Island Archaeology Project (BIAP) 2014–2017;
- Alistair Paterson (CI): all aspects of the historical archaeology program, CI on BIAP (2014–2017) and Lead CI on Collecting the West LP (2016–2020);
- Jamie Hampson (CI): Murujuga Research Fellow, and also a Marie Curie Fellow, focused on contemporary values and tourism;
- Katie Glaskin (CI): Native Title anthropologist who planned to explore contemporary social connections and contemporary Indigenous artistic representations of the area;
- Tom Whitley (CI while at UWA and then PI on his return to USA): GIS and spatial expert who digitised the marine charts and generated existing and new digital data, to develop and visualise landscape models;
- Paul Bourke (CI and then PI): initially at iVEC (Interactive Virtual Environments Centre) UWA (and then UNSW), Paul's visualisation expertise was mobilised in using drones and 3D reconstruction to view and disseminate the results of the project, especially to the Aboriginal community and at conferences and other symposiums.
- Project personnel included:
- Dr Joe Dortch (Project Research Manager): his responsibilities included liaising with Murujuga communities (Traditional Owners, MAC's CEO and MAC Rangers), managing finances, coordinating research outputs, and organising and managing all field trips;
- Sarah de Koning (Database–IT Officer): her responsibilities inlcuded managing the very large quantities of data being mobilised (archival material and grey literature) and generated by this project;
- Andrew Dowding (Ngarluma man and Indigenous anthropologist): he researched Taabi songs on Murujuga at the same time as undertaking a PhD on the regional distribution of these open forms of communicating stories through the Pilbara.

While no scholarships were sought from the ARC, a number of PhD, masters and honours projects were supported over the life of the project (see Chapter 21: References for theses details). These have contributed significantly to understanding in more detail different components of the archaeological record and/or rock art assemblage:

PhD theses

Megan Berry (2018 – see contribution in Chapter 19)
Wendy Reynen (2019 – with contributions in chapters 2, 6, 8, 10, 15, 20)
Emma Beckett (2021 – see Chapter 4 and contributions in chapters 5, 7, 9, 12, 13, 14)
Victoria Wade (ongoing – see Chapter 16)

Master's thesis

Lucia Clayton (2015 – see contribution in Chapter 19)

BA (Hons) theses – archaeology unless otherwise indicated

Sarah de Koning (2014 – see chapters 2, 3, 12, 14, 17)
Rebecca Stewart (2016)
Georgie Buck (2017) – plant biology
Tessa Woods (2018)
Wade Goldwyer (2018)
Zane Blunt (2019 – with contributions in chapters 2, 6, 8, 10, 15)
Alexander Burcham (2019 – with contribution in Chapter 11)
Patrick Morrison (2019)
John Fairweather (2019 – and see contribution in Chapter 2) – geology

Summary of Findings and Monograph Layout

A total of 272 new Aboriginal sites have been recorded as a result of the MLP, these including mostly engravings and stone structures. This includes the documentation of 7,748 panels and 14,931 motifs (these are described in chapters 5, 7, 9, 12, 13 and 14). A number of artefact-rich locations (including quarries) were observed, but generally the presence of lithic material was only noted and not recorded systematically. Fish traps were located and recorded in a number of locations (Beckett 2021). One site was documented in the intertidal zone (Dortch et al. 2019a; Morrison 2019). The project undertook the test-pit excavation of two rockshelters: Murujuga Rockshelter (McDonald et al. 2018) on the Burrup and a small shelter in the centre of West Lewis Island (Chapter 10). A total of eight open landscapes (a total of 14 individual test-pit squares) were excavated on Rosemary and Enderby islands and the Burrup Peninsula (see chapters 6, 8 and 15). These included excavation within stone features, on defined open middens and in sand bodies where there was minimal or mixed surface cultural evidence. The pastoral station on West Lewis Island was also excavated to better understand when, and how, this was used (Chapter 11).

It had originally been intended to excavate spaced test excavations, which would then be expanded to open area excavations to increase the artefact sample and improve understanding of the spatial distribution of material in a variety of occupied landscapes (viz. McDonald 2005; O'Connell 1987). This turned out to be an overly ambitious goal for a three-year project, in a landscape where our understanding of the variability in the geomorphic, landscape and archaeological record was so limited and where we encountered both extremely deep cultural sequences (in sand bodies over 2 m deep) and very dense cultural assemblages (midden deposits with extremely high densities of shells, artefacts and other cultural remains).

The analysis of the excavated material continued for almost 20 months after the MLP grant was completed, benefiting ironically from the COVID-19 pandemic and the cancellation of CRAR+M fieldwork in 2020. This ongoing analysis and reporting, now continued for four years after the project's completion, has been funded in part by the ongoing Rio Tinto–UWA memorandum of understanding. It has also benefited from a publication stipend generously given by the WA Department of Biodiversity, Conservation and Attractions, to ensure that this publication would be available in tandem with the World Heritage nomination dossier.

The aims of the project have been achieved and the obligations to document and analyse the excavated material are now fulfilled with the completion of this monograph. More extensive excavation plans were well beyond the scope of any three-year cycle, particularly given the other complex and extensive aspects of the project which were successfully achieved. In this monograph we present the results of the rock art and stone feature recordings and document the findings of our excavations across the islands. In general these are presented according to the islands and sample areas recorded within these.

Our presentation of these as both a printed monograph and an online open access resource is in keeping with the CRAR+M strategic goals : to disseminate the results of our collaborative work with Indigenous host communities; to undertake cutting-edge

and innovative research and management; and to carry out public outreach and education about Western Australia's unique and spectacular rock art estate.

One of my first actions as the Rio Tinto Chair of Rock Art Studies at CRAR+M at UWA was to commence discussions with the newly formed Murujuga Aboriginal Corporation's Circle of Elders in 2013 about this project. A decade later, it will be my great delight to provide these custodians with the completed monograph, as a companion to the dossier they have prepared for the UNESCO World Heritage nomination of the Murujuga Cultural Landscape, lodged in Paris in January 2023.

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