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# DISTRIBUTION OF FRESHWATER TURTLE ROCK ART AND ARCHAEOLOGICAL SITES IN AUSTRALIA: A GLIMPSE INTO ABORIGINAL USE OF CHELONIANS

*BRUNO DE OLIVEIRA FERRONATO<sup>1,2,3</sup> AND ARTHUR GEORGES<sup>2</sup>*

<sup>1</sup>*Ginninderra Catchment Group, 21 Bingle Street, Flynn, Canberra, Australian Capital Territory 2615, Australia*

<sup>2</sup>*Institute for Applied Ecology, University of Canberra, 11 Kirinari Street, Bruce, Canberra,  
Australian Capital Territory 2601, Australia*

<sup>3</sup>*Corresponding author, email: brunoferronato@hotmail.com*

**Abstract.**—Turtles and tortoises have been an important part of the diet and cultural practices of Indigenous peoples throughout the world since the dawn of humanity. In Australia, freshwater turtles are an integral part of Aboriginal culture, which manifests itself in their rock art, mythology, and as a food source. Despite that, not much of the historical use of turtles by Aboriginal people has been documented, nor which species were potentially used and featured specifically in cultural lore and traditions. To fill this gap, we reviewed the published literature and collated information from rock art sites featuring freshwater turtles and records of turtle remains in archaeological sites in Australia. We report dating, if available, and overlapped records with turtle distribution maps. We recorded 130 Aboriginal art sites featuring freshwater turtles and 30 archaeological sites with freshwater turtle remains; both were most common in the Northern Territory. Using species distribution maps, we were able to confirm some turtle species identified by the original authors. Specifically, 17 of 25 turtle species in Australia have potentially been featured in rock art and 15 of the 25 have potentially been used as a food source. There is evidence that freshwater turtles were part of the diet of Aboriginal people for at least 24,000 y. Turtles were culturally important, owing to the variety of styles presented in the rock art, with turtle paintings up to about 6,000–10,000 y old. Our study expands the understanding of freshwater turtle use by Aboriginal people, and we suggest future investigations to understand current use of turtles in the country.

**Key Words.**—conservation; dendroglyph; ethnobiology; mythology; painting; petroglyph; pictograph; tortoise; traditional use

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## INTRODUCTION

Turtles have been associated with early hominin archaeological sites for millions of years, dating back to the late Pliocene and early Pleistocene on the African continent (4.4–2.6 Mya, Rhodin et al. 2015). The rise of stone tools and signs of turtle shell crushing and butchering show a definitive record of turtle consumption by early humans in Africa at around 2.6–2.5 Mya (Rhodin et al. 2015). As early humans dispersed from Africa, turtles continued to be part of their varied diet, with records of hominin turtle consumption in Eurasia (Spain: 1.2 Mya, Israel: 200,000 y BP, Italy: 120,000 y BP), North America (12,000 y BP), and South America (11,700–9,880 y BP; Rhodin et al. 2015). Additionally, turtles have also been part of ancient cultural practices of Indigenous people throughout the world, with turtle shells serving as musical instruments in the USA (Gillreath-Brown and Peres 2017), clay reliefs in Africa (Zubieta 2016), and ceramic art in Panama (Cooke 2004), St. Vincent and the Grenadines (Waldron 2011). Rock art depictions have been documented in New Guinea (Röder 1939), South Africa (Rudner and Rudner

1968), Canada (Lanoue 1990), Somaliland (Mire 2008), Honduras (Palka 2010), India (Nihildas 2014), and in Alabama (Henson 1986), Nevada (Schneider and Everson 1989), Montana (McCleary 2016), Kentucky (Coy et al. 1997), Wyoming (Loendorf et al. 2005), Arizona (Bostwick 2002), and California (Whitley 2005) in the USA.

In Australia, there is evidence that Aboriginal people first arrived on the continent by around 65,000–50,000 y ago (Clarkson et al. 2017; Bradshaw et al. 2021), from Southeast Asia to the northwest of Australia (Clarkson et al. 2017; Crabtree et al. 2021), and so may represent the oldest surviving human culture in the world (Flood 2013). Throughout the archaeological record, Aboriginal people have consumed a great variety of fauna, including freshwater turtles (O'Connor 1999; Brockwell et al. 2011; Martin 2011). Up to the present day, some Australian turtle species (e.g., Northern Snake-necked Turtle, *Chelodina rugosa*; Chaloupka 1993, and Northern Snapping Turtle, *Elseya dentata*; Guse 2005) are still consumed by Aboriginal people in a traditional way, representing an important source of protein (Chaloupka 1993; Fordham et al. 2006).

Australia is the richest continent for rock paintings (pictographs) and engravings (petroglyphs) in the world (Taçon 2000). Many aspects of the daily life of Aboriginal peoples, including historical events, cultural practices and spirituality, and their regional plants and animals, including ancient megafauna, were portrayed in pictographs (Taçon 2000; Flood 2013; Taçon and Webb 2017), representing a unique archaeological source (Taçon 2000). The depictions of fauna in Australian rock art has had several interpretations, including food items consumed, maintenance of natural species, hunting magic, and totem portrayals (Flood 2013), but they can go beyond mere depictions of food animals, representing narratives of the traditional past (Taçon 1989).

Freshwater turtles are among the animals depicted in Aboriginal rock art in Australia (McCarthy 1983; Layton 1992; David and Lourandos 1998; Taçon et al. 2003; Veth et al. 2018) and the scientific importance of it cannot be underestimated, as illustrated by the case of the Pig-nosed Turtle (*Carettochelys insculpta*). The *C. insculpta* in Australia only came to the attention of science in 1970, when its presence in the Daly River in the Northern Territory was reported (Cogger 2000), though eggs of the species from the East Alligator River had languished unidentified in the collection of the Victoria Museum since the early 1900s (Georges et al. 2000, 2008). In the meantime, a pictograph of *C. insculpta* at Nourlangie Rock prompted scientists to look more closely at the rivers draining the Arnhem Land Plateau where the species was soon found to occur (Chaloupka 1993; Georges et al. 2000). Despite the long evidence of Aboriginal people associated with freshwater turtles in Australia (Chaloupka 1993; O'Connor 1999; David and Lourandos 1998), there have been no systematic studies to document the ancient country-wide use of this resource. Our investigation aims to fill this gap by reviewing published literature and: (1) recording the distribution of rock art sites with freshwater turtle art and presenting dates of the records if available; (2) recording archaeological sites in Australia containing turtle remains, and presenting dates if available; and (3) identifying, if not available in the original literature, the potential freshwater turtle species depicted in the rock art or present in the archaeological findings, through the overlap of such records with species distribution maps.

### MATERIALS AND METHODS

Our investigation focused on Aboriginal art and archaeological sites in Australia that had evidence of use. We also focused on the value placed on freshwater turtles by Aboriginal people, as a food source and/or that were of cultural significance. We considered records of freshwater turtles in: (1) rock art, including petroglyphs, pictographs,

and stone arrangements; (2) tree carvings (dendroglyphs); (3) and any archaeological finding that showed evidence of turtle use, including the presence of bones in pits and middens. Owing to several interpretations of why animals are portrayed in the rock art in Australia, such as a food source or to show there was plenty of food in the area, totemism, hunting magic and mythology (Taçon 1989; Layton 1992; Flood 2013), when we refer to the use of turtles in the rock art context in the manuscript, we are considering it in a broader sense, its cultural value, which also includes it as a food item.

We conducted a literature review by searching for keywords that were related to the use of freshwater turtles in Australia on Scopus, Google Scholar, and Google. We also searched keywords in library databases in Australia, including the National Library of Australia, Australian Capital Territory (ACT) libraries, Australian Museum, University of Canberra (UC) library, and the Mura® Collections Catalogue and Photographic Collection of the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS). The keywords searched consisted of numerous combinations of the following: aboriginal people, aboriginal, Australia, fauna, wildlife, animal, rock art, freshwater turtle, turtle, tortoise, painting, rock painting, petroglyph, zoomorph, motifs, myth, mythology, pig nosed turtle, excavation, archaeology, bone, Murray River, pit, mound, and midden. As freshwater turtles in Australia are also locally called tortoises, we included this term in our search. We did not search for local Aboriginal names of freshwater turtles as such names are rarely presented in the title or abstract of publications. We intend to catalogue the Aboriginal names of turtles in a different study.

Our review collected evidence of freshwater turtle use in space and time, the species used, and the species attributed by the original authors, if available. We recorded the approximate location of the records (e.g., site name and location) from the original literature. For rock art depicting freshwater turtles, we considered each known location available in the literature as one record. We used this approach because a site occasionally had several turtle pictographs; consequently, this would be an impartial way to compare the amount of rock art sites among Australian states. If the date of the rock art or archaeological finding was present in the publication, we reported it, following the methods presented by the original authors, such as BP (years before present, meaning before AD 1950; Aubert 2012) or AD (*anno domini*, years in the Western calendar). We used abbreviations for each Australian state and territory throughout the text: Australian Capital Territory (ACT), New South Wales (NSW), Northern Territory (NT), Queensland (Qld), South Australia (SA), Western Australia (WA), Victoria (Vic) and Tasmania (Tas).

To aid in the identification of the turtle species in the rock art, archaeology, and/or carved tree sites, if not identified by the original authors, we created distribution maps of each freshwater turtle species in Australia, following taxonomy as presented in Van Dyke et al. (2018), with recent changes according to Kehlmaier et al. (2019). Distribution records were obtained from two databases: Wildlife Tissue Collection and Distribution Records at the University of Canberra (<http://georges.biomatix.org/uc-wildlife-tissue-collection-turtles>), and Atlas of Living Australia (<https://www.ala.org.au/>), with ArcGIS (version 10.8: esri, Redlands, California, USA) and Google Earth Pro. We then overlapped the turtle distributions with the rock art, archaeology and carved tree sites records, and presented the potential species that could be featured in each site. If the original record used a common name such as turtle or tortoise, we presented all potential turtle species with distributions overlapping the record. On the other hand, if the original record used a more detailed common name, such as long-necked turtle or short-necked turtle, we presented the potential long-necked turtle species or short-necked species, respectively. Lastly, if the original record used a specific scientific name, we checked if it was within the distribution range of that species.

Although the distribution of each turtle species presented in this study is considered current, we are assuming that the historical distribution of the Australian freshwater turtles might have expanded or contracted but that the core distribution has not changed much over the last 5,000 y. For example, the aridity in the Murray-Darling basin from the mid- to late-Holocene is similar to present day levels (Helfensdorfer 2020), and sea level stabilized to similar levels as present at around 3,500 y BP in the Murray estuary (Bourman et al. 2000), and at about 6,000 y BP in northern Australia (Taçon et al. 1996). Because much of the rock art and archaeological sites with assigned dates are not older than 5,000 y

(Appendix, Supplemental Information Table S1), we assumed that the rock art and archaeological records found within a turtle species distribution should be valid and accurate.

**RESULTS**

We found reports of 128 rock art sites in the reviewed literature that recorded freshwater turtle depictions in Australia, in addition to two sites with turtle dendroglyphs (carved trees) (Table 1, Fig. 1, Supplemental Information Table S1). Rock art sites with turtle motifs were most common in the NT, with the highest number of sites reported in Arnhem Land and Kakadu National Park, followed by Qld, NSW, WA, SA and ACT, with no records found from Vic and Tas (Table 1, Fig. 1). The most featured type of Aboriginal art with turtle images was rock paintings (pictographs; Fig. 2–5), followed by engraving (petroglyphs), charcoal drawing, stone arrangement and dendroglyphs, and beeswax figure (Table 1). Additionally, there were 30 archaeological sites with the presence of freshwater turtle remains in the reviewed literature, with most records in NT, followed by NSW and SA, Qld, WA, Vic, and no record available for the ACT and Tas (Table 2, Fig. 1, Appendix). Although the large majority of freshwater turtle rock art and archaeological sites were found inland (Fig. 1, Appendix, Supplemental Information Table S1), there were four records of freshwater turtle rock art on islands in Qld (Cliff, Flinders, Stanley and Clack Island), three in WA (Dampier Archipelago and Depuch Island), two in the NT (Groote Eylandt and Bickerton Island; Supplemental Information Table S1), and one archaeological site with freshwater turtle bones on Koolan Island, WA and Moreton Island, Qld (Appendix). The most inland records were found in NSW, with a turtle stone arrangement in Angledool (550 km from the coast), a turtle tree drawing in Bulgeraga Creek (460 km), a turtle petroglyph in Mootwingee (440 km) and an

**TABLE 1.** Number of rock art sites and types of Aboriginal art, per state, which have depiction(s) of freshwater turtle motifs in Australia. State abbreviations are ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, Qld = Queensland, SA = South Australia, WA = Western Australia, Vic = Victoria, and Tas = Tasmania. Dendroglyph (carved tree) is considered here to illustrate another type of Aboriginal art that represents historical use of, or the value placed on, freshwater turtles.

State	Rock painting (pictograph)	Charcoal drawing	Dendroglyph (carved tree)	Engraving (petroglyph)	Stone arrangement	Beeswax	Total	%
ACT	3	0	0	0	0	0	3	2.3
NSW	4	6	2	7	1	0	20	15.4
NT	60	0	0	3	0	1	64	49.2
Qld	22	0	0	0	1	0	23	17.7
SA	2	0	0	2	0	0	4	3.1
WA	11	0	0	5	0	0	16	12.3
Vic	0	0	0	0	0	0	0	0.0
Tas	0	0	0	0	0	0	0	0.0
<b>Total</b>	<b>102</b>	<b>6</b>	<b>2</b>	<b>17</b>	<b>2</b>	<b>1</b>	<b>130</b>	

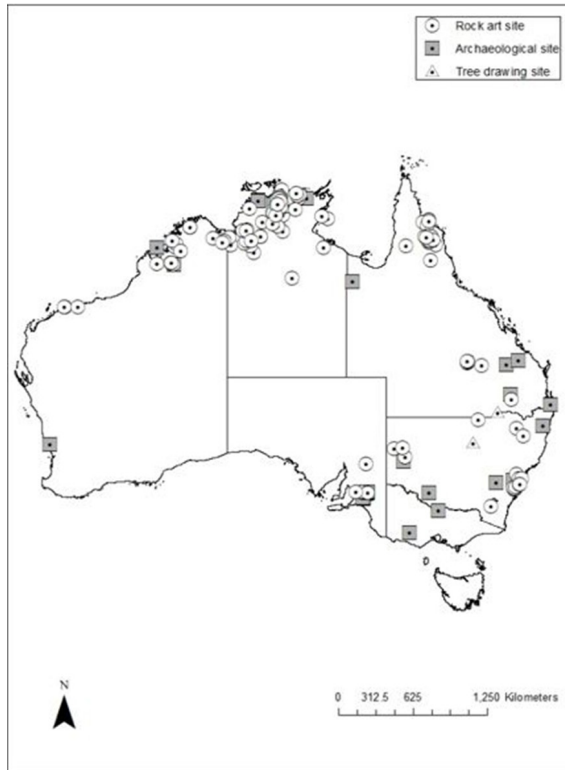


FIGURE 1. Distribution of sites with freshwater turtle motifs in Aboriginal rock art and dendroglyphs (tree drawing), and turtle remains in archaeological sites in Australia.

archaeological site in Menindee Lakes (414 km; Fig. 1, Appendix, Supplemental Information Table S1).

**Turtle species identified in rock art.**—Most of the freshwater turtle rock art motifs were identified to common names, such as turtle, tortoise, freshwater turtle, freshwater tortoise, long-necked turtle, long-necked tortoise, and short-necked turtle by the original authors (Supplemental Information Table S1). A few records, however, were more detailed and authors were able to identify genus and species: *E. dentata* in Mount Tolmer area in Litchfield Park, NT (Guse 2005); *C. insculpta* in Ubirr (McKenzie 1978; Taçon 1989; Layton 1992; Chaloupka 1993; Flood 1996; Smith 1998) and Nawurlandja, both in Kakadu National Park (Kimber 1975; Chaloupka 1993), and in Namarrgon site complex in Arnhem Land, NT (Chaloupka 1993); *C. rugosa* in Namarrgon site complex and Mikginj, both in Arnhem Land, NT (Chaloupka 1993); and the Steindachner's Long-necked Turtle (*Chelodina steindachneri*) in Murujuga, Dampier Archipelago, WA, (Veth et al. 2018; Supplemental Information Table S1). All these records and species names were corroborated by our species distribution maps, as the identified turtle species by the original authors fell within their respective species distributions (Supplemental Information Table



FIGURE 2. Aboriginal rock art painting (pictograph) of the Pig-nosed Turtle (*Carettochelys insculpta*) in Kakadu National Park, Northern Territory, Australia. We acknowledge the Bunitj, Manilagarr, and Mandjurgunj people, the Traditional owners of this land and we pay our respects to their Elders, past, present, and emerging. The painting was touched up with Reckitts Blue by the artist in the early 1960s. (Photographed by Arthur Georges).

S1, Supplemental Information Fig. S1). For the other records without a species name, we indicated the potential turtle species that could have been featured in each rock art site (Supplemental Information Table S1, Supplemental Information Fig. S1). Of all the 25 species of freshwater turtles in Australia (Van Dyke et al. 2018), 17 potentially could have been featured in the rock art according to our study (Supplemental Information Table S1), and these are the potential species in each state: NSW (Eastern Long-necked Turtle, *Chelodina longicollis*, Broad-shelled Snake-necked Turtle, *C. expansa*, Murray River Turtle, *Emydura macquarii*, and Bell's Sawshelled Turtle, *Myuchelys bellii*); ACT (*C. longicollis*); NT (*C. insculpta*, *C. rugosa*, Sandstone Snake-necked Turtle, *C. burrungandjii*, Cann's Long-necked Turtle, *C. canni*, Worrell's Short-necked Turtle, *Emydura subglobosa worrelli*, Northern Yellow-faced Turtle, *E. tanybaraga*, Northern Red-faced Turtle, *E. victoriae*, Yellow-bellied Snapping Turtle, *Elseya flaviventralis*, *E. dentata*, Gulf Snapping Turtle, *E. lavarackorum*, and Common Sawshelled Turtle, *M. latisternum*); Qld (*C. expansa*, *C. longicollis*, *C. canni*, *C. rugosa*, *E. macquarii*, *E. tanybaraga*, *M. latisternum*,



FIGURE 3. Aboriginal rock art depicting dingo, kangaroo, turtle, and emu in Namadgi National Park, Australian Capital Territory, Australia. We acknowledge the Ngunnawal people, the Traditional owners of this land and we pay our respects to their Elders, past, present, and emerging. (Photograph courtesy of National Library of Australia; C.S. Daley, 1925, PIC Box PIC/15299 #PIC/15299/2, NLAref149406).



FIGURE 5. Aboriginal rock art painting (pictograph) of a Long-necked Turtles (*Chelodina rugosa*) in Kakadu, Northern Territory, Australia. We acknowledge the Mirarr people, the Traditional owners of this land and we pay our respects to their Elders, past, present, and emerging. These images and the designs and motifs depicted are the Indigenous Cultural Intellectual Property of the Mirarr People. Traditional law and custom apply to them including the right to control their use and reproduction. These images must not be copied or reproduced without the consent of the Mirarr People who can be contacted via Gundjeihmi Aboriginal Corporation (<https://www.mirarr.net>). (Photograph courtesy of AIATSIS; JONES.R20.CS-000148825, Kakadu, Northern Territory, Jones 1981, and the Gundjeihmi Aboriginal Corporation).



FIGURE 4. Aboriginal rock art paintings (pictographs) of Long-necked Turtles (*Chelodina rugosa*) in Kakadu National Park, Northern Territory, Australia. We acknowledge the Bunitj, Manilagarr, and Mandjurlgunj people, the Traditional owners of this land and we pay our respects to their Elders, past, present, and emerging. (Photographed by Arthur Georges).

and White-throated Snapping Turtle, *Eelseya albagula*); SA (*C. expansa*, *C. longicollis*, and *E. macquarii*), and WA (*C. steindachneri*, *C. burrungandjii*, *C. rugosa*, *E. dentata*, and *E. victoriae*; Supplemental Information Table S1, Supplemental Information Fig. S1).

**Turtle species identified in archaeological findings.**—The common names found in the literature for archaeological sites were: tortoise, freshwater turtle, turtle, long-necked turtle, freshwater tortoise, and Chelid turtle (Appendix). The species identified were:

TABLE 2. Number of archaeological sites and survey methods, per state, which have freshwater turtle remains (bones, shell fragments) and indicate Aboriginal use of this resource in Australia. State abbreviations are ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, Qld = Queensland), SA = South Australia, WA = Western Australia, Vic = Victoria, and Tas = Tasmania.

State	Ashy grey deposits	Excavation	Midden (mound)	Site survey	Open site	Total	%
ACT	0	0	0	0	0	0	0.0
NSW	1	2	2	1	0	6	20.0
NT	0	4	4	0	1	9	30.0
Qld	0	4	1	0	0	5	16.7
SA	0	6	0	0	0	6	20.0
WA	0	3	0	0	0	3	10.0
Vic	0	0	1	0	0	1	3.3
Tas	0	0	0	0	0	0	0.0
Total	1	19	8	1	1	30	

*C. rugosa* in Ji-bena mound (Brockwell et al. 2005) and Arafura Swamp (Peterson 1973), both in Arnhem Land, in Kina (South Alligator River), NT (Meehan et al. 1985), and in Anbangbang I and Djuwarr I (Deaf Adder Gorge), both in Kakadu National Park, NT (Foley 1985); *C. insculpta* in Anbangbang I and Djuwarr I (Deaf Adder Gorge), both in Kakadu National Park, NT (Foley 1985); *C. longicollis* in Lapstone creek open site, western Cumberland Plain, NSW (Kohen 1986), and in Fromm's Landing (Pate 1997), Devon Downs Shelter and Tartanga site (Hale and Tindale 1930), all in Nildottie, SA; *E. macquarii* in Fromm's Landing (Pate 1997), Devon Downs Shelter and Tartanga site (Hale and Tindale 1930), all in Nildottie, SA; and *C. expansa* in Gyraunda region, Dawson River, Qld (Morwood and Godwin 1987), and Devon Downs Shelter, Nildottie, SA (Hale and Tindale 1930; Appendix). All these records and species names were corroborated by our species distribution maps, as the identified turtle species by the original authors fell within their respective species distribution (Appendix, Supplemental Information Fig. S1). Fifteen turtle species of a total of 25 species in Australia (Van Dyke et al. 2018), potentially could have been present in archaeological findings according to our study (Appendix, Supplemental Information Fig. S1), and these are the potential species in each state: NSW (*C. expansa*, *C. longicollis*, and *E. macquarii*); NT (*C. insculpta*, *C. rugosa*, *C. burrungandjii*, *E. dentata*, *E. flaviventralis*, and *E. tanybaraga*); Qld (*C. expansa*, *C. longicollis*, *E. macquarii*, *E. subglobosa worrelli*, *M. latisternum*, *E. albagula*, and *E. lavarackorum*); SA (*C. expansa*, *C. longicollis*, and *E. macquarii*); Vic (*C. longicollis*); and WA (South-western Long-necked Turtle, *C. oblonga*, *C. burrungandjii*, and *E. victoriae*; Appendix, Supplemental Information Fig. S1).

**Age records in rock art and archaeology.**—The only direct dated turtle image found was of a short-necked turtle, executed in beeswax, in Western Arnhem Land, NT (Age: 4,460 BP  $\pm$  80; see Nelson et al. 1995 and Watchman and Jones 2002; Supplemental Information Table S1). The other dated turtle motifs were estimates based on archaeological findings within the site, and chronology of environmental changes and description of periods or phases associated with those changes by the author (Chaloupka 1993; Morwood and Hobbs 2002). For example, there are some old turtle pictographs from the end of the Pre-estuarine period in Arnhem Land, NT, which are approximately 6,000–10,000 y old (Morwood and Hobbs 2002; Taçon et al. 2020; Supplemental Information Table S1). Other old petroglyphs and pictographs of turtles are found in Dampier Archipelago (12,000 y BP  $\pm$  3,000 y; Mulvaney 2011), WA, and Kakadu National Park (5,000–8,000 y ago, *C. insculpta*; Chaloupka 1993), NT, respectively (Supplemental

Information Table S1). There is also evidence of recent turtle rock art in Barunga, NT, which were probably painted between 1976 and 1990 (Smith et al. 2016; Supplemental Information Table S1). The earliest known record of freshwater turtle fragments in archaeological sites was found in Koolan Island, WA, which is at least 24,000 y BP (O'Connor 1999; Appendix). Other ancient records are found in Abercrombie Creek, NSW, and Murray Bridge, SA, which are approximately 4,000 y BP (Appendix).

## DISCUSSION

Our investigation is one of the few to document the country-wide historical use of and value placed on a whole vertebrate group by Indigenous people in Australia (for whales, dolphins and dugongs see Taçon 2017, and birds of prey see Taçon 2020). By reviewing Aboriginal art and archaeological records, we were able to demonstrate that freshwater turtles were used in most Australian states, and 17 of 25 turtle species in Australia were potentially featured in rock art and 15 of the 25 used as a food source, including five species (*C. longicollis*, *C. rugosa*, *C. expansa*, *E. macquarii* and *C. insculpta*) identified by the original authors at archaeological sites. Additionally, there is evidence that freshwater turtles were part of the diet of Aboriginal people for at least 24,000 y and they were culturally important owing to the variety of styles presented in the rock art records, with turtle paintings up to about 6,000–10,000 y old.

The NT was the state with the highest concentration of sites with both freshwater turtle motifs in the rock art and archaeological turtle remains. This could potentially be related to the area being one of the early routes of migration of Aboriginal people into Australia (Bradshaw et al. 2021; Crabtree et al. 2021), with evidence of early colonization of the Arnhem Land at around 65,000 y ago (Clarkson et al. 2017), translating into an early association of Aboriginal people with the land and the local natural resources (Brockwell 1996, 2006; Russell-Smith et al. 1997). The Arnhem Land, and the NT more broadly, is also one of the richest and oldest areas in rock art sites in Australia (McDonald and Clayton 2016; David et al. 2017), but also one of the most studied areas in the country (McDonald and Clayton 2016). Another factor could be that the three freshwater turtle species mainly depicted in rock art and recovered from archaeological sites in the NT (*C. rugosa*, *C. insculpta* and *E. dentata*, Foley 1985; Taçon 1989; Chaloupka 1993; Brockwell et al. 2005; Guse 2005), show a long association with aboriginal people and their cultural beliefs, spanning at least 5,000–8,000 y (Chaloupka 1993). Interestingly, *C. rugosa* is still consumed by Aboriginal people up to this day, likely being harvested since Aboriginal people arrived in Australia and representing one of the oldest

sustained harvests of a reptile species in the world (Kennett et al. 2014).

In a similar manner, freshwater turtles do play important cultural, mythical, and economic roles to some Aboriginal Australian groups, with some examples of the relative proportion of turtle motifs in the rock art compared to other fauna. For example, in a site in Laura, Qld, turtle motifs ranked fifth out of 19 animal species reported, behind catfish, kangaroo, fish in general, and birds in general (Morwood and Hobbs 2002). On the other hand, turtles were more common in figurative motifs (excluding anthropomorphs) in Mitchell River, Qld, ranked fourth together with eel/catfish, in a total of 11 animals (David 1994), fourth out of 12 animals in Jowalbinna Station, Qld (excluding anthropomorphs and cultural items, David 1994), and third out of six animal depictions in Koolburra Plateau, Qld (excluding therianthropes and anthropomorphs; David 1994). Also, according to the archaeological record and rock art depictions, turtle consumption increased over time (Brockwell et al. 2005; Brockwell and Akerman 2007), in addition to the increase in turtle motifs (Taçon et al. 2003), as a consequence of changes in the environment and climate, including increases in wetlands available in the last 1,000 y in some parts of the NT.

The depiction of turtle motifs in the rock art, but also their habitat and behaviour show an intimate knowledge of Aboriginal people with the local fauna, in addition to some mythological relations. For example, there is a painting in the NT of a *C. rugosa* in its subterranean home, hibernating in the mud until the next rainy season (Chaloupka 1993). The same turtle species is also depicted in a different painting with supposed supernatural features, portrayed as a hunter, with a spear and a goose-wing fan (Chaloupka 1993). The interpretation of rock art motifs may sometimes be influenced by the associated landscape and motifs, such as a 4-m water lily motif associated with a turtle, because turtles bury themselves in the mud of lagoons and are dug up and caught by Aboriginal people (Welch 2003). The use of what are termed x-ray pictographs, where the internal organs are shown, is also a way of showing their detailed knowledge on the anatomy of the animal (Taçon 1989), with many x-ray pictographs of turtles in the NT (Taçon 1989; Layton 1992; Chaloupka 1993). Another cultural example is the four paired turtle motifs in central Qld, which form a 75 km line that crosses the Great Dividing Range and served as a territorial boundary between Aboriginal groups (Morwood and Hobbs 2002). It also ran parallel with another mythological track of a Rainbow serpent and both paths link sites at which water was available (Morwood and Hobbs 2002). Additionally, there are many other ancient stories and myths in the Aboriginal oral history that include freshwater turtles (Taçon 1989;

Taçon et al. 1996; McKay et al. 2001).

Tasmania was the only state that did not have turtle rock art depictions nor turtle remains in archaeological sites. This is unsurprising because there are no extant native freshwater turtles inhabiting Tasmania, and a fossil turtle found there (an *Emydura* species related to *E. macquarii*) is of Oligocene-Miocene age (Warren 1969); consequently, there was no evidence of interaction of local Aboriginal people with turtles. Victoria had one archaeological site record with turtles (Coutts et al. 1976) but no turtle motifs in the rock art recorded. This could be because the motif range in the state is limited, 80% concentrated in the Grampians region and mainly composed of anthropomorphs, with the remainder consisting of geometric figures and bird tracks (McDonald and Clayton 2016). Although no turtle remains were present in the archaeological record in the ACT, the territory has turtle depictions in the rock art in Namadgi National Park (Officer 1989; Layton 1992), and only one turtle species occurring in the territory (*C. longicollis*). Interestingly, there were some records of freshwater turtle motifs on islands off the coast of Qld, WA and NT, and an archaeological site on islands offshore from WA and Qld. Freshwater turtles on such islands were probably relict populations from the time of the supercontinent of Sahul, when Australia and New Guinea were connected during the Last Glaciation Maximum at around 21,000 y ago and sea levels were approximately 125 m lower (Williams et al. 2018). The use of turtles by Aboriginal people on these islands could have occurred within the last glaciation (Koolan Island, WA, at around 24,000 y BP; O'Connor 1999) or when sea levels were similar to the present day, over the last 6,000 y. Additionally, there is some ethnographic evidence of the use of freshwater turtles on other Qld islands, such as North Stradbroke Island (Ross et al. 2010) and Wellesley Islands (Memmott and Horsman 1991).

One of the limitations of the present study is that the identification of potential turtle species present in Aboriginal art is mainly based on distribution maps and not on specific anatomical features of the turtle paintings. This is due to the nature of the literature review, where in many cases the original author presented a list of faunal species featured in paintings in a site, for example, but did not provide an image of the freshwater turtle painting itself. In such cases, we provided all the turtle species that had their distribution overlapping with the painting record (Supplemental Information Table S1); however, in cases where the original author presented common names such as short-necked turtle, or a turtle painting with a long neck, we were able to limit the potential species based on those more detailed records and the maps of distribution. Another limitation is that there is no doubt more records of turtle motifs in the

rock art and turtle remains in archaeological sites in Australia that remain undocumented to science or yet to be discovered. The representation of the findings within each state and territory should be a reasonable representation of historical use of freshwater turtles by Aboriginal people in Australia.

We believe that the results presented here, based on the literature reviewed, show an early association of Aboriginals with freshwater turtles that might have some conservation and management implications. For example, there is no evidence of any freshwater turtle species becoming extinct in mainland Australia since Aboriginal arrival. Two giant terrestrial horned turtles (family Meiolaniidae) in Qld went extinct in the late Pleistocene, however, where aridification of their habitat and human exploitation could have played a role (Rhodin et al. 2015). Thus, the main reasons for Australian freshwater turtle population declines are not apparently due to indigenous overharvesting but related to more recent events after European colonization, such as the introduction of invasive species such as foxes and pigs, vehicle collisions, habitat modification, and disease (Fordham et al. 2006; Santori et al. 2018; Van Dyke et al. 2018, 2019).

Our study expands the current understanding of ancient use and the value placed on Australian freshwater turtle species by Aboriginal people. By reviewing Aboriginal rock art and archaeological records, we were able to demonstrate that freshwater turtle motifs were present in rock art sites in all Australian states, except for Victoria and Tasmania, and there was evidence of freshwater turtle consumption throughout the country. Through the use of turtle species distribution maps, we were also able to identify potential turtle species that might have been featured in the rock art and in remains found in the archaeological sites. Future studies should focus on understanding where in Australia Indigenous people are still using freshwater turtles, which species and their local names, and ecological and cultural values associated with turtles. This is important because: (1) freshwater turtles are totems to some Aboriginal groups, such as *C. expansa* for the Yorta Yorta people (Howard et al. 2011); (2) to keep stories and traditions alive for young Indigenous people (Turnbull 2016); (3) to help researchers uncover turtle behaviors unknown to western science, such as underwater nesting by *C. rugosa* (Kennett et al. 1993); (4) to aid in species identification, such as the case of *C. insculpta* occurrence in the NT (Chaloupka 1993; Georges et al. 2000) and the potential species identification in our study; and (5) to understand how traditional knowledge and mythology might help in protecting habitats and conserving turtle species (Ferronato and Cruzado 2013).

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#### LITERATURE CITED

- Aplin, K., T. Manne, and V. Attenbrow. 2016. Using a 3-stage burning categorization to assess postdepositional degradation of archaeofaunal assemblages: some observations based on multiple prehistoric sites in Australasia. *Journal of Archaeological Science: Reports* 7:700–714.
- Aubert, M. 2012. A review of rock art dating in the Kimberley, Western Australia. *Journal of Archaeological Science* 39:573–577.
- Bednarik, R.G. 2013. Megafauna depictions in Australian rock art. *Rock Art Research* 30:197–215.
- Bonhomme, T. 1990. An archaeological survey of the Barmah Forest. Occasional Report 34, Department of Conservation and Environment, Victoria Archaeological Survey, Melbourne, Victoria, Australia. 141 p.
- Bostwick, T.W. 2002. Landscape of the spirits: Hohokam rock art at South Mountain Park. University of Arizona Press, Tucson, Arizona, USA.
- Bourman, R.P., C.V. Murray-Wallace, A.P. Belperio, and N. Harvey. 2000. Rapid coastal geomorphic change in the River Murray Estuary of Australia. *Marine Geology* 170:141–168.
- Bradshaw, C.J.A., K. Norman, S. Ulm, A.N. Williams, C. Clarkson, J. Chadoeuf, S.C. Lin, Z. Jacobs, R.G. Roberts, M.I. Bird, et al. 2021. Stochastic models support rapid peopling of Late Pleistocene Sahul. *Nature Communications* 12:2440. <https://doi.org/10.1038/s41467-021-21551-3>.
- Brockwell, S. 1996. Prehistoric settlement patterns on the Adelaide River, northern Australia. *Australian Aboriginal Studies* 1996(1):45–59.



- Brockwell, S. 2006. Earth Mounds in northern Australia: a review. *Australian Archaeology* 63:47–56.
- Brockwell, S., and K. Akerman. 2007. Bone points from the Adelaide River, Northern Territory. *Australian Aboriginal Studies* 2007:83–97.
- Brockwell, S., P. Bourke, A. Clarke, C. Crassweller, P. Faulkner, B. Meehan, S. O'Connor, R. Sim, and D. Wesley. 2011. Holocene settlement of the northern coastal plains, Northern Territory, Australia. *Beagle: Records of the Museums and Art Galleries of the Northern Territory* 27:1–22.
- Brockwell, S., B. Meehan, and B. Ngurrabangurraba. 2005. An-barra Archaeological Project: a progress report. *Australian Aboriginal Studies* 2005:84–89.
- Chaloupka, G. 1993. *Journey in Time: The World's Longest Continuing Art Tradition. The 50,000 year Story of the Australian Aboriginal Rock Art of Arnhem Land*. Reed, Chatswood, New South Wales, Australia.
- Clarkson, C., Z. Jacobs, B. Marwick, R. Fullagar, L. Wallis, M. Smith, R.G. Roberts, E. Hayes, K. Lowe, X. Carah, et al. 2017. Human occupation of northern Australia by 65,000 years ago. *Nature* 547:306–310.
- Cogger, H.G. 2000. *Reptiles and Amphibians of Australia*. 6th Edition. Reed New Holland, Sydney, New South Wales, Australia.
- Cole, N. 1988. *The Rock Art of Jowalbinna*. B.A. (Hons.) Thesis, James Cook University, Townsville, Queensland, Australia. 102 p.
- Coles, R., and R. Hunter. 2010. *The Ochre Warriors: Peramangk Culture and Rock Art in the Mount Lofty Ranges*. Axiom Publishing, Stepney, South Australia, Australia.
- Cooke, R. 2004. Observations on the religious content of animal imagery of the 'Gran Cocle' semiotic tradition of pre-Colombian Panama. Pp. 114–127 *In Behaviour Behind Bones: The Zooarchaeology of Ritual, Religion, Status, and Identity*. O'Day, S.J., S.W. van Neer, and A. Ervynck (Eds.). Oxbow Books, Oxford, UK.
- Coutts, P., D. Witter, M. McIlwraith, and R. Frank. 1976. The mound people of western Victoria: a preliminary statement. *Records of the Victorian Archaeological Survey* 1:1–54.
- Coy, F.E., Jr., T.C. Fuller, L.G. Meadows, and J.L. Swauger. 1997. *Rock Art of Kentucky*. University Press of Kentucky, Lexington, Kentucky, USA.
- Crabtree, S.A., D.A. White, C.J.A. Bradshaw, F. Saltre, A.N. Williams, R.J. Beaman, M.I. Bird, and S. Ulm. 2021. Landscape rules predict optimal super-highways for the first peopling of Sahul. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-021-01106-8>.
- Crawford, I.M. 1964. The engravings of Depuch Island. Pp 23–63 *In Report on the Aboriginal Engravings and Flora and Fauna of Depuch Island, Western Australia*. Ride, W.D.L., and A. Neumann (Eds.). Western Australian Museum Board by the Government Printer, Perth, Western Australia, Australia.
- David, B. 1994. *A space-time odyssey: rock art and regionalisation in North Queensland prehistory*. Ph.D. Dissertation, University of Queensland, Brisbane, Australia. 415 p.
- David, B., and H. Lourandos. 1998. Rock art and socio-demography in northeastern Australian prehistory. *World Archaeology* 30:193–219.
- David, B., P.S.C. Taçon, R. Gunn, J-J. Delannoy, and J-M. Geneste. 2017. The archaeology of western Arnhem Land's rock art. Pp 1–17 *In The Archaeology of Rock Art in Western Arnhem Land*. David B., P.S.C. Taçon, J-J. Delannoy, and J-M. Geneste (Eds.). Australian National University Press, Canberra, Australian Capital Territory, Australia.
- David, B., H. Walt, H. Lourandos, M. Rowe, J. Brayer, and C. Tuniz. 1997. Ordering the rock paintings of the Mitchell-Palmer limestone zone (Australia) for AMS dating. *Artefact* 20:57–72.
- Davidson, D.S., and K. Akerman. 2011. *Aboriginal Australian and Tasmanian Rock Carvings and Paintings with a Preliminary Consideration of Aboriginal Australian Decorative Art*. Hesperian Press, Carlisle, Western Australia, Australia.
- Dibden, J. 2019. Rock Art and Temporal Variability. Pp. 129–176 *In Drawing in the Land: Rock Art in the Upper Nepean, Sydney Basin, New South Wales*. Dibden, J. (Ed.). Australian National University Press, Canberra, Australian Capital Territory, Australia.
- Ferronato, B.O., and G. Cruzado. 2013. Uses, beliefs, and conservation of turtles by Ashaninka Indigenous people, Central Peru. *Chelonian Conservation and Biology* 12:308–313.
- Flood, J. 1987. Rock art of the Koolburra Plateau, north Queensland. *Rock Art Research* 4:91–126.
- Flood, J. 1996. *Rock Art of the Dreamtime: Images of Ancient Australia*. Angus and Robertson, Pymble, New South Wales, Australia.
- Flood, J. 2013. Interpretation of Australian rock art. *Time Mind* 6:59–64.
- Foley, D. 1985. Faunal analysis of Anbangbang 1 and Djuwarr 1. Pp.97–102 *In Archaeological Research in Kakadu National Park, Special Publication 13*. Jones, R. (Ed.). Australian National Parks and Wildlife Service, Canberra, Australian Capital Territory, Australia.
- Fordham, D., A. Georges, B. Corey, and B.W. Brook. 2006. Feral pig predation threatens the indigenous harvest and local persistence of snake-necked turtles in northern Australia. *Biological Conservation* 133:379–388.

- Georges, A., S. Doody, J. Young, and J. Cann. 2000. The Australian Pig-nosed Turtle (*Carettochelys insculpta*). Cooperative Research Centre for Freshwater Ecology, Applied Ecology, University of Canberra, Canberra, Australian Capital Territory, Australia.
- Georges, A., S. Doody, C. Eisemberg, E. Alacs, and M. Rose. 2008. *Carettochelys insculpta* Ramsay 1886 - Pig-Nosed Turtle, Fly River Turtle. Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Rhodin, A.G.J., P.C.H. Pritchard, P.P. van Dijk, R.A. Saumure, K.A. Buhlmann, J.B. Iverson, and R.A. Mittermeier (Eds.). Chelonian Research Monographs No. 5, doi:10.3854/crm.5.090.affinis.v1.2015.
- Gillreath-Brown, A., and T. Peres. 2017. Identifying turtle shell rattles in the archaeological record of the southeastern United States. *Ethnobiology Letters* 8:109–114.
- Gunn, R.G. 2003. Rock art in the Tolmer sandstones, Northern Territory, Australia. *Before Farming* 2003:1–22.
- Gunn, R.G., B. David, J-J. Delannoy, and M. Katherine. 2017. The past 500 years of rock art at Nawarla Gabarnmang, central-western Arnhem Land. Pp. 303–328 *In* The Archaeology of Rock Art in Western Arnhem Land. David, B., P.S.C. Taçon, J-J. Delannoy, and J-M. Geneste (Eds.). Australian National University Press, Canberra, Australian Capital Territory, Australia.
- Gunn, R.G., L.C. Douglas, and R.L. Whear. 2018. The complexity of Arnhem Land rock art complexes. *Rock Art Research* 35:3–24.
- Guse, D.L. 2005. Our home our country: a case study of law, land, and Indigenous cultural heritage in the Northern Territory, Australia. M.Sc. Thesis. Charles Darwin University, Darwin, Northern Territory, Australia. 207 p.
- Hale, H.M., and N.B. Tindale. 1930. Notes on Some Human Remains in the lower Murray Valley, South Australia. Hassell Press, Adelaide, South Australia, Australia.
- Hale, H.M., and N.B. Tindale. 1933. Aborigines of Princess Charlotte Bay, North Queensland. *Records of the South Australian Museum* 5:64–116.
- Hall, J. 1984. Exploratory excavation at Toulkerrie midden (LB:B75), Moreton Island, S.E. Queensland. *Queensland Archaeological Research* 1:61–84.
- Helfensdorfer, A. 2020. The Holocene geomorphic history of the lower Murray River and Murray estuary. Ph.D. Dissertation, University of Sydney, Sydney, New South Wales, Australia. 207 p.
- Henson, B.B. 1986. Art in mud and stone: mud glyphs and petroglyphs in the Southeast. Pp. 81–108 *In* The Prehistoric Native American Art of Mud Glyph Cave. Faulkner, C.H. (Ed.). University of Tennessee Press, Knoxville, Tennessee, USA.
- Howard, K., L. Beesley, L. Joachim, and A. King. 2011. Cultural conservation of freshwater turtles in Barnah-Millewa Forest 2010–11. Technical Report Series No. 223, Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, Heidelberg, Victoria, Australia.
- Johnson, I. 1977. Abercrombie Arch Shelter: an excavation near Bathurst, N.S.W. *Australian Archaeology* 6:28–40.
- Johnson, M.R. 2004. Changing times, changing techniques: the spatial analysis of an Aboriginal rock art site with a Geographic Information System. M.Sc. Thesis, University of Melbourne, Melbourne, Victoria, Australia. 252 p.
- Kehlmaier, C., X. Zhang, A. Georges, P.D. Campbell, S. Thomson, and U. Fritz. 2019. Mitogenomics of historical type specimens of Australasian turtles: clarification of taxonomic confusion and old mitochondrial introgression. *Scientific Reports* 9:5841. <https://doi.org/10.1038/s41598-019-42310-x>
- Kennett, R., K. Christian, and D. Pritchard. 1993. Underwater nesting by the tropical freshwater turtle, *Chelodina rugosa* (Testudinata: Chelidae). *Australian Journal of Zoology* 41:47–52.
- Kennett, R., D.A. Fordham, E. Alacs, B. Corey, and A. Georges. 2014. *Chelodina oblonga* Gray 1841 - Northern Snake-Necked Turtle. Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Rhodin, A.G.J., P.C.H. Pritchard, P.P. van Dijk, R.A. Saumure, K.A. Buhlmann, J.B. Iverson, and R.A. Mittermeier (Eds.). Chelonian Research Monographs No. 5, doi:10.3854/crm.5.077.oblonga.v1.2014.
- Kohen, J. 1986. Prehistoric settlement in the Western Cumberland Plain: resources, environment and technology. Ph.D. Dissertation, Macquarie University, Sydney, New South Wales, Australia. 500 p.
- Lanoue, G. 1990. When is a turtle a turtle? Representations of social solidarity in rock art. *Journal de la Société des Américanistes* 76:7–31.
- Layton, R. 1992. *Australian Rock Art: A New Synthesis*. Cambridge University Press, Cambridge, UK.
- Lewis, D.J. 1988. The Rock Paintings of Arnhem Land, Australia: Social, Ecological and Material Culture Change in the Post-Glacial Period. International Series S415. British Archaeological Reports, Oxford, UK.
- Lewis, D. 1990a. “They meet up at Bilinara”: rock art in the Victoria River valley. M.Sc. Thesis, Australian National University, Canberra, Australian Capital

Ferronato and Georges.—Aboriginal use of chelonians in Australia.

- Territory, Australia. 226 p.
- Lewis, D., and B. McCausland. 1987. Engraved human figures and faces from Wardaman country, eastern Victoria River district, Northern Territory. *Australian Aboriginal Studies* 1987:67–79.
- Loendorf, L., C. Chippindale, and D.S. Whitley. 2005. *Discovering North America Rock Art*. University of Arizona Press, Tucson, Arizona, USA.
- Martin, S. 2011. Palaeoecological evidence associated with earth mounds of the Murray Riverine Plain, south-eastern Australia. *Environmental Archaeology* 16:162–172.
- Maynard, L. 1976. An archaeological approach to the study of Australian rock art. M.Sc. Thesis, University of Sydney, Sydney, New South Wales, Australia. 261 p.
- McBryde, I. 1974. *Aboriginal Prehistory in New England: an Archaeological Survey of Northeastern New South Wales*. Sydney University Press, Sydney, New South Wales, Australia.
- McCarthy, F.D. 1940. The carved trees of New South Wales. *Australian Museum Magazine* 7: 161–166.
- McCarthy, F.D. 1961. A remarkable gallery of cave paintings in eastern New South Wales. *Records of the Australian Museum* 25:115–120.
- McCarthy, F.D. 1983. *Catalogue of rock engravings in the Sydney-Hawkesbury district, N.S.W.* National Parks and Wildlife Service, Sydney, New South Wales, Australia. 998 p.
- McCleary, T.P. 2016. *Crow Indian Rock Art: Indigenous Perspectives and Interpretations*. Left Coast Press, Walnut Creek, California, USA.
- McDonald, J., and L. Clayton. 2016. *Rock Art Thematic Study*. Department of the Environment and the Australian Heritage Council, Centre for Rock Art Research and Management, University of Western Australia, Perth, Australia. 139 p.
- McKay, H., J. Barker, F. Jones, and E. McLeod. 2001. *Gadi Mirrabooka: Australian Aboriginal Tales from the Dreaming*. Libraries Unlimited Incorporated, Englewood, Colorado, USA.
- Meehan, B., S. Brockwell, J. Allen, and R. Jones. 1985. The wetlands sites. Pp.103–153 *In* *Archaeological Research in Kakadu National Park*, Special Publication 13. Jones, R. (Ed.). Australian National Parks and Wildlife Service, Canberra, Australian Capital Territory, Australia.
- Memmott, P., and R. Horsman. 1991. *A Changing Culture: The Lardil Aborigines of Mornington Island*. Social Science Press, Wentworth Falls, New South Wales, Australia.
- Mire, S. 2008. The discovery of Dhambalin rock art site, Somaliland. *African Archaeological Review* 25:153–168.
- Morwood, M.J., and L. Godwin. 1987. *Archaeology of the Gyrranda region, Dawson River, central Queensland*. Queensland Archaeological Research 4:96–114.
- Morwood, M. J., and D.R. Hobbs. 2002. *Visions from the past: the archaeology of Australian Aboriginal art*. Smithsonian Institution Press, Washington, D.C., USA.
- Mulvaney, K. 1996. What to do on a rainy day. *Rock Art Research* 13:3–20.
- Mulvaney, K. 2001. Cultural images: the petroglyphs of a sandstone quarry, Helen Springs, Northern Territory, Australia. *Rock Art Research* 18:40–54.
- Mulvaney, K. 2011. About time: towards a sequencing of the Dampier Archipelago petroglyphs of the Pilbara region, Western Australia. *Records of the Western Australian Museum* 79:30–49.
- Nelson, D.E., G. Chaloupka, C. Chippindale, M.S. Alderson, and J.R. Southon. 1995. Radiocarbon dates for beeswax figures in the prehistoric rock art of northern Australia. *Archaeometry* 37:151–156.
- Nihildas, N. 2014. A micro-regional approach to the rock art sites in the Anjunad Valley, south Central Kerala. *Journal of Multidisciplinary Studies in Archaeology* 2:593–624.
- O'Connor, S. 1999. 30,000 Years of Aboriginal Occupation in the Kimberley, Northwest Australia. *Terra Australis* 14. Union Offset Printers, Canberra, Australian Capital Territory, Australia.
- O'Connor, S., K. Aplin, and S. Collins. 2008. A small salvage excavation in Windjana Gorge, Kimberley, Western Australia. *Archaeology in Oceania* 43:75–81.
- O'Connor, S., J. Balme, J. Fyfe, J. Oscar, M. Oscar, J. Davis, H. Malo, R. Nuggett, and D. Surprise. 2013. Marking resistance? Change and continuity in the recent rock art of the southern Kimberley, Australia. *Antiquity* 87:539–554.
- Officer, K.L.C. 1989. *Namadgi pictures: the Aboriginal rock art sites within the Namadgi National Park, A.C.T.: their recording, significance, analysis and conservation*. ACT Administration, Heritage Unit, and the ACT Parks and Conservation Service, Canberra, Australian Capital Territory, Australia. 98 p.
- Organ, M.K., and C. Speechley. 1997. Illawarra Aborigines. Pp 7–22 *In* *A History of Wollongong*. Hagan, J.S., and A. Wells (Eds.). University of Wollongong Press, Wollongong, New South Wales, Australia.
- Pardoe, C. 2003. The Menindee Lakes: a regional archaeology. *Australian Archaeology* 57:42–53.
- Pate, F.D. 1997. Bone chemistry and paleodiet: reconstructing prehistoric subsistence-settlement systems in Australia. *Journal of Anthropological Archaeology* 16:103–120.
- Palka, J. W. 2010. *The A to Z of Ancient Mesoamerica*. Scarecrow Press, Lanham, Maryland, USA.

- Peterson, N. 1973. Camp site location amongst Australian hunter-gatherers: archaeological and ethnographic evidence for a key determinant. *Archaeology and Physical Anthropology in Oceania* 8:173–193.
- Piotto, E.L., A. Ross, C. Perryman, and S. Ulm. 2018. Deliberate selection of rocks in the construction of the Gummingurru Stone Arrangement Site Complex, Darling Downs, Queensland. *Queensland Archaeological Research* 21:27–38.
- Rhodin, A., S. Thomson, G. Georgalis, H-V. Karl, I. Danilov, A. Takahashi, M. de la Fuente, J. Bourque, M. Delfino, R. Bour, et al. 2015. Turtles and tortoises of the world during the rise and global spread of humanity: first checklist and review of extinct Pleistocene and Holocene chelonians. *Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. Rhodin, A.G.J., P.C.H. Pritchard, P.P. van Dijk, R.A. Saumure, K.A. Buhlmann, J.B. Iverson, and R.A. Mittermeier (Eds.). *Chelonian Research Monographs* No. 5, doi:10.3854/crm.5.000e.fossil.checklist.v1.2015
- Roberts, A., I. Campbell, A. Pring, G. Bell, A. Watchman, R.S. Popelka-Filcoff, C.E. Lenehan, C.T. Gibson, and N. Franklin. 2015. A multidisciplinary investigation of a rock coating at Ngaut Ngaut (Devon Downs), South Australia. *Australian Archaeology* 80:32–39.
- Röder, J. 1939. Rock-pictures and prehistoric times in Dutch New Guinea. *Man* 39:175–178.
- Rosenfeld, A., J. Winston-Gregson, and K. Maskell. 1983. Excavations at Nursery Swamp 2, Gudgenby Nature Reserve, Australian Capital Territory. *Australian Archaeology* 17:48–58.
- Ross, A., J. Prangnell, and B. Coghill. 2010. Archaeology, cultural landscapes and Indigenous knowledge in Australian cultural heritage management legislation and practice. *Heritage Management* 3:73–96.
- Rudner, J., and I. Rudner. 1968. Rock-art in the thirstland areas. *South African Archaeological Bulletin* 23:75–89.
- Russell-Smith, J., D. Lucas, M. Gapindi, B. Gunbunuka, N. Kapirigi, G. Namingam, K. Lucas, P. Giuliani, and G. Chaloupka. 1997. Aboriginal resource utilization and fire management practice in western Arnhem Land, monsoonal northern Australia: notes for prehistory, lessons for the future. *Human Ecology* 25:159–195.
- Santori, C., R-J. Spencer, J.U. Van Dyke, and M.B. Thompson. 2018. Road mortality of the eastern Long-necked Turtle (*Chelodina longicollis*) along the Murray River, Australia: an assessment using citizen science. *Australian Journal of Zoology* 66:41–49.
- Schneider, J.S., and G.D. Everson. 1989. The Desert Tortoise (*Xerobates agassizii*) in the prehistory of the southwestern Great Basin and adjacent areas. *Journal of California & Great Basin Anthropology* 11:175–202.
- Schultz, A.S. 1956. North-west Australian rock paintings. *Memoirs of the National Museum of Victoria* 20:7–57.
- Sefton, C. 2013. Molluscs and fish in the rock art of the coast, estuary and hinterland of the Woronora Plateau, NSW. *Rock Art Research: Journal of the Australian Rock Art Research Association* 30:97–102.
- Shine, D., M. Marshall, D. Wright, T. Denham, P. Hiscock, G. Jacobsen, and S-P. Stephens. 2015. The archaeology of Bindjarran rockshelter in Manilkarr Country, Kakadu national Park, Northern Territory. *Australian Archaeology* 80:104–111.
- Slack, M., R. Fullagar, A. Border, J. Diamond, and J. Field. 2005. Late Holocene occupation at Bunnengalla 1, Musselbrook Creek, northwest Queensland. *Australian Archaeology* 60:54–58.
- Smith, B. 1998. The tale of the chameleon and the platypus: limited and likely choices in making pictures. Pp 212–228 *In* The Archaeology of Rock-art. Chippindale, C., and P.S.C. Taçon (Eds.). Cambridge University Press, Cambridge, UK.
- Smith, C., I. Domingo, and G. Jackson. 2016. Beswick Creek Cave six decades later: change and continuity in the rock art of Doria Gudaluk. *Antiquity* 90:1613–1626.
- Stirling, E.C. 1911. Preliminary report on the discovery of native remains at Swanport, River Murray; with an inquiry into an alleged occurrence of a pandemic among Australian Aboriginals. *Transactions of the Royal Society of South Australia* 35:4–46.
- Taçon, P.S.C. 1989. From rainbow snakes to ‘x-ray’ fish: the nature of the recent rock painting tradition of western Arnhem Land, Australia. Ph.D. Dissertation, Australian National University, Canberra, Australian Capital Territory, Australia. 617 p.
- Taçon, P.S.C. 2000. New insight into old north Australian rock-art. *Artlink* 20:6–10.
- Taçon, P.S.C. 2017. Whales, dolphins and dugongs in the rock art of Australia. Pp. 71–84 *In* Whale on the Rock. Sang-Mog, L. (Ed.). Ulsan Petroglyph Museum, Ulsan, South Korea.
- Taçon, P.S.C. 2020. Depictions of eagles, hawks and owls in the rock art of Australia. Pp. 243–248 *In* Raptor on the Fist: Falconry, its Imagery and Similar Motifs Throughout the Millennia on a Global Scale. Grimm, O., K-H. Gersmann, and A. Tropato (Eds.). Advanced Studies on the Archaeology and History of Hunting. Wachholtz, Kiel/Hamburg, Germany.
- Taçon, P.S.C., and S. Webb. 2017. Art and megafauna in the Top End of the Northern Territory, Australia: illusion or reality? Pp. 145–161 *In* The Archaeology of Rock Art in Western Arnhem Land. David, B., P.S.C. Taçon, J-J. Delannoy, and J-M. Geneste (Eds.).

- Australian National University Press, Canberra, Australian Capital Territory, Australia.
- Taçon, P.S.C., S.K. May, R. Lamilami, F. McKeague, I.G. Johnston, A. Jalandoni, D. Wesley, I.D. Sanz, L.M. Brady, D. Wright, and J. Goldhahn. 2020. Maliwawa figures - a previously undescribed Arnhem Land rock art style. *Australian Archaeology* 86:208–225.
- Taçon, P.S.C., K. Mulvaney, S. Ouzman, R.L. Fullagar, L.M. Head, and P. Carlton. 2003. Changing ecological concerns in rock-art subject matter of North Australia's Keep River region. *Before Farming* 3:1–14.
- Taçon, P.S.C., M. Wilson, and C. Chippindale. 1996. Birth of the rainbow serpent in Arnhem Land rock art and oral history. *Archaeology Oceania* 31:103–124.
- Thorn, K.M., R. Roe, A. Baynes, R.P. Hart, K.A. Lance, D. Merrilees, J.K. Porter, and S. Sofoulis. 2017. Fossil mammals of Caladenia Cave, northern Swan Coastal Plain, south-western Australia. *Records of the Western Australian Museum* 32:217–236.
- Van Dyke, J.U., B.O. Ferronato, and R-J. Spencer. 2018. Current conservation status of Australian freshwater turtles. *Australian Journal of Zoology* 66:1–3. [https://doi.org/10.1071/ZOV66n1\\_IN](https://doi.org/10.1071/ZOV66n1_IN).
- Van Dyke, J. U., R-J. Spencer, M.B. Thompson, B. Chessman, K. Howard, and A. Georges. 2019. Conservation implications of turtle declines in Australia's Murray River system. *Scientific Reports* 9, 1998. <https://doi.org/10.1038/s41598-019-39096-3>.
- Veth, P., J. McDonald, and S. de Koning. 2018. Archaeology and rock art of the north-west arid zone with a focus on animals. Pp 283–306 *In* *On the Ecology of Australia's Arid Zone*. Lambers, H. (Ed). Springer, Dordrecht, Netherlands.
- Watchman, A.L., and R. Jones. 2002. An independent confirmation of the 4 ka antiquity of a beeswax figure in Western Arnhem Land, Northern Australia. *Archaeometry* 44:145–153.
- Waldron, L. 2011. Geographic distributions of zoomorphic motifs in Saladoid ceramics. Pp. 450–466 *In* *Proceedings of the 24th Congress of the International Association for Caribbean Archaeology*. Berard, B. (Ed.). International Association for Caribbean Archaeology, Fort-de-France, Martinique.
- Warren, J.W. 1969. Chelid turtles from the Mid-Tertiary of Tasmania. *Journal of Paleontology* 43:179–182.
- Welch, D. 1993. Stylistic change in Kimberley rock art, Australia. Pp. 99–113 *In* *Rock Art Studies: the Post-stylistic Era or Where Do We Go From Here?* Bahn, P.G., and M. Lorblanchet (Eds.). Oxford Books, Oxford, UK.
- Welch, D. 2003. Plant motifs in Kimberley rock-art, Australia. *Before Farming* 4:1–13.
- Wesley, D., and J. Viney. 2016. South east Asian influences in western Arnhem Land rock art decorative infill. *Journal of the Anthropological Society of South Australia* 40:35–69.
- Wesley, D., T. Jones, and R. Whitau, R. 2017. People and fish: Late Holocene rock art at Wulk Lagoon, Arnhem Land. Pp 21–50 *In* *The Archaeology of Rock Art in Western Arnhem Land*. David, B., P.S.C. Taçon, J-J. Delannoy, and J-M. Geneste (Eds.). Australian National University Press, Canberra, Australian Capital Territory, Australia.
- Westcott, C., I. Lilley, and S. Ulm. 1999. The archaeology of Cania Gorge: an overview. *Queensland Archaeological Research* 11:15–28.
- Western Australia Aboriginal Education Resources Unit. 1990. *Aboriginal artists of Western Australia*. Aboriginal Education Resources Unit, Leederville, Western Australia, Australia.
- Whitley, D.S. 2005. *Introduction to Rock Art Research*. Left Coast Press Inc., Walnut Creek, California, USA.
- Williams, A.N., S. Ulm, T. Sapienza, S. Lewis, and C.S.M. Turney. 2018. Sea-level change and demography during the last glacial termination and early holocene across the Australian continent. *Quaternary Science Reviews* 182:144–154.
- Wilson, C.J. 2017. *Holocene archaeology and Ngarrindjeri Ruwe/Ruwar (land, body, spirit): a critical Indigenous approach to understanding the Lower Murray River, South Australia*. Ph.D. Dissertation. Flinders University, Adelaide, Australia. 283 p.
- Zubieta, L.F. 2016. Learning through practise: Cheŵa women's roles and the use of rock art in passing on cultural knowledge. *Journal of Anthropological Archaeology* 43:13–28.

#### MUSEUM DATA AND UNPUBLISHED REPORTS

- 'Australia' (Australian News & Information Bureau). 'Carved trees, mystery stones & cave paintings – relics of the vanished Darling tribes' (NSW SH55, SI54), v9, no. 3., sourced from Australian Institute of Aboriginal and Torres Strait Islander Studies, MF 32.
- Australian National Parks and Wildlife Service. 1970. Photographs of rock art sites in the Mootwingee, N.S.W. area. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image ANPWS.001.CS-000024641.
- Bawinanga Aboriginal Corporation. 1994. Mann River Rock Art Recording Project. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BAC.002.BW-N05924\_28.
- Behrendt, P. 1985. Photographs of archaeological and historical sites and flora in the Walgett area.

- Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BEHRENDT.P03.CS-000088259.
- Borsboom, A.P. 1972. Rock art, dwellings and ceremonies in Maningrida. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BORSBOOM.A02.CS-000014282.
- Brandl, E.J. 1965. Rock Art and Rock Art sites in Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E02.CS-000052417, 000052888, 000052029, 000052530.
- Brandl, E.J. 1968a. Rock art at Cadell River, Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E33.BW-N08995\_07.
- Brandl, E.J. 1968b. Rock art at Obiri, East Alligator Crossing, Oenpelli and Red Lily Lagoon in Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E31.BW-N08976\_02.
- Brandl, E.J. 1968c. Rock art of Burrunggui (Nourlangie Rock), Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E27.BW-N08882\_08.
- Brandl, E.J. 1969. Photographs of rock art and landscapes taken by Eric Brandl whilst accompanying the 1969 Czechoslovak Expedition into Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E26.BW-N08858\_37.
- Brandl, E.J. 1970a. Rock art in the Gimbat Creek area, Arnhem Land. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E19.BW-N08672\_22A, N08672\_05A.
- Brandl, E.J. 1970b. Photographs of rock art at Djerlandjal Rock, Mount Brockman. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image BRANDL.E39.BW-N09201\_01.
- Coles, R. 2007. Recently recorded Aboriginal art sites in the Barossa Region. History Conference SA 2007. South Australia, Australia. 18 p.
- Creamer, H. 1970. Photographs taken of significant sites and education program participants taken during a survey of Aboriginal sites in the New South Wales Parks reserves. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image CREAMER.H08.CS-000172250.
- Edwards, R. 1965. Ceremonies, rock art and material culture. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image EDWARDS.R01.CS-000003267, 000003183.
- Edwards, R. 1967. Rock art, excavations, ceremonies and general environment at various locations in South Australia, Western Australia and Northern Territory. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image EDWARDS.R08.BW-N07728\_08, N07715\_02.
- Gunn, R.G. 1989. Rock art and archaeology sites in Gregory National Park, N.T. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image GUNN.R04.CS-000104148.
- Hornshaw, B.L. 1931. The B. L. Hornshaw Collection. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image HORNSHAW.B01.BW-N06816\_06, N06819\_18A.
- Kimber, R.G. 1975. Rock art sites and landscape at Kakadu and East Alligator River region. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image KIMBER.R01.CN-N01767\_01.
- Kimber, R.G. 1979. Scenes from Central Australia and Flinders Ranges. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image KIMBER.R04.CS-000059632.
- Layton, R. 1977. Rock art, musical instruments and fauna around Mt. Isa, Qld and northwest WA. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image LAYTON.R01.CS-000028921.
- Lewis, D. 1974. Magela Creek area rock art. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image LEWIS.D07.CS-000048099.
- Lewis, D. 1990b. Rock paintings and engravings in the Victoria River district. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image LEWIS.D14.CS-000110390, 000110369.
- Linley, S. 1970. Photographs of rock art in the West Kimberleys. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image LINLEY.S01.CS-000003620.
- Lorblanchet, M. 1974. Details of rock paintings and engravings at the Early Man and Emu shelters in Laura, North Queensland. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image LORBLANCHET.M03.BW-N00498\_04.
- Macdonald, P. 1992. AURA grand tour 1992 - rock art in Western Australia and the Northern Territory. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image MACDONALD.P05.CN-N07807\_04.
- Martin-Stone, K., and R. Woolfe. 2013. An assessment of the archaeological potential of Area C and the proposed haul road, Sherwin Iron 2013. Earth Sea Heritage Surveys. Draft V1.1. Darwin, Northern Territory, Australia. 109 p.
- McKenzie, K. 1978. Rock Art; Environment; Community. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image MCKENZIE.K01.CS-000034602.

Ferronato and Georges.—Aboriginal use of chelonians in Australia.

- Meehan, B. 1987. Anbarra and Nanggiwumerri daily activities and lifestyle. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image MEEHAN\_JONES.002.CS-000151824.
- Meehan, B. 1990. Laurie Creek Rock Art Project. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image MEEHAN.B14.BW-N08317\_24.
- Officer, K.L.C. 1989. Namadgi pictures: the Aboriginal rock art sites within the Namadgi National Park, A.C.T.: their recording, significance, analysis and conservation. ACT Administration, Heritage Unit, and the ACT Parks and Conservation Service, Canberra, A.C.T., Australia. 98 p.
- Ponifex. 1967. Photographs of rock art in the Timber Creek region. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image PONIFEX.001.CS-000009770.
- Power, C.D. 1972. The Charles Danvers Power photographic collection of Aboriginal engravings in the Sydney/Hawkesbury sandstone area. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image AIATSI.041.CS-000123876.
- Rose, R. 1962. Rock art, landscape and fauna in and around Oenpelli. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image ROSE.R05.BW-N07383\_01.
- Saulwick, A.G. 1999a. Rock Art Survey and excavations in the Liverpool River area. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image SAULWICK.A02.DF-D00017236.
- Saulwick, A.G. 1999b. Rembarnga Rock Art Survey - a photographic record. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image SAULWICK.A01.CS-000128022.
- Sawdy, J.E. 1967. Central Australian rock art. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image SAWDY.J01.CS-000009288.
- Social Impact of Uranium Mining Project. 1980. Community life at Oenpelli. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image SIU.007.CS-00062476.
- Stanner, W.E.H. 1950. Port Keats and Daly River, 1932-1960. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image STANNER.W10.BW-N00982\_05.
- The Sydney Morning Herald. 1957. 'Ancient Aboriginal carvings near Sydney' (NSW SI56-05), 8 October, p. 2., sourced from Australian Institute of Aboriginal and Torres Strait Islander Studies, MF 32.
- Treize, P. 1966. Rock art and sites in the South Eastern region of Cape York Peninsula, Queensland. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image TREZISE.P07.CS-000011782, 000011892.
- Treize, P. 1977. Rock art, sites and site recording in the Laura region of Cape York Peninsula. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image TREZISE.P05.CS-000034197, 000034187.
- Turnbull, S. 2016. Schoolboys keep Indigenous tradition alive diving for turtles in northern NSW rivers. ABC North Coast. 25 February. Accessed on 15 July 2021. <https://www.abc.net.au/news/2016-02-24/schoolboys-keep-indigenous-tradition-alive-turtle-diving/7196190?nw=0>
- Vinnicombe, P. 1997. Rock art sites in Wardaman Country. Australian Institute of Aboriginal and Torres Strait Islander Studies, archive image VINNICOMBE.P02.CS-000121395.

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**BRUNO DE O. FERRONATO** conducts turtle ecological research in natural and urban landscapes and is based at the Ginninderra Catchment Group, Canberra, Australian Capital Territory, Australia. He received his B.V.M. at Universidade do Estado de Santa Catarina (UDESC), Brazil, a M.Sc. in Applied Ecology at Universidade de São Paulo (USP), Brazil, and his Ph.D. in Applied Sciences at University of Canberra, Australia. His research interests involve ethnobiology, population ecology, reproductive biology, and the impacts of urbanization on reptiles. Bruno is a member of the Tortoises and Freshwater Turtles Specialist Group (TFTSG) of the International Union for Conservation of Nature. (Photographed by Sam Nerrie).



**ARTHUR GEORGES** is an Ecologist and Herpetologist whose research interests lie in the evolution, ecology, and systematics of Australian reptiles. A fundamental interest in these fascinating animals takes him into the field and the laboratory to learn more of their biology and to apply what he has learned in solving contemporary challenges for their conservation. Arthur is a Distinguished Professor at the University of Canberra and received his B.S. (Honours) and Ph.D. (Zoology) from the University of Queensland, Australia. (Photographed by Kerry Aust).

**APPENDIX.** Archaeological sites in Australia with evidence of freshwater turtle use by Aboriginal people. State abbreviations are ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, Qld = Queensland, SA = South Australia, WA = Western Australia, Vic = Victoria, and Tas = Tasmania. Species are Pig-nosed turtle (*Carettochelys insculpta*), Sandstone Snake-necked Turtle (*Chelodina burrungandjii*), South-western Long-necked Turtle (*Chelodina oblonga*), Broad-shelled Snake-necked Turtle (*Chelodina expansa*), Eastern Long-necked Turtle (*Chelodina longicollis*), Northern Snake-necked Turtle (*Chelodina rugosa*), White-throated Snapping Turtle (*Elseya albagula*), Northern Snapping Turtle (*Elseya dentata*), Yellow-bellied Snapping Turtle (*Elseya flaviventralis*), Gulf Snapping Turtle (*Elseya lavarackorum*), Murray River Turtle (*Emydura macquarii*), Worrell's Short-necked Turtle (*Emydura subglobosa worrelli*), Northern Yellow-faced Turtle (*Emydura tanybaraga*), Northern Red-faced Turtle (*Emydura victorae*), and Common Sawshelled Turtle (*Myuchelys latisternum*). One asterisk (\*) means this is within the distribution of the identified species by the original author, and two asterisks (\*\*) is edge: archaeology record found slightly outside of any turtle species distribution, where the closest species was assigned to it.

Type	Survey method	Species (original author)	Site Name and items found	Location	State	Date	Author	Potential species (present work)
archaeology	site survey	<i>Chelodina longicollis</i>	Lapstone creek open site. Femur and shell	western Cumberland Plain	NSW		Kohen 1986	<i>Chelodina longicollis</i> *
archaeology	excavation		Abercrombie Arch Shelter. Carapace	Bathurst	NSW		Johnson 1977	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	mound (excavation)		Ravensworth 3. Shell fragments and leg-bone	Abercrombie Creek system	NSW	4,100 BP - 3,800 BP	Martin 2011	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	ashy grey deposits		Shell	Menindee Lakes	NSW		Pardoe 2003	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	midden (excavation)		Bone fragments	Moiria State Forest	NSW		Bonhomme 1990	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	excavation			Seelands	NSW		McBryde 1974	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	excavation		Birriwilik rockshelter. Fragment of carapace or plastron	southwest Arnhem Land	NT	50 to 750 years BP	Aplin et al. 2016	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya flaviventralis</i> , <i>Emydura tanybaraga</i>
archaeology	mound (excavation)		Middle Point. Carapace	Adelaide River	NT	2,040 BP ± 260	Brockwell 1996, 2006	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya dentata</i> , <i>Emydura tanybaraga</i>
archaeology	mound (excavation)	<i>Chelodina rugosa</i>	Ji-bena mound	Arnhem Land	NT	810 BP ± 80	Brockwell et al. 2005	<i>Chelodina rugosa</i> *
archaeology	mound (excavation)	<i>Chelodina rugosa</i>	Kina	South Alligator River	NT	280 BP ± 40	Meehan et al. 1985	<i>Chelodina rugosa</i> *
archaeology	mound (excavation)	<i>Chelodina rugosa</i>	Arafura Swamp. Bone and shell	Arnhem Land	NT		Peterson 1973	<i>Chelodina rugosa</i> *



**APPENDIX (CONTINUED).** Archaeological sites in Australia with evidence of freshwater turtle use by Aboriginal people. State abbreviations are ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, Qld = Queensland, SA = South Australia, WA = Western Australia, Vic = Victoria, and Tas = Tasmania. Species are Pig-nosed turtle (*Carettochelys insculpta*), Sandstone Snake-necked Turtle (*Chelodina burrungandjii*), South-western Long-necked Turtle (*Chelodina oblonga*), Broad-shelled Snake-necked Turtle (*Carettochelys insculpta*), Eastern Long-necked Turtle (*Chelodina longicollis*), Northern Snake-necked Turtle (*Chelodina rugosa*), White-throated Snapping Turtle (*Elseya albagula*), Northern Snapping Turtle (*Elseya dentata*), Yellow-bellied Snapping Turtle (*Elseya flaviventralis*), Gulf Snapping Turtle (*Elseya lavarackorum*), Murray River Turtle (*Emydura macquarii*), Worrell's Short-necked Turtle (*Emydura subglobosa worrelli*), Northern Yellow-faced Turtle (*Emydura tanybaraga*), Northern Red-faced Turtle (*Emydura victorae*), and Common Sawshelled Turtle (*Myuchelys latisternum*). One asterisk (\*) means this is within the distribution of the identified species by the original author, and two asterisks (\*\*) is edge: archaeology record found slightly outside of any turtle species distribution, where the closest species was assigned to it.

Type	Survey method	Species (original author)	Site Name and items found	Location	State	Date	Author	Potential species (present work)
archaeology	open site (excavation)		Scotch Creek I	Adelaide River floodplain	NT	approx. 3,000 BP	Brookwell et al. 2011	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya dentata</i> , <i>Emydura tanybaraga</i>
archaeology	excavation		Wulk Lagoon. Bone fragments	northwestern Arnhem Land	NT		Wesley et al. 2017	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya flaviventralis</i> , <i>Emydura tanybaraga</i>
archaeology	excavation	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i>	Anbangbang I (Nourlangie Massif)	Kakadu National Park	NT		Foley 1985	<i>Carettochelys insculpta</i> *, <i>Chelodina rugosa</i> *
archaeology	excavation	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i>	Djuwarr I (Deaf Adder Gorge)	Kakadu National Park	NT		Foley 1985	<i>Carettochelys insculpta</i> *, <i>Chelodina rugosa</i> *
archaeology	excavation		Broadbeach site	Gold Coast	Qld		Pate 1997	<i>Chelodina expansa</i> , <i>Myuchelys latisternum</i>
archaeology	excavation	<i>Chelodina expansa</i>	Gyranda region	Dawson River	Qld	1,520 BP ± 80	Morwood and Godwin 1987	<i>Chelodina expansa</i> *
archaeology	midden (excavation)		Toulkernie midden	Moreton Island	Qld		Hall 1984	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	excavation		Contact Cave. Carapace	Cania Gorge	Qld		Westcott et al. 1999	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Elseya albagula</i> , <i>Emydura macquarii</i> , <i>Myuchelys latisternum</i>
archaeology	excavation		Bunnengalla I - Musselbrook Creek	Boodjamulla National Park	Qld	approx. 900 BP	Slack et al. 2005	<i>Elseya lavarackorum</i> , <i>Emydura s. worrelli</i>
archaeology	excavation	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>	Fromm's Landing (Devon Downs)	Nildottie	SA		Pate 1997	<i>Chelodina longicollis</i> *, <i>Emydura macquarii</i> *
archaeology	excavation		Bones	Swampport	SA		Stirling 1911	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>

APPENDIX (CONTINUED). Archaeological sites in Australia with evidence of freshwater turtle use by Aboriginal people. State abbreviations are ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, Qld = Queensland, SA = South Australia, WA = Western Australia, Vic = Victoria, and Tas = Tasmania. Species are Pig-nosed turtle (*Carettochelys insculpta*), Sandstone Snake-necked Turtle (*Chelodina burrungandjii*), South-western Long-necked Turtle (*Chelodina oblonga*), Broad-shelled Snake-necked Turtle (*Chelodina expansa*), Eastern Long-necked Turtle (*Chelodina longicollis*), Northern Snake-necked Turtle (*Chelodina rugosa*), White-throated Snapping Turtle (*Eelseya albagula*), Northern Snapping Turtle (*Eelseya dentata*), Yellow-bellied Snapping Turtle (*Eelseya flaviventralis*), Gulf Snapping Turtle (*Eelseya lavarackorum*), Murray River Turtle (*Emydura macquarii*), Worrell's Short-necked Turtle (*Emydura subglobosa worrelli*), Northern Yellow-faced Turtle (*Emydura tanybaraga*), Northern Red-faced Turtle (*Emydura victoriae*), and Common Sawshelled Turtle (*Myuchelys latisternum*). One asterisk (\*) means this is within the distribution of the identified species by the original author, and two asterisks (\*\*) is edge: archaeology record found slightly outside of any turtle species distribution, where the closest species was assigned to it.

Type	Survey method	Species (original author)	Site Name and items found	Location	State	Date	Author	Potential species (present work)
archaeology	excavation		Glen Lossie Midden and Burial site. Carapace (0.3 grams)	Murray Bridge	SA	4,155 ± 35 BP	Wilson 2017	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	excavation		Pomberuk Carapace	Murray Bridge	SA	4,140 ± 70 BP	Wilson 2017	<i>Chelodina expansa</i> , <i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
archaeology	excavation	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i> , <i>Chelodina expansa</i>	Devon Downs Shelter	Nildottie	SA		Hale and Tindale 1930	<i>Chelodina expansa</i> *, <i>Chelodina longicollis</i> *, <i>Emydura macquarii</i> *
archaeology	excavation	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>	Tarianga site	Nildottie	SA		Hale and Tindale 1930	<i>Chelodina longicollis</i> *, <i>Emydura macquarii</i> *
archaeology	mound (excavation)		Hopkins River	Warmanbool District	Vic		Coutts et al. 1976	<i>Chelodina longicollis</i>
archaeology	excavation		Windjana Gorge Water Tank Shelter	Windjana Gorge National Park	WA		O'Connor et al. 2008	<i>Chelodina burrungandjii</i> , <i>Emydura victoriae</i>
archaeology	excavation		Koolan Shelter 2. Bone	Koolan Island	WA	prior to 24,000 BP	O'Connor 1999	<i>Emydura victoriae</i> (**edge)
archaeology	excavation		Caladenia Cave. Shell	northern Swan Coastal Plain	WA	1,346 BP ± 20	Thorn et al. 2017	<i>Chelodina oblonga</i>

**SUPPLEMENTAL INFORMATION**

**DISTRIBUTION OF FRESHWATER TURTLE ROCK ART AND  
ARCHAEOLOGICAL SITES IN AUSTRALIA: A GLIMPSE INTO  
ABORIGINAL USE OF CHELONIANS**

*BRUNO DE OLIVEIRA FERRONATO AND ARTHUR GEORGES*

The following material is provided by the authors and was not subject to editing by *Herpetological Conservation and Biology*.

**SUPPLEMENTAL INFORMATION TABLE S1.** Aboriginal rock art sites depicting freshwater turtles in Australia.

Type	Rock art type	Style	Species (original author)	Site Name	Location	State	Date	Author	Potential species (present work)
rock art	rock painting (pictograph)		tortoise	Yankee Hat shelter	Namadgi National Park	ACT		Layton 1992	<i>Chelodina longicollis</i>
rock art	rock painting (pictograph)			Site 2	Namadgi National Park	ACT		Rosenfeld et al. 1983	<i>Chelodina longicollis</i>
rock art	rock painting (pictograph)		turtle	Site 3	Namadgi National Park	ACT		Officer 1989	<i>Chelodina longicollis</i>
rock art	rock painting (pictograph)	white outline	tortoise		Hawkesbury District	NSW		McCarthy 1961	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>
rock art	engraving (petroglyph)		turtle	Euro Gorge	Euriowie	NSW		Johnson 2004	<i>Chelodina longicollis</i> , <i>Emydura macquarii</i>

	dendroglyph						<i>Chelodina expansa,</i>
	* (carved		Bulgeraga			McCarthy	<i>Chelodina longicollis,</i>
tree drawing	tree)	tortoise	creek	Oxley	NSW	1940	<i>Emydura macquarii</i>
	dendroglyph		Gnoura				<i>Chelodina expansa,</i>
	* (carved		Gnoura			McCarthy	<i>Chelodina longicollis,</i>
tree drawing	tree)	tortoise	creek	Boomi	NSW	1940	<i>Emydura macquarii</i>
	charcoal		Woronora	Woronora			<i>Chelodina longicollis</i>
rock art	drawing	tortoise	plateau	Heights	NSW	Sefton 2013	
						Organ and	<i>Chelodina longicollis</i>
	charcoal		west of the			Speechley	
rock art	drawing	tortoise	escarpment	Illawarra	NSW	1997	
	charcoal						<i>Chelodina longicollis</i>
rock art	drawing	tortoise		Avon catchment	NSW	Dibden 2019	
	charcoal			Nepean			<i>Chelodina longicollis</i>
rock art	drawing	tortoise		catchment	NSW	Dibden 2019	

	charcoal			Cordeaux				<i>Chelodina longicollis</i>
rock art	drawing	tortoise		catchment	NSW		Dibden 2019	
	charcoal			Cataract				<i>Chelodina longicollis</i>
rock art	drawing	tortoise		catchment	NSW		Dibden 2019	
	engraving	long-necked					McCarthy	<i>Chelodina longicollis</i>
rock art	(petroglyph)	turtle		Cowan	NSW		1983	
								<i>Chelodina expansa,</i>
				Northern				<i>Chelodina longicollis,</i>
	rock painting			Tablelands			McBryde	<i>Emydura macquarii,</i>
rock art	(pictograph)	tortoise	Copeton	region	NSW		1974	<i>Myuchelys bellii</i>
				south of			The Sydney	<i>Chelodina longicollis</i>
	engraving			Hawkesbury			Morning	
rock art	(petroglyph)	tortoise	Arcadia	River	NSW		Herald 1957	
			gallery about	between Darling			‘Australia’	<i>Chelodina expansa,</i>
	rock painting		50 miles	River and			(Australian	<i>Chelodina longicollis,</i>
rock art	(pictograph)	turtle	from the	Broken Hill	NSW		News &	<i>Emydura macquarii</i>

			Darling			Information	
			River			Bureau)	
						Australian	<i>Chelodina longicollis</i> ,
						National	<i>Emydura macquarii</i>
						Parks and	
						Wildlife	
rock art	engraving (petroglyph)	turtle		Mootwingee	NSW	Service 1970	
	engraving			Ku-ring-gai		Hornshaw	<i>Chelodina longicollis</i>
rock art	(petroglyph)	tortoise		Chase	NSW	1931	
	stone						<i>Chelodina expansa</i> ,
	arrangement					Behrendt	<i>Chelodina longicollis</i> ,
rock art	(turtle totem)	turtle		Angledool	NSW	1985	<i>Emydura macquarii</i>
	engraving			Royal National		Hornshaw	<i>Chelodina longicollis</i>
rock art	(petroglyph)	tortoise		Park	NSW	1931	

									<i>Chelodina longicollis</i> ,
	rock painting			Northern				Creamer	<i>Emydura macquarii</i> ,
rock art	(pictograph)		turtle	Tablelands	New England	NSW		1970	<i>Myuchelys bellii</i>
	engraving		long-necked						<i>Chelodina longicollis</i>
rock art	(petroglyph)		turtle	Bundeena	Park	NSW		Power 1972	
								Chaloupka	<i>Elseya flaviventralis</i>
								1993; Nelson	
								et al. 1995;	
					East Alligator			Watchman	
			short-necked	Gunbilngmu	River, Western		4,460 BP	and Jones	
rock art	beeswax	x-ray	turtle	rrung	Arnhem Land	NT	$\pm 80^{**}$	2002	
									<i>Carettochelys insculpta</i> ,
			short-necked						<i>Chelodina rugosa</i> ,
	rock painting		turtle, long-	Umbrawarra	Tolmer				<i>Elseya dentata</i> , <i>Emydura</i>
rock art	(pictograph)	white	necked turtle	Gorge	Sandstone	NT		Gunn 2003	<i>s. worrelli</i> , <i>Emydura</i>



								<i>tanybaraga, Emydura victoriae</i>
rock art	engraving (petroglyph)		long-necked tortoise	Kurutiti	Helen Springs	NT	Mulvaney 2001	<i>Chelodina rugosa</i> (***edge)
rock art	rock painting (pictograph)	white	turtle	Goorungeni m shelter	Baines	NT	Mulvaney 1996	<i>Chelodina rugosa,</i> <i>Elseya dentata, Emydura victoriae</i>
rock art	engraving (petroglyph)		turtle		Wardaman country (eastern Victoria River district)	NT	Lewis and McCausland 1987	<i>Chelodina rugosa,</i> <i>Elseya dentata, Emydura victoriae</i>
rock art	engraving (petroglyph)		turtle	Gordon Creek	Kupakaralami (Bilinara country)	NT	Lewis 1990a	<i>Chelodina rugosa,</i> <i>Elseya dentata, Emydura victoriae</i>

					Jasper Gorge				<i>Chelodina rugosa,</i>
	rock painting			Mulukurrini	(Ngaliwurru				<i>Elseya dentata, Emydura</i>
rock art	(pictograph)		turtle	yung	country)	NT		Lewis 1990a	<i>victoriae</i>
								Probably	<i>Chelodina rugosa,</i>
								added	<i>Elseya dentata, Emydura</i>
			long-necked					between	<i>s. worrelli, Emydura</i>
	rock painting		turtle, short-	Doria				1976 and	Smith et al.
rock art	(pictograph)	red, white	necked turtle	Gudaluk	Barunga	NT	1990	2016	<i>tanybaraga, Myuchelys</i>
									<i>latisternum</i>
									<i>Carettochelys insculpta,</i>
			long-necked						<i>Chelodina rugosa,</i>
	rock painting		turtle, short-	Wulk	northwestern				Wesley et al.
rock art	(pictograph)		necked turtle	Lagoon	Arnhem Land	NT			2017
									<i>Emydura tanybaraga</i>
									<i>Chelodina rugosa,</i>
								1,640 -	<i>Elseya flaviventralis,</i>
	rock painting	white;		Nawarla	south-western		1,930 cal		Gunn et al.
rock art	(pictograph)	Bula style	turtle	Gabarnmang	Arnhem Land	NT	AD		2017
									<i>Chelodina burrungandjii,</i>
									<i>Myuchelys latisternum</i>

	rock painting		long-necked	Wellington	northwestern		Wesley and	<i>Chelodina rugosa</i>
rock art	(pictograph)		turtle	Range	Arnhem Land	NT	Viney 2016	
								<i>Chelodina canni,</i> <i>Chelodina rugosa,</i> Martin-Stone <i>Emydura s. worrelli,</i> and Woolfe <i>Emydura tanybaraga,</i> 2013 <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)	white	turtle	Roper River	Elsley	NT		<i>Elseya dentata,</i> Taçon et al. <i>Chelodina burrungandjii,</i> 2003 <i>Emydura victoriae</i>
rock art	rock painting (pictograph)		turtle	Keep River	Baines	NT		<i>Chelodina rugosa,</i> <i>Elseya flaviventralis,</i> <i>Chelodina burrungandjii,</i> Lewis 1988 <i>Emydura tanybaraga</i>
	rock painting (pictograph)		turtle	Baroalba Creek	Arnhem Land	NT		

								<i>Chelodina rugosa,</i>
								<i>Elseya flaviventralis,</i>
				Deaf Adder				<i>Chelodina burrungandjii,</i>
	rock painting			Creek				<i>Emydura tanybaraga,</i>
rock art	(pictograph)	turtle	headwaters	Arnhem Land	NT	Lewis 1988		<i>Myuchelys latisternum</i>
		short-necked						<i>Elseya dentata</i> ****
		turtle						
	rock painting				Mount Tolmer			
rock art	(pictograph)	red ochre	( <i>Elseya dentata</i> )	Ngalawonga	(Litchfield Park)	NT	Guse 2005	
	rock painting		long-necked		Arnhem Land		Gunn et al.	<i>Chelodina rugosa,</i>
rock art	(pictograph)	turtle		Jawoyn Bim	Plateau	NT	2018	<i>Chelodina burrungandjii</i>
								<i>Carettochelys insculpta,</i>
								<i>Chelodina rugosa,</i>
	rock painting			Bindjarran	Kakadu		Shine et al.	<i>Elseya flaviventralis,</i>
rock art	(pictograph)	turtle	rockshelter	National Park	NT	2015		<i>Emydura tanybaraga</i>

			turtle, long-necked					McKenzie	<i>Carettochelys</i>
								1978; Taçon	<i>insculpta</i> ****,
								1989; Layton	<i>Chelodina rugosa</i> ,
								5,000 - 1992;	<i>Elseya flaviventralis</i> ,
		x-ray;	turtle, Pig-nosed turtle					8,000 years ago	<i>Emydura tanybaraga</i>
	rock painting	estuarine	( <i>Carettochelys insculpta</i> )		Kakadu			1993; Flood	
rock art	(pictograph)	period		Ubirr	National Park	NT	( <i>C. insculpta</i> )	1996; Smith	
									<i>Carettochelys insculpta</i> ,
				Area K					<i>Chelodina rugosa</i> ,
				(Bamgiya					<i>Elseya dentata</i> , <i>Elseya</i>
				and Djorolan					<i>flaviventralis</i> , <i>Chelodina</i>
				clan)	greater Kakadu				<i>burrungandjii</i> , <i>Emydura</i>
	rock painting				National Park				<i>s. worrelli</i> , <i>Emydura</i>
rock art	(pictograph)	x-ray	turtle		region	NT		Taçon 1989	<i>latisternum</i>

				Area G (Jurkmanj clan)	greater Kakadu National Park			<i>Carettochelys insculpta,</i> <i>Chelodina rugosa,</i> <i>Elseya flaviventralis,</i> <i>Chelodina burrungandjii,</i> <i>Emydura s. worrelli,</i>
rock art	rock painting (pictograph)	x-ray	turtle		region	NT	Taçon 1989	<i>Emydura tanybaraga</i>
				Area J (Madalg clan)	greater Kakadu National Park			<i>Chelodina rugosa,</i> <i>Elseya flaviventralis,</i> <i>Chelodina burrungandjii,</i> <i>Emydura tanybaraga,</i>
rock art	rock painting (pictograph)	x-ray	turtle		region	NT	Taçon 1989	<i>Myuchelys latisternum</i>
				Area D (Bardmardi clan)	greater Kakadu National Park			<i>Chelodina rugosa,</i> <i>Elseya</i> <i>flaviventralis, Chelodina</i> <i>burrungandjii, Emydura</i>
rock art	rock painting (pictograph)	x-ray	turtle		region	NT	Taçon 1989	<i>tanybaraga</i>

				Area N (Kodjardni, Mandebid and Rol clan)	greater Kakadu National Park region	NT	Taçon 1989	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya flaviventralis</i> , <i>Chelodina burrungandjii</i> , <i>Emydura tanybaraga</i>
rock art	rock painting (pictograph)	x-ray	turtle					
				Area M (Mirrar clan)	greater Kakadu National Park region	NT	Taçon 1989	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya flaviventralis</i> , <i>Chelodina burrungandjii</i> , <i>Emydura tanybaraga</i>
rock art	rock painting (pictograph)	x-ray	turtle					
				Area O (Bunitj, Mirrar, Mandjurlngu n and	greater Kakadu National Park region	NT	Taçon 1989	<i>Carettochelys insculpta</i> , <i>Chelodina rugosa</i> , <i>Elseya flaviventralis</i> , <i>Emydura tanybaraga</i>
rock art	rock painting (pictograph)	x-ray	turtle					

Manilagarr							
clan)							
			long-necked			Layton 1992;	<i>Chelodina rugosa</i>
	rock painting		tortoise,			Davidson and	(***edge)
rock art	(pictograph)		tortoise	Groote Eylandt	NT	Akerman 2011	
	rock painting		long-necked				<i>Chelodina rugosa</i>
rock art	(pictograph)		tortoise	Bickerton Island	NT	Layton 1992	
	rock painting		long-necked	Oenpelli			<i>Chelodina rugosa</i>
rock art	(pictograph)	x-ray	tortoise	(Gunbalanya)	NT	Layton 1992	
		Pre-				Morwood	<i>Elseya flaviventralis,</i>
	rock painting	estuarine	short-necked			6,000 –	and Hobbs
rock art	(pictograph)	period	turtle	Arnhem Land	NT	10,000 years ago	2002; Taçon et al. 2020
							<i>Myuchelys latisternum</i>



			long-necked turtle ( <i>Chelodina rugosa</i> ), Pig- nosed turtle					<i>Chelodina rugosa</i> ****, <i>Carettochelys insculpta</i> (***edge)
rock art	rock painting (pictograph)	x-ray	( <i>Carettochel ys insculpta</i> )	Namarrgon site complex	Arnhem Land	NT	Chaloupka 1993	
			long-necked turtle ( <i>Chelodina rugosa</i> )					<i>Chelodina rugosa</i> ****
rock art	rock painting (pictograph)	x-ray	( <i>Chelodina rugosa</i> )	Mikginj	Arnhem Land	NT	Chaloupka 1993	
			Pig-nosed turtle ( <i>Carettochel ys insculpta</i> )					<i>Carettochelys insculpta</i> ****
rock art	rock painting (pictograph)	x-ray	( <i>Carettochel ys insculpta</i> )	Nawurlandja	Kakadu National Park	NT	Chaloupka 1993	Kimber 1975;

	rock painting		long-necked	Willeroo	Victoria River		Vinnicombe	<i>Chelodina rugosa</i>
rock art	(pictograph)		turtle	Station	area	NT	1997	
								<i>Carettochelys insculpta,</i> <i>Chelodina rugosa,</i> <i>Elseya dentata, Elseya</i> <i>flaviventralis, Chelodina</i> <i>burrungandjii, Emydura</i> <i>s. worrelli, Emydura</i> <i>tanybaraga, Myuchelys</i> <i>latisternum</i>
rock art	rock painting (pictograph)	red, white	long-necked turtle, short- necked turtle	Gimbat creek	Arnhem Land	NT	Brandl 1970a	
rock art	rock painting (pictograph)		short-necked turtle	Mount Brockman	Kakadu National Park	NT	Brandl 1970b	<i>Elseya flaviventralis,</i> <i>Emydura tanybaraga</i>
rock art	rock painting (pictograph)	red	long-necked turtle		Victoria River district	NT	Lewis 1990b	<i>Chelodina rugosa</i>
rock art	rock painting (pictograph)	white	long-necked turtle	Liverpool River	Arnhem Land	NT	Saulwick 1999a	<i>Chelodina rugosa,</i> <i>Chelodina burrungandjii</i>

							Bawinanga	<i>Chelodina rugosa</i>
							Aboriginal	
	rock painting		long-necked				Corporation	
rock art	(pictograph)		turtle	Mann River	Arnhem Land	NT	1994	
				Upper				<i>Chelodina rugosa</i>
	rock painting		long-necked	Cadell River			Saulwick	
rock art	(pictograph)	white	turtle	region	Arnhem Land	NT	1999b	
								<i>Chelodina canni,</i>
								<i>Chelodina rugosa,</i>
	rock painting							<i>Elseya lavarackorum,</i>
rock art	(pictograph)	white	turtle		McArthur River	NT	Sawdy 1967	<i>Emydura s. worrelli</i>
								<i>Carettochelys insculpta,</i>
								<i>Chelodina rugosa,</i>
	rock painting			Deaf Adder	Kakadu			<i>Elseya flaviventralis,</i>
rock art	(pictograph)	x-ray	turtle	Gorge	National Park	NT	Brandl 1969	<i>Chelodina burrungandjii</i>

	rock painting		short-necked					<i>Elseya flaviventralis,</i>
rock art	(pictograph)		turtle	Deaf Adder	Arnhem Land	NT	Brandl 1965	<i>Emydura tanybaraga</i>
				Djerlandjal				<i>Elseya flaviventralis,</i>
	rock painting		short-necked	rock gallery	Kakadu			<i>Emydura tanybaraga</i>
rock art	(pictograph)		turtle	II	National Park	NT	Brandl 1965	
								<i>Chelodina rugosa,</i>
	rock painting							<i>Elseya dentata, Emydura</i>
rock art	(pictograph)	white	turtle		Laurie Creek	NT	Meehan 1990	<i>victoriae</i>
								<i>Chelodina rugosa</i>
	rock painting		long-necked					<i>Chelodina rugosa</i>
rock art	(pictograph)		turtle	Cadell River	Arnhem Land	NT	Brandl 1968a	
								<i>Chelodina rugosa</i>
	rock painting		long-necked		Nawangylawgy			<i>Chelodina rugosa</i>
rock art	(pictograph)		turtle		rock shelter	NT	Brandl 1968b	
								<i>Chelodina rugosa</i>
	rock painting		long-necked	Bamyili rock			Edwards	<i>Chelodina rugosa</i>
rock art	(pictograph)		turtle	shelter	Barunga	NT	1967	
								<i>Chelodina rugosa</i>
	rock painting		long-necked					<i>Chelodina rugosa</i>
rock art	(pictograph)	red	turtle	Djibena	Arnhem Land	NT	Meehan 1987	

							<i>Carettochelys insculpta,</i>
							<i>Chelodina rugosa,</i>
	rock painting	freshwater	Magela	Kakadu			<i>Elseya flaviventralis,</i>
rock art	(pictograph)	tortoise	Creek	National Park	NT	Lewis 1974	<i>Emydura tanybaraga</i>
							<i>Chelodina rugosa,</i>
							<i>Elseya dentata,</i>
							<i>Chelodina burrungandjii,</i>
							<i>Emydura s. worrelli,</i>
	rock painting		Katherine	Nitmiluk			<i>Emydura tanybaraga,</i>
rock art	(pictograph)	turtle	Gorge	National Park	NT	Rose 1962	<i>Emydura victoriae</i>
							<i>Carettochelys insculpta,</i>
			East				<i>Chelodina rugosa,</i>
	rock painting		Alligator	Kakadu			<i>Elseya flaviventralis,</i>
rock art	(pictograph)	turtle	River	National Park	NT	Kimber 1979	<i>Emydura tanybaraga</i>

								<i>Chelodina rugosa,</i>
	rock painting					Edwards		<i>Elseya flaviventralis,</i>
rock art	(pictograph)	tortoise	Wilton River	Arnhem Land	NT	1967		<i>Myuchelys latisternum</i>
								<i>Chelodina rugosa,</i>
	rock painting							<i>Elseya dentata, Emydura</i>
rock art	(pictograph)	tortoise		Timber Creek	NT	Ponifex 1967		<i>victoriae</i>
								<i>Chelodina rugosa,</i>
	rock painting	long-necked	Mount					<i>Chelodina rugosa,</i>
rock art	(pictograph)	tortoise	Gilruth	Arnhem Land	NT	Brandl 1965		<i>Chelodina burrungandjii</i>
								<i>Chelodina rugosa,</i>
	rock painting			Fitzmaurice				<i>Elseya dentata, Emydura</i>
rock art	(pictograph)	turtle	Kirindjingin	River	NT	Stanner 1950		<i>victoriae</i>
								<i>Chelodina rugosa,</i>
						Social Impact		<i>Chelodina rugosa,</i>
						of Uranium		<i>Elseya flaviventralis,</i>
	rock painting		Injalak /			Mining		<i>Chelodina burrungandjii,</i>
rock art	(pictograph)	x-ray	turtle	Unbalanja	Arnhem Land	NT	Project 1980	<i>Emydura tanybaraga</i>

								<i>Carettochelys insculpta,</i>
	rock painting			Mount			Taçon et al.	<i>Chelodina rugosa,</i>
rock art	(pictograph)	turtle	Awunbarna	Borradaile	NT	2020		<i>Elseya flaviventralis</i>
	rock painting		Namunidjbu	northwestern			Taçon et al.	<i>Chelodina rugosa</i>
rock art	(pictograph)	turtle	k	Arnhem Land	NT	2020		
	rock painting	long-necked	Kirindjingin	Fitzmaurice				<i>Chelodina rugosa</i>
rock art	(pictograph)	turtle	cave	River district	NT	Lewis 1990b		
								<i>Chelodina rugosa,</i>
								<i>Elseya flaviventralis,</i>
								<i>Chelodina burrungandjii,</i>
								<i>Emydura s. worrelli,</i>
	rock painting			Kakadu			Edwards	<i>Emydura tanybaraga,</i>
rock art	(pictograph)	turtle	Sleisbeck	National Park	NT	1965		<i>Myuchelys latisternum</i>
	rock painting						Borsboom	<i>Chelodina rugosa</i>
rock art	(pictograph)	white	turtle	Maningrida	Arnhem Land	NT	1972	(***edge)

				Burrungui				<i>Carettochelys insculpta,</i> <i>Chelodina rugosa,</i> <i>Elseya flaviventralis,</i> <i>Chelodina burrungandjii,</i>
rock art	rock painting (pictograph)	x-ray	turtle	(Nourlangie Rock)	Kakadu National Park	NT	Brandl 1968c	<i>Emydura tanybaraga</i>
rock art	rock painting (pictograph)	white	turtle		Jutpurra / Gregory National Park	NT	Gunn 1989	<i>Chelodina rugosa,</i> <i>Elseya dentata, Emydura</i> <i>victoriae</i>
rock art	stone arrangement		turtle	Gummingurr u	Darling Downs	Qld	Piotto et al. 2018	<i>Chelodina expansa,</i> <i>Chelodina longicollis,</i> <i>Emydura macquarii</i>
rock art	rock painting (pictograph)		turtle		Mitchell-Palmer limestone zone	Qld	David et al. 1997	<i>Chelodina canni,</i> <i>Chelodina rugosa,</i> <i>Emydura macquarii,</i> <i>Myuchelys latisternum</i>



					David and	<i>Chelodina canni</i>
rock art	rock painting (pictograph)	turtle, tortoise	Clack Island	Qld	Lourandos 1998	
					David and	<i>Chelodina canni</i> ,
rock art	rock painting (pictograph)	turtle, tortoise	Cliff Island	Qld	Lourandos 1998	<i>Myuchelys latisternum</i>
					David and	<i>Chelodina canni</i>
rock art	rock painting (pictograph)	turtle, tortoise	Flinders Island	Qld	Lourandos 1998	
					David and	<i>Chelodina canni</i> ,
rock art	rock painting (pictograph)	turtle, tortoise	Bathurst Head	Qld	Lourandos 1998	<i>Myuchelys latisternum</i>
					David and	<i>Chelodina canni</i> ,
rock art	rock painting (pictograph)	turtle, tortoise	Jane Table Hill	Qld	Lourandos 1998	<i>Chelodina rugosa</i> , <i>Myuchelys latisternum</i>

						<i>Chelodina canni,</i>
	rock					Flood 1987;
	painting,					David and
	engraving	turtle,	Koolburra		Lourandos	<i>Chelodina rugosa,</i>
rock art	(petroglyph)	tortoise	Plateau	Qld	1998	<i>Emydura macquarii,</i>
						<i>Emydura tanybaraga,</i>
						<i>Myuchelys latisternum</i>
		turtle,				<i>Chelodina canni,</i>
		tortoise,				<i>Chelodina rugosa,</i>
		long-necked			Cole 1988;	<i>Emydura macquarii,</i>
		turtle			David and	<i>Emydura tanybaraga,</i>
	rock painting	( <i>Chelodina</i>			Lourandos	<i>Myuchelys latisternum</i>
rock art	(pictograph)	sp.)	Jowalbinna	Qld	1998	
						Maynard
						1976; David
						and
	rock painting	turtle,			Lourandos	<i>Chelodina rugosa,</i>
rock art	(pictograph)	tortoise	Laura River	Qld	1998	<i>Emydura macquarii,</i>
						<i>Myuchelys latisternum</i>

							David 1994;	<i>Chelodina canni,</i>
							David and	<i>Chelodina rugosa,</i>
rock art	rock painting (pictograph)	turtle, tortoise		Mitchell River	Qld		Lourandos 1998	<i>Emydura tanybaraga</i>
								<i>Chelodina longicollis,</i>
				Central			Morwood	<i>Elseya albagula,</i>
rock art	rock painting (pictograph)	tortoise	Carnarvon site 6	Queensland Highlands	Qld	< 140 - 36 BP	and Hobbs 2002	<i>Emydura macquarii,</i> <i>Myuchelys latisternum</i>
			site 1, Upper Nogoa River					<i>Chelodina longicollis,</i>
		tortoise (4 paired paintings)	and upper Warrego River	Central Queensland Highlands	Qld		Morwood and Hobbs 2002	<i>Emydura macquarii,</i> <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)	tortoise (4 paired paintings)	site 2, Upper Nogoa River and upper	Central Queensland Highlands	Qld		Morwood and Hobbs 2002	<i>Chelodina longicollis,</i> <i>Emydura macquarii,</i> <i>Myuchelys latisternum</i>

				Warrego River				
				site 3, Upper Nogoa River				<i>Chelodina longicollis</i> , <i>Emydura macquarii</i> , <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)		tortoise (4 paired paintings)	and upper Warrego River	Central Queensland Highlands	Qld	Morwood and Hobbs 2002	
				site 4, Upper Nogoa River				<i>Chelodina longicollis</i> , <i>Emydura macquarii</i> , <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)		tortoise (4 paired paintings)	and upper Warrego River	Central Queensland Highlands	Qld	Morwood and Hobbs 2002	
rock art	rock painting (pictograph)	red ochre	freshwater turtle	Endaen shelter	Stanley Island	Qld	Hale and Tindale 1933	<i>Chelodina canni</i>
rock art	rock painting (pictograph)		short-necked turtle		Mungana	Qld	David 1994	<i>Emydura tanybaraga</i> , <i>Myuchelys latisternum</i>

								<i>Emydura macquarii,</i>
rock art	rock painting (pictograph)	white	short-necked turtle	Helicopter creek	Laura (Quinkan area)	Qld	Trezise 1966	<i>Emydura tanybaraga,</i> <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)	brown, white	long-necked turtle	Kennedy creek	Laura (Quinkan area)	Qld	Trezise 1966	<i>Chelodina canni,</i> <i>Chelodina rugosa</i>
								<i>Chelodina canni,</i> <i>Chelodina rugosa,</i> <i>Emydura macquarii,</i>
rock art	rock painting (pictograph)		turtle	Early Man Shelter	Laura	Qld	Lorblanchet 1974	<i>Emydura tanybaraga,</i> <i>Myuchelys latisternum</i>
rock art	rock painting (pictograph)		long-necked turtle	Hells Gate Creek	Laura	Qld	Trezise 1977	<i>Chelodina canni,</i> <i>Chelodina rugosa</i>
rock art	rock painting (pictograph)		turtle	Brady Creek	Laura	Qld	Trezise 1977	<i>Chelodina canni,</i> <i>Chelodina rugosa,</i> <i>Emydura macquarii,</i>

									<i>Emydura tanybaraga,</i> <i>Myuchelys latisternum</i>
	rock painting	white		Eden Valley					<i>Chelodina longicollis,</i>
rock art	(pictograph)	ochre	tortoise	Shelter 2	River Marne	SA		Coles 2007	<i>Emydura macquarii</i>
	engraving							Bednarik	<i>Chelodina longicollis,</i>
rock art	(petroglyph)		turtle		Yunta Springs	SA		2013	<i>Emydura macquarii</i>
								Hale and	<i>Chelodina expansa,</i>
				Ngaut Ngaut				Tindale 1930;	<i>Chelodina longicollis,</i>
	engraving			(Devon			< 3,000	Roberts et al	<i>Emydura macquarii</i>
rock art	(petroglyph)		tortoise	Downs)	Nildottie	SA	BP	2015	
	rock painting			South Para	Mount Lofty			Coles and	<i>Chelodina longicollis,</i>
rock art	(pictograph)	red ochre	tortoise	River	Ranges	SA		Hunter 2010	<i>Emydura macquarii</i>
	engraving		long-necked		Dampier		12,000 BP	Mulvaney	<i>Chelodina steindachneri</i>
rock art	(petroglyph)		tortoise		Archipelago	WA	± 3000	2011	
	engraving		Flat-shelled		Dampier			Veth et al.	<i>Chelodina</i>
rock art	(petroglyph)		turtle	Murujuga	Archipelago	WA		2018	<i>steindachneri****</i>

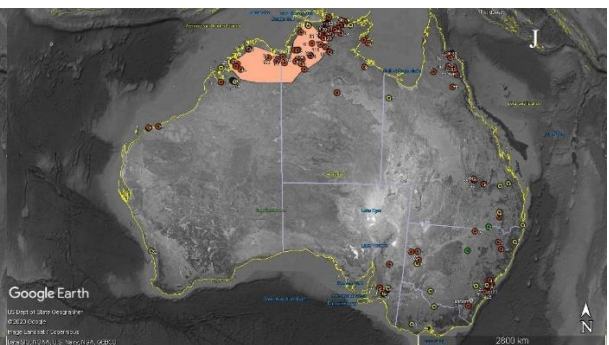
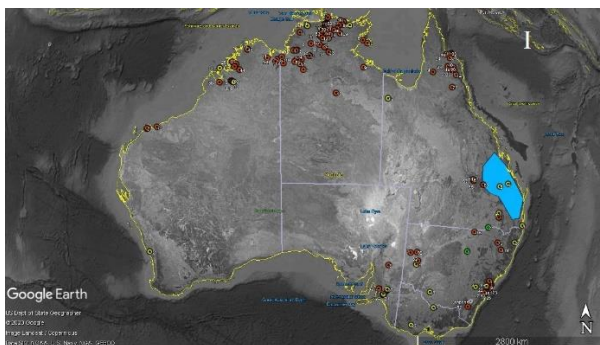
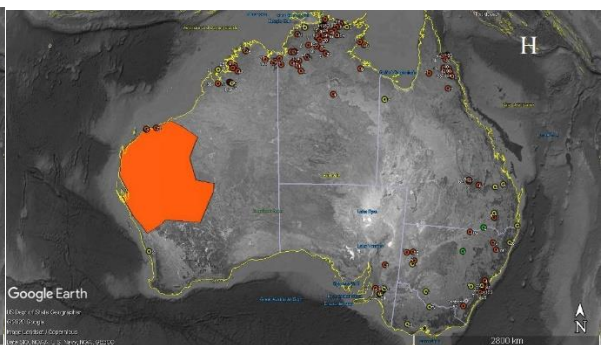
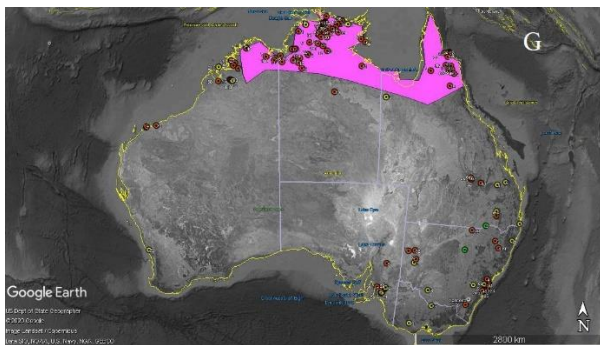
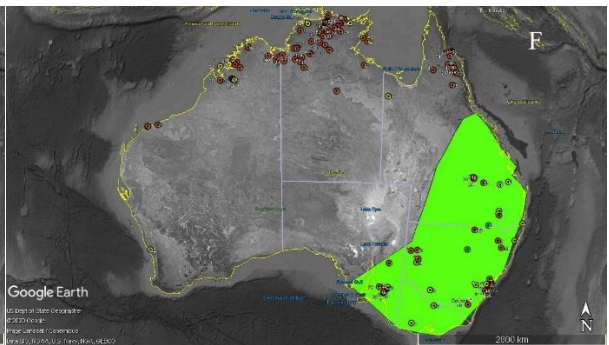
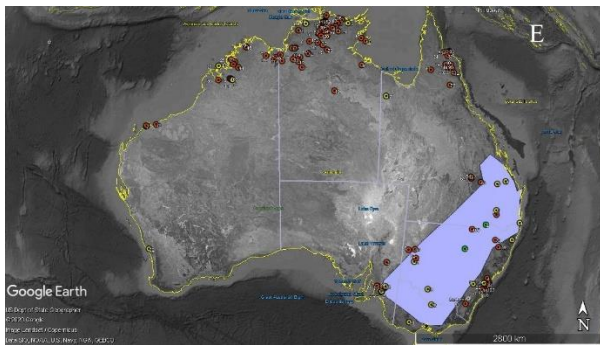
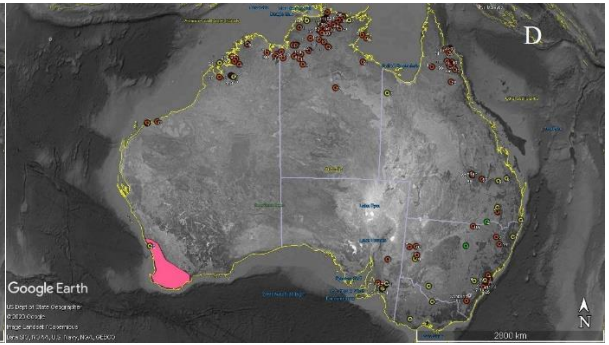
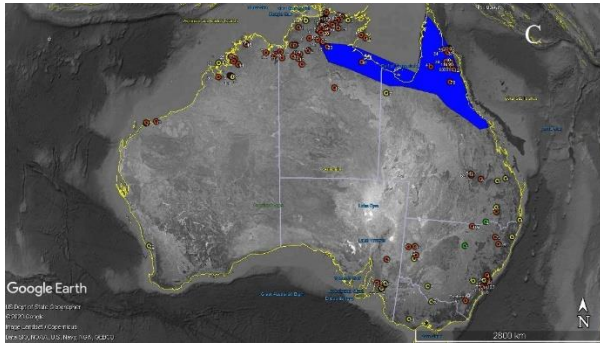
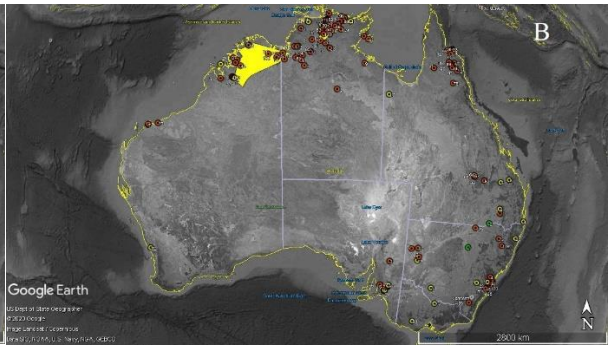
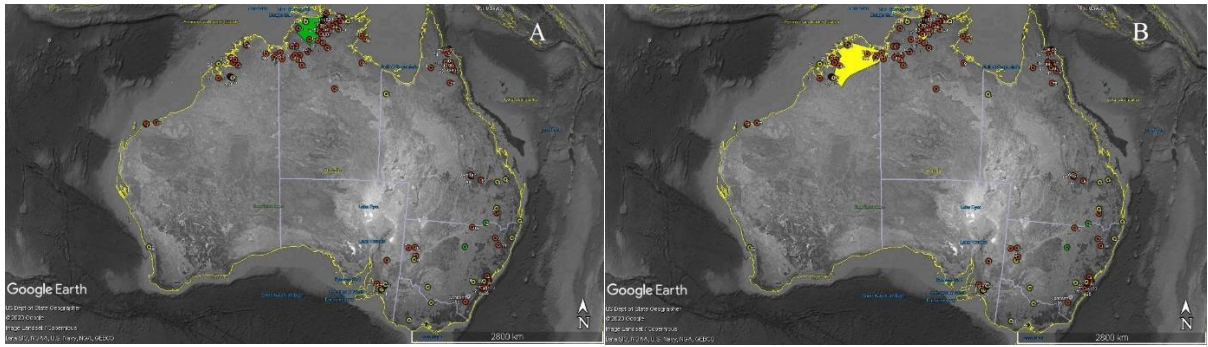
								<i>(Chelodina steindachneri)</i>
rock art	rock painting (pictograph)	long-necked turtle		Bunuba country	WA		O'Connor et al. 2013	<i>Chelodina burrungandjii</i>
rock art	rock painting (pictograph)	long-necked tortoise	Wolang-Kolang	Lushington Bluff (Kimberley)	WA		Schultz 1956	<i>Chelodina burrungandjii</i> (***edge)
rock art	rock painting (pictograph)	tortoise	Maliba I. Gallery (east of Calder River)	Elizabeth and Catherine Range (Kimberley)	WA		Schultz 1956	<i>Elseya dentata, Emydura victoriae</i>
rock art	rock painting (pictograph)	tortoise	Kobuda Gallery	Glenelg river (Kimberley)	WA		Schultz 1956	<i>Elseya dentata</i> (**edge)

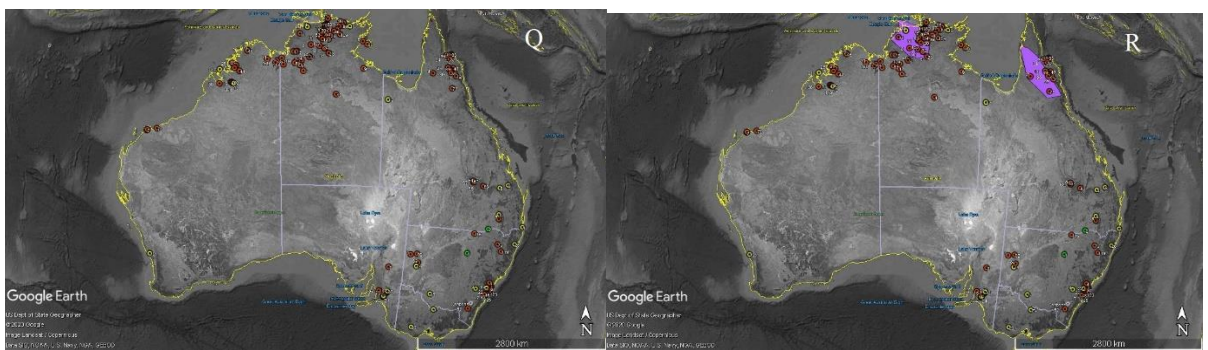
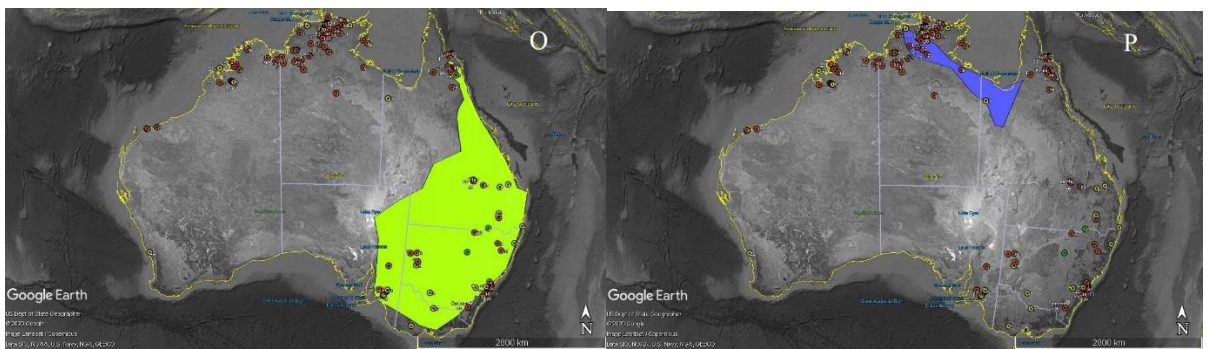
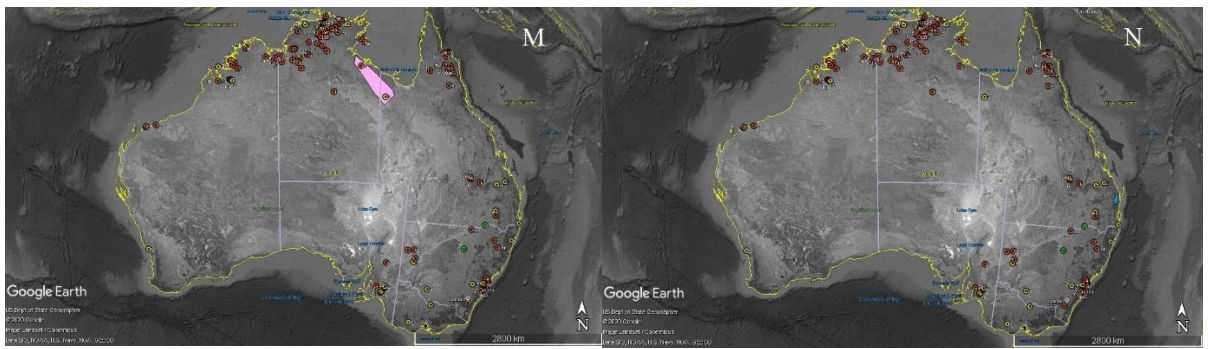
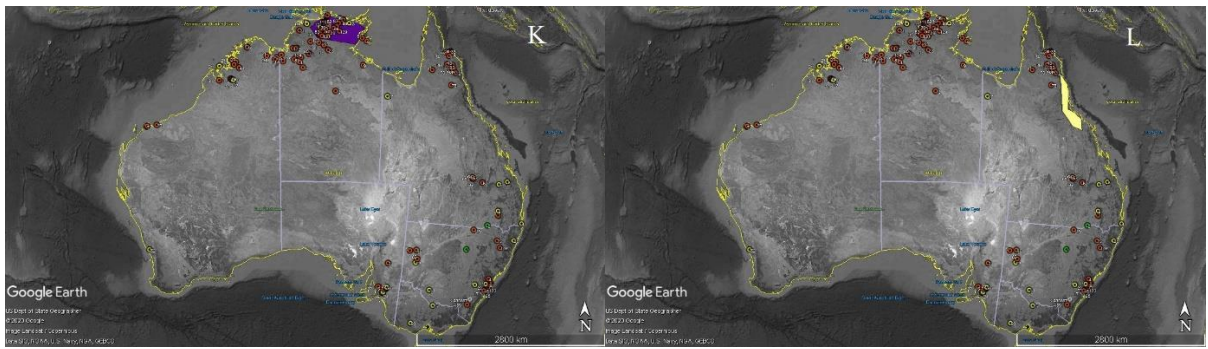
								<i>Eelseya dentata,</i>
	rock painting			Ngarinyin				<i>Chelodina burrungandjii,</i>
rock art	(pictograph)		turtle	tribes	Kimberley	WA	Welch 2003	<i>Emydura victoriae</i>
								<i>Chelodina rugosa,</i>
	engraving			Kununurra				<i>Eelseya dentata,</i>
rock art	(petroglyph)		turtle	area	Kimberley	WA	Welch 1993	<i>Chelodina burrungandjii,</i> <i>Emydura victoriae</i>
								<i>Chelodina rugosa,</i>
	rock painting							<i>Chelodina burrungandjii,</i>
rock art	(pictograph)	x-ray, red	tortoise		Kimberley	WA	Welch 1993	<i>Emydura victoriae</i>
								<i>Chelodina rugosa,</i>
	rock painting		freshwater					<i>Chelodina burrungandjii,</i>
rock art	(pictograph)		tortoise	Kunmunya	Kimberley	WA	Layton 1992	<i>Emydura victoriae</i> (***edge)
								<i>Chelodina rugosa,</i>
	engraving		long-necked					<i>Chelodina steindachneri</i>
rock art	(petroglyph)		turtle	Anchor Hill	Depuch Island	WA	1964	
								<i>Chelodina rugosa,</i>
	engraving				Kununurra			<i>Chelodina rugosa,</i>
rock art	(petroglyph)		tortoise	Ord River	(Kimberley)	WA	1964	<i>Eelseya dentata,</i>

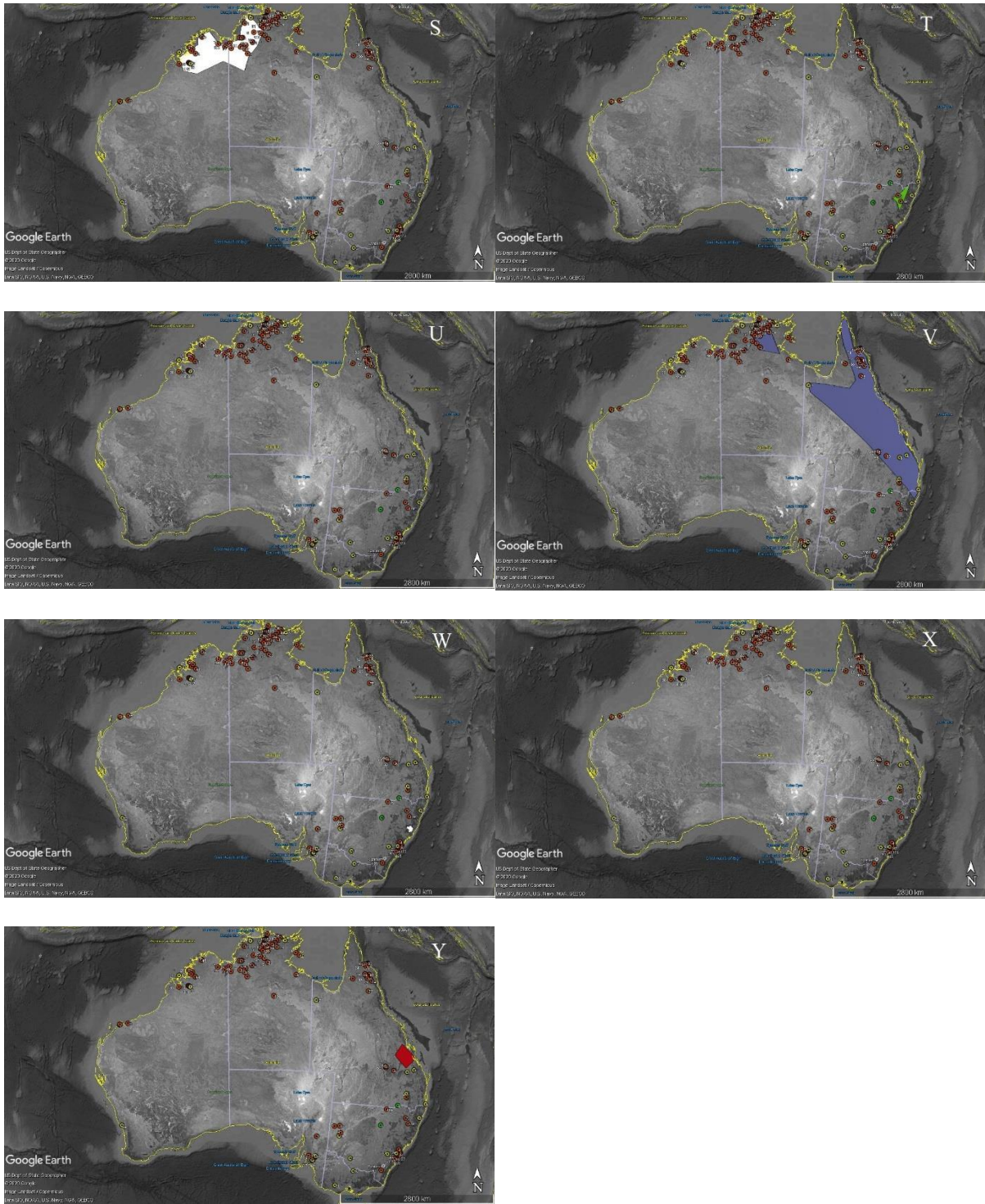


								<i>Chelodina burrungandjii,</i> <i>Emydura victoriae</i>
							Western Australia. Aboriginal Education Resources Unit 1990	<i>Chelodina rugosa,</i> <i>Chelodina burrungandjii</i>
rock art	rock painting (pictograph)		long-necked turtle	King Edward River	WA			
								<i>Chelodina rugosa,</i> <i>Elseya dentata,</i> <i>Chelodina burrungandjii,</i> <i>Emydura victoriae</i>
rock art	rock painting (pictograph)		turtle	Kununurra	WA		Macdonald 1992	
rock art	rock painting (pictograph)	red	long-necked turtle	Napier Ranges	West Kimberley	WA	Linley 1970	<i>Chelodina burrungandjii</i> (***edge)
rock art	rock painting (pictograph)		long-necked turtle	Yammera Gap	West Kimberley	WA	Layton 1977	<i>Chelodina burrungandjii</i> (***edge)

ACT (Australian Capital Territory), NSW (New South Wales), NT (Northern Territory), Qld (Queensland), SA (South Australia), WA (Western Australia), Vic (Victoria), Tas (Tasmania). \*Dendroglyph (carved tree) is considered here to illustrate another type of aboriginal art that represents historical use or the value placed on freshwater turtles. \*\*Painting directly dated. \*\*\*edge: rock art record found slightly outside of any turtle species distribution, where the closest species was assigned to it. \*\*\*\*within the distribution of the identified species by the original author.







**SUPPLEMENTAL INFORMATION FIGURE S1.** Distribution maps of freshwater turtle species in Australia and records of rock art (red dots), archaeological sites (yellow dots), and tree carving (green dots) with freshwater turtle motifs (rock art and tree carving) and turtle remains (archaeological sites). Turtle species taxonomy as in Van Dyke et al. (2018), with

recent changes according to Kehlmaier et al. (2019): (A) Pig-nosed turtle (*Carettochelys insculpta*); (B) Sandstone Snake-necked Turtle (*Chelodina burrungandjii*); (C) Cann's Long-necked Turtle (*Chelodina canni*), (D) South-western Long-necked Turtle (*Chelodina oblonga*), (E) Broad-shelled Snake-necked Turtle (*Chelodina expansa*), (F) Eastern Long-necked Turtle (*Chelodina longicollis*), (G) Northern Snake-necked Turtle (*Chelodina rugosa*), (H) Steindachner's Long-necked Turtle (*Chelodina steindachneri*), (I) White-throated Snapping Turtle (*Elseya albagula*), (J) Northern Snapping Turtle (*Elseya dentata*), (K) Yellow-bellied Snapping Turtle (*Elseya flaviventralis*), (L) Irwin's Snapping Turtle (*Elseya irwini*), (M) Gulf Snapping Turtle (*Elseya lavarackorum*), (N) Mary River Turtle (*Elusor macrurus*), (O) Murray River Turtle (*Emydura macquarii*), (P) Worrell's Short-necked Turtle (*Emydura subglobosa worrelli*), (Q) New Guinea Painted Turtle (*Emydura subglobosa subglobosa*), (R) Northern Yellow-faced Turtle (*Emydura tanybaraga*), (S) Northern Red-faced Turtle (*Emydura victoriae*), (T) Bell's Sawshelled Turtle (*Myuchelys bellii*), (U) Bellinger River Sawshelled Turtle (*Myuchelys georgesi*), (V) Common Sawshelled Turtle (*Myuchelys latisternum*), (W) Manning River Sawshelled Turtle (*Myuchelys purvisi*), (X) Western Swamp Turtle (*Pseudemydura umbrina*), (Y) Fitzroy River Turtle (*Rheodytes leukops*).