



KEYWORDS: *Cultural heritage – Regional relationships – Dating – Daly-Fitzmaurice region*

DATING OF ROCK PAINTINGS IN THE WADEYE-FITZMAURICE REGION, NORTHERN TERRITORY

Alan Watchman, Graeme K. Ward, Mark Crocombe and Ken Mulvaney

Abstract. The Wadeye-Fitzmaurice region is in the northwest of the Top End of Australia's Northern Territory. It lies between two major geographical and cultural regions of northern Australia, the Kimberley to the southwest and Arnhem Land to the northeast. Its location suggests that it has potential to address questions concerning relationships between the two, but it has been little researched archaeologically. In collaboration with Traditional Owners of the area, we undertook a survey of cultural places of much of the region, concentrating on areas in the centre and south and along the Fitzmaurice River. The initial results from the recording of rock paintings suggest presence of cultural ties with areas to the south and west. Results of direct dating of surface accretions allow identification of a sequence of painting styles changing over time from about five thousand years ago. The most recent representations were painted within the last century. The earliest images are distinctive mulberry-red representations of anthropomorphs with resonances to similar styles described for the Kimberley and Keep River. The similar antiquity of this style of painting in all three regions tends to confirm cultural connectedness over a wide area during that period.

Introduction

The study area, the Wadeye-Fitzmaurice region, is bounded in the north and south by two of the Top End's major watercourses, the Daly and the Fitzmaurice Rivers. To the west is the Joseph Bonaparte Gulf and in the east the major ranges that separate it from the Katherine and Victoria River regions (Fig. 1). The coast has few harbours; much of the land area in the north and west is low-lying and riverine, and there are extensive wetlands, particularly those associated with the Moil (Moyle) River. More elevated and broken landscapes are found in the east and south; in these parts, rockshelters with a variety of paintings and some petroglyphs can be found.

Most of the region is encompassed within the Daly River–Port Keats Aboriginal Lands Trust. Wadeye, the major township on the Lands, is approximately 300 km to the southwest of Darwin, and at the head of a long inlet known as Port Keats, which name was applied to the mission initiated in the mid-1930s. The mission brought together members of six language groups and more than twenty land-owning clans. The Kardu Diminin are the Traditional Owners of the Wadeye townsite, and its residents mainly speak the Murrinhpatha language. Today there are further small settlements outside Wadeye occupied by members of the major clan groups.

The Wadeye-Fitzmaurice region lies between

the Kimberley and western Arnhem Land regions, north of the Victoria River District (VRD) and west of the Katherine region (eastern VRD or Wardaman Country), all well known for distinctive rock art assemblages. It is a potential field of study for evaluating possible connections between different peripheral linguistic and cultural groups using rock

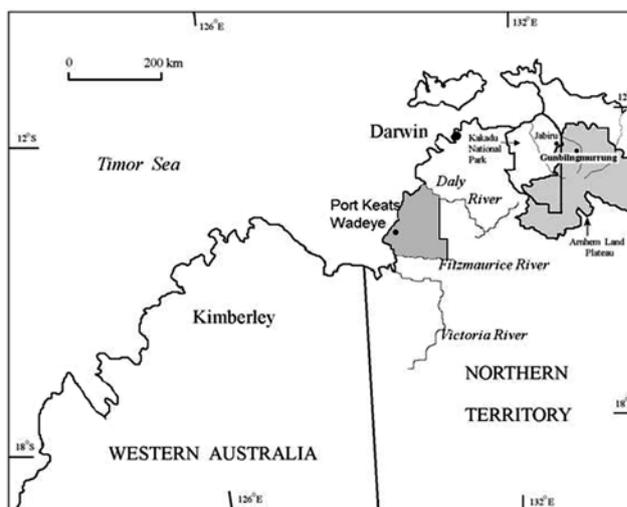


Figure 1. Location map showing the central location of the Wadeye-Fitzmaurice region between the Arnhem Land Plateau in the east and the Kimberley.



Figure 2. Red-infill and white-outline 'sorcery' figures, Paynimbi.

markings. For example, is there evidence for Gwion Gwion paintings in the Fitzmaurice region? Do the Dynamic Figures of western Arnhem Land spread into the region? Is the influence of symbolism derived from the desert observed in this coastal region?

Inland sites to the north, east and south of Wadeye are either in shallow rockshelters or at the base of steep cliffs where sandy deposits have accumulated over long periods. The Fitzmaurice River sites are located on steep quartzite cliff faces usually in shallow rockshelters with rocky floors; the tidal nature of the river makes access possible during high tide when boats can traverse the muddy river and rocky bars.

In the 1930s and the late 1950s Dr W. E. H. Stanner (e.g. 1933, 1936, 1960, 1970) undertook anthropological research in the region. Between November 1957 and January 1958 he conducted excavations at a rockshelter at Yarrar (Yarrah) where there were paintings and some petroglyphs. The considerable assemblage of stone tools from his work and the subsequent excavation by Dr John Mulvaney at the same site were analysed by Jo Flood (1970), who reported an occupation sequence dating to more than 3500 years ago. Stanner also recorded other painted shelters in the areas south of Wadeye and particularly along the Fitzmaurice River and on the plateau to its south; he published descriptions of some of the rock paintings in 1960. Apart from some compliance survey work, little has been recorded or published on the archaeology and rock art of the area between the Daly and Fitzmaurice Rivers. Research focusing on rock art in regions adjacent to the Wadeye-Fitzmaurice region includes that in the upper Daly River by Meehan and Jones (1991), Loy et al. (1990) and Nelson (1993), in the VRD by Chippindale and others (Davidson 1935; Chippindale et al. 2000; Taçon et al. 1997, 2003), Wardaman Country (Davidson 1935; David et al. 1990a, 1990b, 1990c, 1991, 1992, 1999; Flood and David 1994; Lewis and McCausland 1987; Mulvaney 1992). KM has conducted surveys for the Aboriginal Sites Authority in the Wardaman region.

With the relevant Traditional Owners associated

with the Kanamkek-Yile Ngala Museum at Wadeye, MC has been recording cultural sites in the region for several years. AW and KM assisted him to consolidate this work supported by a grant from AIATSIS; MC, AL and GKW subsequently extended the research. AL undertook the dating at selected sites, the results of which initially were presented at the dating symposium at the RASI conference in Agra (Watchman et al. 2004).

Wadeye-Fitzmaurice rock paintings

During two fieldwork seasons, 65 sites in thirty areas or site complexes were recorded in detail along with available cultural stories. The majority were rockshelters containing pictograms and/or petroglyphs; in some instances archaeological deposits of significant depth were recorded. In the study area, the major technique used for marking rocks is the application of wet pigments (paints); there are also some applied beeswax figures and a minor proportion of pounded macropod and bird tracks. Dry pigments or crayons were not found. Pigments used for paintings include red/mulberry, white, black yellow, orange (from an area known as Kuyardi ['Kwiardi'], southeast of Paynimbi near Ngagara) and pink (from Pink Galah Dreaming near Emu Point); red ochres of various hues were available from several known sources including major ones at Pearce Point, southwest of Wadeye, and at Yara Creek in the Madjellindi Valley, north of the Fitzmaurice River.

The mineralogical compositions of some of these pigments have been studied using x-ray diffractometry. Mulberry-red pigments contain quartz, gypsum, haematite and anorthite (feldspar); the colorant is presumably haematite. The Emu Point source of red ochre has red pigment consisting primarily of quartz and haematite. Yellow pigments contain quartz, gypsum and haematite. As both red and yellow pigments contain haematite as the main colorant, it seems likely that weathering has produced iron oxides with different oxidation states and different colours. White pigment consists of quartz, gypsum, kaolinite and muscovite.

The range of motifs includes geometric designs, hand stencils and prints, anthropomorphic and zoomorphic figures, tracks, and sorcery figures ('wandi wandith').

Red-infill-and-white-outline horizontal stick figures typify anthropomorphic sorcery images at Paynimbi (Paiynimbi), a large inland cliff site on the edge of the Madjellindi Valley. Those figures show similarities in size, shape and colour to others found south of the Fitzmaurice River and in the VRD (Fig. 2).

Paintings of freshwater 'crocodiles' and images (Fig. 3) similar to those known as 'Dreaming

beings' or 'Lightning Brothers' (e.g. Flood 1997: vi) also indicate cultural links between the Wadeye-Fitzmaurice sites and regions further south and east. Crocodiles inhabit these areas since the river systems penetrate deep within the inland region producing similar environments that are suitable places for the animals to live. As the paintings appear to be relatively new (below) it would seem that there have been only minor environmental changes in the two regions, and therefore the habitats seen today probably reflect similar environments when the paintings were applied. The presence of unstable white pigments in many of these paintings indicate that the paintings are not very old.

Several dark mulberry-red anthropomorphous figures (Fig. 4), with their elongate stick-like 'bodies', show strong similarities to the Gwion Gwion (Bradshaw figures) of the Kimberley (e.g. Ngarjono 2000), the Dynamic Figures of western Arnhem Land (e.g. Chaloupka 1993) and the Karlinga figures of the Keep River (Taçon et al. 2003). The Wadeye-Fitzmaurice figures are difficult to see as they underlie earlier figures. They have thin, straight 'legs', placed close together and apparent 'headdresses' with tassel-like trimmings. In these features, they are more akin to the Gwion and Karlinga figures than to the open-legged, active Dynamic Figures farther east. Additional support for cultural ties with the southern and western areas comes from the similar antiquity of this style of painting in all three regions (below). Age determinations for figures in the three regions range from 4000 to 5000 years BP, indicating cultural connectedness over a wide area during that period.

The superimposition sequence established at the Stingray site on the northern side of the Fitzmaurice River provides evidence for the antiquity of the dark mulberry-red anthropomorphous figures. At the top of the sequence (youngest) are white 'human' stick-figures (representation of a male throwing a spear; Fig. 5). These overlie white abstract figures, white-outline red figures (representation of stingray), solid-red figures, and then the elongate mulberry-red anthropomorph at the base of the sequence (oldest).

A significant difference between the rock markings in the Wadeye-Fitzmaurice region and the surrounding areas is the near absence of cupules. Shallow peckings on vertical surfaces or deep circular pits on horizontal slabs typify the occurrences of cupules in western Arnhem Land, Kimberley, the VRD, and the Keep River, but but none were found at major Fitzmaurice sites. (KM observed a minor occurrence in a narrow rockshelter on the southern side of the lower Fitzmaurice.)

Radiocarbon age determinations

Small samples of pigment and rock surface coatings were collected for dating by scraping material directly into plastic vials or onto aluminium foil using a dental pick. Those samples were sent to the ANSTO laboratory for radiocarbon assaying. Results are listed in Table 1.



Figure 3. Two red-and-white paintings of anthropomorphs showing similarities to the 'Lightning Brothers' of Wardaman Country. Photograph: MC.

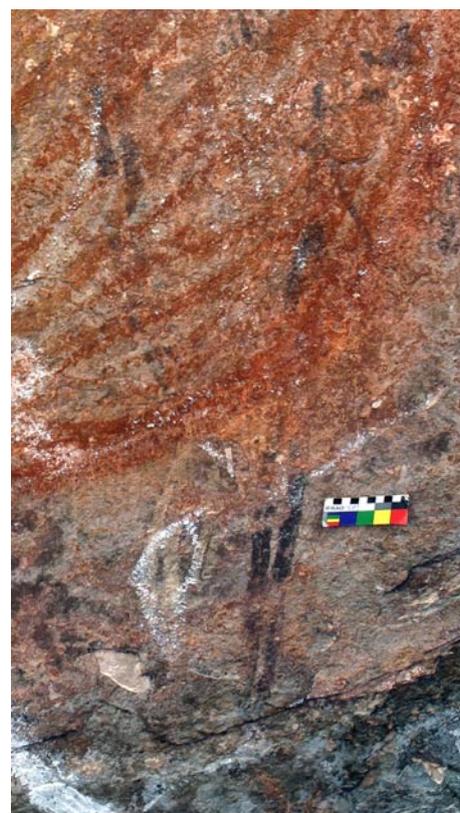


Figure 4. Remnant dark mulberry painting of a stick-like human figure with possible headdress and tassels superimposed by a large red brown painting at Kumil Shelter 2, the Stingray site, on the Fitzmaurice River. Photograph: GKW.

Site	Sample number	Material / painting style	Sample location	Sample size (g)	Laboratory number	AMS result $\delta^{13}\text{C}$ (per mil)	Age determination (years BP)
Yarrah	Y6	Beeswax resin	Anthropomorph	0.00689	OZH-037	-25.1	110 \pm 35
Papa Ngala	PA1	Beeswax	Centre of 'sun'	0.00650	OZH-032	-20.3	590 \pm 40
Papa Ngala	PA6T	Oxalate-rich crust (below:)	Sinuuous red figure	0.00190	OZH-034	n/a	1040 \pm 50
Papa Ngala	PA6B	Oxalate-rich crust (basal)	Sinuuous red figure	0.00431	OZH-033	n/a	13 300 \pm 110
Paynimi (Paiynimbi)	PN15	Oxalate-rich crust (below:)	Red/white 'lizard'	0.00356	OZH-035	n/a	1390 \pm 80
Paynimi (Paiynimbi)	PN16	Oxalate-rich crust (below:)	'Lizard'	0.00792	OZH-036	-17.5	1670 \pm 60
Stingray site	SS1	Mulberry red	Anthropomorph	n/a	n/a	-12.7	4870 \pm 50
Cf. Kimberley		Gwion figures					>4000
Cf. Keep River		Karlinga figures					4060 \pm 210

Table 1. AMS radiocarbon results from the Wadeye-Fitzmaurice region research and comparison with adjacent regions (n/a = not available).



Figure 5. Paintings on the ceiling of the Stingray shelter provide details of the superimposition of images and their relative ages. Photograph: GKW.

A mulberry-red stick-figure was dated to circa 4870 years BP. This compares with ages exceeding 4000 years BP for similar elongate mulberry figures known as the Gwion (Watchman et al. 1997). A Karlinga figure in the Keep River region gave an age estimate of 4060 \pm 210 years BP (Watchman pers. data).

Two beeswax figures gave ages of less than one thousand years, as expected. At the Papa Ngala site, beeswax harvested from the centre of motif resembling the sun (PA1) gave an age of 590 \pm 40 years BP. At the Yarrah site, an anthropomorph made in beeswax resin has an estimated age of 110 \pm 35 years BP.

Oxalate-rich crusts have been used to provide ages for rock markings because they contain datable natural organic salts (the oxalate minerals whewellite and weddellite; Watchman 1990, 1991, 2001).

At Papa Ngala, oxalate crust was removed from the surface and the base of the layer coating the rock surface. A sinuous red figure has been painted on top of the oxalate crust. The top surface of the coating (PA6T) gave an age estimate of 1040 \pm 50 years BP, whereas the basal layer (PA6B) gave an age of 13 300 \pm 110 years BP. This implies that the red sinuous motif is less than a thousand years old. The age determination for the onset of oxalate formation in that site indicates the existence of a suitably humid environment for micro-organic growth and oxalic acid production from the last Ice Age.

At Paynimi, a surface scraping (PN15) of oxalate on top of which a red-and-white lizard-like representation

has been painted gave an age estimate for oxalate development of 1390 ± 80 years BP. The base of the same thin crust beneath the motif (PN16) gave an age of 1670 ± 60 years BP. These two age determinations indicate that the rock surface at the base of the cliff has been available for painting for less than 2000 years and that the painting was applied less than 1400 years ago. The remnant white paint gives credence to a relatively young painting.

Conclusions

Some general dating conclusions can be drawn from the exploratory investigations of pigments, beeswax and oxalate-rich coatings. There is potential for discovering ancient paintings buried within thick crusts in certain rockshelters, particularly Papa Ngala where the base of the coating there indicates the start of crust formation approximately 13300 years ago.

Mulberry-coloured anthropomorphs are less than about 5000 years old, which is comparable with similar motifs in the Keep River area (Watchman et al. 2000) and the Kimberley (Watchman et al. 1997).

All non-purple pigment-based rock paintings are less than 3000 years old in the Wadey-Fitzmaurice region. Similar styles of paintings in other areas are of the same age; for example, the Wardaman paintings (David et al. 1999) and Keep River complexes (Taçon et al. 2003). Paintings comprising red pigments, and red-with-white outlines are about 2000 years old or less. The all-white, off-white and mud-coloured paintings were painted in recent times, within the last one hundred years or so. Beeswax-moulded figures are about 600 years old and within the range of other figures found elsewhere, which are generally less than 1800 years old.

Acknowledgments

We thank the Traditional Owners for their permission and encouragement to conduct this research at their cultural places: Barty Keringbo, Wally Minjin, Majella Chula, Cyril Ninnal, Casimar Narndu, Patricia Kauri, Mabel Wodidj, Richard Parry, Camilla Lewin and Anzac Minjin. Field assistance was provided by Bernadine Kungul, Stephen Dulla, Adrian Lantjin, Uriah Crocombe, Darryl Olsen, Sebastian Miller and Neville Crocombe. We acknowledge a research grant provided to Mark Crocombe and Traditional Owners associated with the Kanamkek-Yile Ngala Museum from the Australian Institute of Aboriginal and Torres Strait Islander Studies; an AINSE grant and ANSTO radiocarbon dating; an ARC Fellowship and grant to Watchman.

Dr Alan Watchman
Glorieta, NM 87535
U.S.A.

Dr Graeme K. Ward
Australian Institute of Aboriginal and Torres Strait Islander Studies
P.O. Box 553
Canberra, ACT 2601
Australia

E-mail: graeme.ward@aiatsis.gov.au
Mark Crocombe
Kanamkek-Yile Ngala Museum
Wadey, NT 0822
Australia

Ken Mulvaney
Dampier, WA 6713
Australia

REFERENCES

- CHALOUKKA, G. 1993. Journey in time: the worlds longest continuing art tradition: the 50,000 year story of the Australian Aboriginal rock art of Arnhem Land. Reed, Chatswood, NSW.
- CHIPPINDALE, C., J. DE JONGH and J. FLOOD 2000. Stratigraphy, Harris matrices and relative dating of Australian rock-art. *Antiquity* 74(284 supp.): 285–286.
- CHIPPINDALE, C. and P. TAÇON 1993. Two old painted panels from Kakadu: variation and sequence in Arnhem Land rock art. In J. Steinbring and A. Watchman (eds), *Time and space. Dating and spatial considerations*, pp. 32–56. Occasional AURA Publication 8, Australian Rock Art Research Association, Melbourne.
- DAVID, B., D. CHANT and J. FLOOD 1992. Jalibang 2 and the distribution of pecked faces in Australia. *Memoirs of the Queensland Museum* 32(1): 61–77.
- DAVID, B., M. DAVID, J. FLOOD and R. FROST 1990. Rock paintings of the Yingalarri region: preliminary results and implications for an archaeology of inter-regional relations in northern Australia. *Memoirs of the Queensland Museum* 28(2): 443–462.
- DAVID, B., M. LECOLE, H. LOURANDOS, A. J. BAGLIONI and J. FLOOD 1999. Investigating relationships between motif forms, techniques and rock surfaces in north Australian rock art. *Australian Archaeology* (48): 16–22.
- DAVID, B., I. MCNIVEN, J. FLOOD, V. ATTENBROW and R. FROST 1990. Lightning Brothers Project: the 1988 and 1989 field seasons. *Australian Archaeology* (31): 86–91.
- DAVID, B., I. MCNIVEN and J. FLOOD 1991. Archaeological excavations at Yirwarlarlay 1: site report. *Memoirs of the Queensland Museum* 30(3): 373–380.
- DAVID, B., I. MCNIVEN, J. FLOOD and R. FROST 1990. Yirwarlarlay 1: archaeological excavations at the Lightning Brothers site, Delemere Station, Northern Territory. *Archaeology in Oceania* 25(2): 79–84.
- DAVIDSON, D. S. 1935. Archaeological problems of northern Australia. *Royal Anthropological Institute Journal* 65: 145–183.
- NGARJNO, UNGUDMAN, BANGGAL and NYAWARRA 2000. *Gwion Gwion: secret and sacred pathways of the Ngarinyin Aboriginal people of Australia*, J. Doring (ed.). Könemann, Köln.
- FLOOD, J. M. 1970. A point assemblage from the Northern Territory. *Archaeology and Physical Anthropology in Oceania* 5: 27–52.
- FLOOD, J. 1997. Rock art of the Dreamtime. Images of ancient Australia. Harper Collins, Sydney.
- FLOOD, J. and B. DAVID 1994. Traditional systems of encoding meaning in Wardaman rock art, Northern Territory, Australia. *The Artefact* 17: 6–22.
- LEWIS, D. 1997. Bradshaws: the view from Arnhem Land. *Australian Archaeology* (44): 1–16.
- LEWIS, D. and B. MCCAUSLAND 1987. Engraved human

- figures and faces from Wardaman country, eastern Victoria River District, Northern Territory. *Australian Aboriginal Studies* 1987(1): 67-79.
- MEEHAN, B. and R. JONES 1991. Laurie Creek art project 1990 - final report to The Australian Institute of Aboriginal and Torres Strait Islander Studies, pp. 1-9.
- LOY, T. H., R. JONES, D. E. NELSON, B. MEEHAN, J. VOGEL, J. SOUTHON and R. COSGROVE 1990. Accelerator radiocarbon dating of human blood proteins in pigments from Late Pleistocene art sites in Australia. *Antiquity* 64: 110-116.
- NELSON, D. E. 1993. Second thoughts on a rock art date. *Antiquity* 67: 893-895.
- MULVANEY, K. 1992. Who paints for a killing: Gurindji sorcery painting of Palngarrawuny. In J. McDonald and I. P. Haskovec (eds), *State of the Art: regional rock art studies in Australian and Melanesia*, pp. 216-225. Occasional AURA Publication 6, Australian Rock Art Research Association, Melbourne.
- STANNER, W. E. H. 1933. The Daly River tribes: a report of field work in north Australia. *Oceania* 3(4): [377]-405; 4(1): [10]-29.
- STANNER, W. E. H. 1936. Murinbata kinship and totemism. *Oceania* 7(2): [186]-216.
- STANNER, W. E. H. 1960. Aboriginal rock painting. *The Etruscan. The staff magazine of the Bank of New South Wales* 9(4): 18-23.
- STANNER, W. E. H. 1970. *White man got no Dreaming*. Australian National University Press, Canberra.
- TAÇON, P. S. C., R. FULLAGAR, S. OUZMAN and K. MULVANEY 1997. Cupule engravings from Jinnium-Granilpi (northern Australia) and beyond: exploration of a widespread and enigmatic class of rock markings. *Antiquity* 71: 942-965.
- TAÇON, P. S. C., K. MULVANEY, S. OUZMAN, R. FULLAGAR, L. HEAD and P. CARLTON 2003. Changing ecological concerns in rock-art subject matter of north Australia's Keep River region. *Before Farming* 2003/3(4): 1-14.
- WATCHMAN, A. 1990. A summary of occurrences of oxalate-rich crusts in Australia. *Rock Art Research* 7: 44-50.
- WATCHMAN, A. 1991. Age and composition of oxalate-rich crusts in the Northern Territory, Australia. *Studies in Conservation* 36: 24-32.
- WATCHMAN, A. 2001. Dating oxalate minerals in rock surface deposits. In M. Jones and P. Sheppard (eds), *Australasian connections and new directions: proceedings of the 7th Australasian Archaeometry Conference*, p. 401-411. University of Auckland.
- WATCHMAN, A., P. S. C. TAÇON, R. L. K. FULLAGAR and L. HEAD 2000. Minimum ages for pecked markings from Jinnium, north western Australia. *Archaeology in Oceania* 35(1): 1-10.
- WATCHMAN, A., G. WALSH, M. MORWOOD and C. TUNIZ 1997. AMS radiocarbon age estimates for early rock paintings in the Kimberley, N.W. Australia: preliminary results. *Rock Art Research* 14: 18-26.
- WATCHMAN, A., G. K. WARD, M. CROCOMBE and K. MULVANEY 2004. Dating of rock-markings in the Wadeye-Fitzmaurice region, Northern Territory, Australia. Presentation to Symposium M: Dating, RASI 2004 International Rock Art Congress, 29 November 2004, Agra.

RAR 27-977

Semiotics Institute Online, Toronto, by Professor Paul Bouissac, presents two eight-lecture courses by Robert G. Bednarik, at

<http://www.chass.utoronto.ca/epc/srb/cyber/cyber.html>

The epistemology of Pleistocene archaeology

See course description at

<http://www.chass.utoronto.ca/epc/srb/cyber/bednarik-outline.pdf>

Cognition and symbolism in human evolution

See course description at

<http://www.chass.utoronto.ca/epc/srb/cyber/rbednarikoutline.pdf>