



Thy Thylacoleo is a thylacine

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Thy *Thylacoleo* is a thylacine

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Abstract

In 2009 two Kimberley rock art paintings were reported as representing Australia's extinct marsupial lion, *Thylacoleo carnifex* (Akerman 2009; Akerman and Willing 2009). The first painting was re-examined and confirmed as a representation of *Thylacoleo* (Woodhouse 2012). Some researchers now refer to the presence of *Thylacoleo* in Kimberley rock art to support further theories about northern Australian rock art and prehistoric events. This paper argues the case that both paintings represent the thylacine (*Thylacinus cynocephalus*, Tasmanian tiger) and not *Thylacoleo*. Distinctive attributes of the thylacine, present in both paintings, are described. Thylacine paintings are common in the Kimberley and appear in a variety of shapes, sizes, postures and artistic styles. Neither painting is from the Pleistocene; the first is superimposed over earlier human figures, and, stylistically, neither belongs to the Archaic Period in the Kimberley rock art sequence. Thylacines became extinct on mainland Australia following the arrival of the dingo approximately 3500 years ago (Paddle 2000:20), while *Thylacoleo* is argued to have become extinct approximately 46,000 years ago (Roberts et al. 2001).

Introduction

To date, five northern Australian rock art paintings have been interpreted as representations of the marsupial lion, *Thylacoleo carnifex*, a member of Australia's extinct megafauna. Initially, two examples from Arnhem Land were described as such (Murray and Chaloupka 1984:111), followed by another from the Kimberley region (Akerman 1998:117–121). More recently, Akerman and Willing (2009) described another example from the Kimberley, reproduced here as Figure 1A, concluding:

With the finding of the 2008 figure however we have indisputable evidence that some early Aboriginal people were not only familiar with megafauna, in this case, *Thylacoleo carnifex*, but also recorded the salient features of this now long extinct animal, in a manner that resonates across the millennia.

Their interpretation was based on the following anatomical features of the motif:

- It is 'cat-like' rather than 'dog-like';
- 'Compared with the powerful forequarters, the hindquarters appear underdeveloped. This apparent asymmetry is not seen in rock art images of thylacines, where both hind and fore limbs are usually of similar dimensions';
- 'The head is large with a bluff profile and does not have the drawn-out muzzle found in rock art images of other striped animals, particularly thylacines';
- The shape of the head reflects the massive jaw muscles used to operate a *Thylacoleo*'s huge shearing premolars;
- The forepaw shows one enlarged digit and claw, and the hind paw has one toe larger than the others, consistent with a *Thylacoleo*'s large retractable claws on both fore and hind limbs and large thumbs;
- 'The broad paw with extended claws is quite different from the dog-like pads depicted on images of thylacines';

- 'The eye is huge, and raises the possibility that the creature was a nocturnal hunter—even if the 'pupil' was not deliberately intended'; and,
- The tail, with tufted tail-tip, is 'strikingly similar to an image thought to represent a *Thylacoleo* illustrated in Murray and Chaloupka (1984:111, Figure 6d)' (Akerman and Willing 2009).

Akerman and Willing (2009) reported that three palaeontologists familiar with *Thylacoleo* skeletal remains agreed with their interpretation.

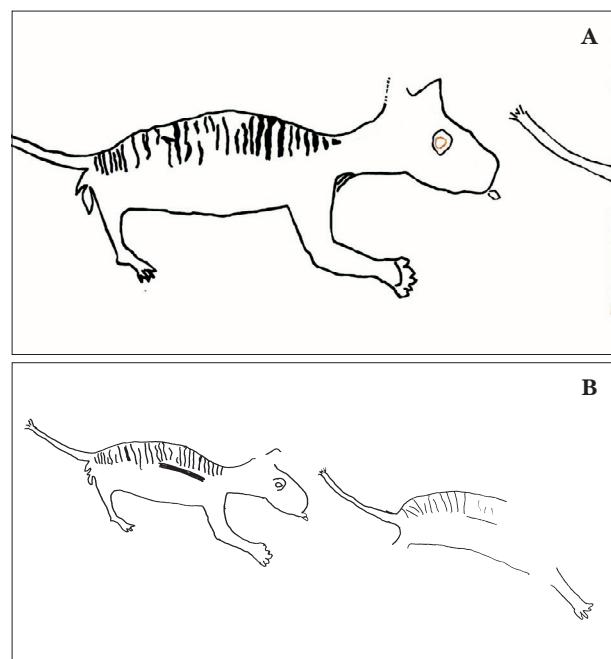


Figure 1 (A) Reproduction of an alleged *Thylacoleo* by Akerman and Willing (image courtesy of Kim Akerman); and (B) Reproduction of an alleged *Thylacoleo* by Woodhouse (2012) (image courtesy of Stan Woodhouse).

In addition to the morphological aspects of the motif, Akerman and Willing (2009) also assessed the painting's style, arguing that it falls into the Irregular Infill Animal Period of Walsh's (1994:40) Kimberley rock art sequence, or the Large Naturalistic Animal Period of Chaloupka's (1993:89) Arnhem Land rock art sequence.

Woodhouse (2012) subsequently re-examined this motif, providing more detailed photographs and a sketch (Figure 1B), and supported its interpretation as a representation of a *Thylacoleo*. He discounted the likelihood of it representing a thylacine because:

... all of the oldest and youngest rock paintings of thylacines that I have seen show stripes on the hindquarters only and the paintings have a dog-like attitude with sharply pointed ears. Furthermore, the tail in these paintings is never uplifted and the paws have no resemblance to the paw shown in the Kimberley panel under discussion. (Woodhouse 2012)

Akerman (2009) later described another rock art painting in the Kimberley—that of a human spearing a dog-like animal (Figure 2)—and suggested this might represent a human spearing or warding off a *Thylacoleo*. This interpretation was based upon: (a) the opinions of two palaeontologists and an archaeologist regarding the animal; (b) the large size of the animal in relation to the human figure; and (c) the existence of the earlier painting reported as *Thylacoleo*. The possibility of the animal representing a thylacine was viewed as unlikely due to its 'robust' nature (Akerman 2009). Akerman (2009) did not claim the painting to be 46,000 years old. Rather, he stated that, if it depicted a *Thylacoleo*, this would indicate a later demise for the animal than previously thought because the painting was most likely aged between 15,000 and 22,000 years (Akerman 2009).

Herein I argue that neither the motif described by Akerman (2009) nor that by Akerman and Willing (2009) represent *Thylacoleo*. Evidence is presented relating to the form of the motifs, their style of depiction and superimpositioning that goes directly to the issue of their interpretation. On this basis it is concluded that both are representations of thylacines, the former painted during the Painted Hand Period (Welch 1993:104–106, 1999:309–310), when thylacine paintings were common, and the latter corresponding approximately with the earlier Tasselled Figure Period (Welch 1993:100–101) or Bradshaw Period (Walsh 1994:40).



Figure 2 Man spearing a 'large' striped quadruped alleged to represent *Thylacoleo* (photograph by Michael Rainsbury).

Thylacines

The thylacine is Australia's marsupial equivalent of the dog or wolf, known as the 'Tasmanian tiger' or 'Tasmanian wolf' due to the prominent stripes over its back and sides (Figure 3). Of note, 'its teeth, head and forequarters have a remarkably canine appearance, although the hind legs and broad-based tail betray its marsupial nature' (Strahan 1995:164). It was once present over all of Sahul and, when sea levels rose and Tasmania became separated from mainland Australia some 11,000 years ago, the thylacine continued to live on both landmasses. The arrival of the dingo on mainland Australia approximately 3500 years ago contributed to its mainland extinction by approximately 3000 years ago, though some early European reports suggest the possibility that relic populations still existed on the southern mainland until the 1800s (Paddle 2000:22–24). In Tasmania, the thylacine had a bounty placed on it and became hunted and trapped by white settlers, bringing about its extinction in 1936 when the last captive animal died (Paddle 2000:1).

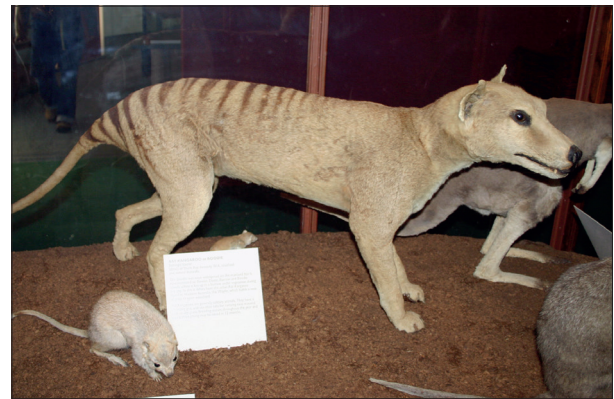


Figure 3 Thylacine on display in the Western Australian Museum (photograph by author).

Northern Australian Paintings of Thylacines

Aboriginal rock art reveals the once widespread occurrence of the thylacine across northern Australia. Thylacine paintings appear in various artistic styles consistent with early rock art periods in both the Kimberley (Welch 1993:100, 104) and Arnhem Land regions (Brandl 1973:33–34, 195; Lewis 1977). A total of 23 Kimberley and 30 Arnhem Land thylacine paintings have been recorded by the author.

Examination of thylacine paintings demonstrates considerable morphological variation amongst them. Most are not life-like representations, but artists' impressions of the animal. Difficulties associated with the recognition of thylacines and other species have been addressed by Clegg (1978). Variations in thylacine body shape observed in both the Kimberley and western Arnhem Land range from thin and attenuated to short and stocky, and from dog-like to kangaroo-like (Figures 4A–4C). One Kimberley painting of a thylacine standing on its hind limbs (Figure 4C) is described as the ancestral 'red kangaroo' by Ngarinyin Elder Paddy Neowarra (Nyawarra), who referred to it as '*Walamba*, that's the red kangaroo and *Walamba* means he's an important bloke' (as cited in Doring 2000:268).

The animal can appear as if standing on all fours, standing upright on its hind limbs (Figure 4C) or running with legs outstretched (Figure 4A). The tail can curve up or down, a feature sometimes seemingly dictated by the amount



Figure 4 (A) Thylacine running with outstretched legs from the Painted Hand Period, Kimberley. Length = 62 cm; (B) Thylacine with its stripes painted at the front of the animal and repeated on the accompanying crude human-like figure, Kimberley. Length = ca 1.5 m; (C) Crudely-painted thylacine in upright position with dog-like head, hind paws, rudimentary stripes and upturned tail, Kimberley. Height = 112 cm (photographs by author).



Figure 5 Thylacine painted with stripes on its trunk, limbs and tail, Kimberley. The painting occurs on a small low ceiling (72 cm above floor level) within a boulder, and the animal's tail curves downward to fit within the available space. Length = 80 cm (photograph by author).

of available surface area (Figures 4C and 5). Ears can be pointed or round.

Stripes can be clearly present (Figure 6), minimised to a few lines or a thin band (Figures 4B and 4C) or absent entirely (Figure 7). Stripes are depicted at the front of the animal (Figure 4B), at the back (Figures 8 and 9), across the trunk (Figure 6) or over the entire animal, including its legs and tail (Figure 5).

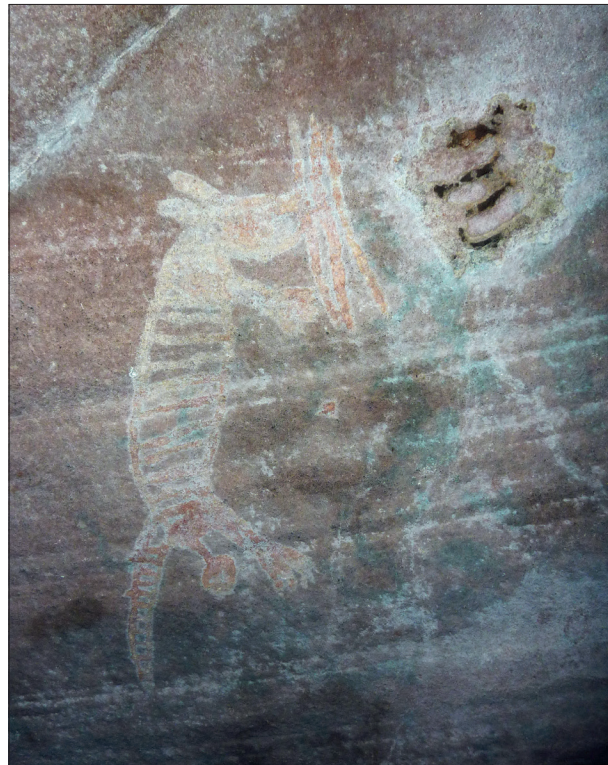


Figure 6 Thylacine painting with stripes along the length of its body and tail, Kimberley. Although painted on a shelter wall in this upright position, its limb alignment is more consistent with the animal standing on all fours (photograph by author).



Figure 7 Thylacine (top left) from the Archaic Period, Kimberley. The head has weathered away. Note the dog-like trunk and hind paw, marsupial genitalia (posterior penis) and stiff tail. Stripes are absent, the infill being composed of irregular dashes. Length = 88 cm (photograph by author).



Figure 8 Male thylacine painted in incipient x-ray style with facial vibrissae and long hairs at the tail end, western Arnhem Land. Length = ca 1.5 m (photograph by author).



Figure 9 Female thylacine with facial vibrissae and a distinct row of long protruding hairs forming a tail tuft, western Arnhem Land (photograph by author).

An Objective Means of Assessing Thylacine Painted Motifs

Owing to the variability of artistic styles in northern Australian rock art, I suggest five criteria for identifying paintings of thylacines, defining their salient features and distinguishing them from paintings of similar animals by a process of elimination:

1. The presence of an approximately dog-like shape for the head, body and tail;
2. The possession of paws on the hind limbs, thus excluding the possibility of a macropod;
3. The presence of marsupial genitalia (this allows the placental dingo to be excluded);
4. The tail should be depicted as long, smooth and relatively straight or only slightly curved, thus excluding possums, native rats, the numbat and other marsupials with curled or bushy tails. Tail features may also include a broad base and end tuft; and,
5. The presence of body stripes.

Using the above criteria, animal paintings can be described as having a particular probability of representing a thylacine. Paintings with all five attributes are considered most likely (90–100%) to represent a thylacine, depending on the degree of naturalism within the painting. A painting with the hind limb(s) obliterated due to weathering, but all other attributes present, might be considered 70–90% likely. Artists occasionally painted kangaroo-like thylacines and thylacine-like kangaroos, and only by visualising the hind limb and identifying paws, rather than a macropod foot, can a macropod be excluded with certainty. The presence of body stripes is placed last. Their omission on some paintings suggests they were unimportant to those artists. In current thinking, stripes are an important identifier for the thylacine because they help distinguish it from the dingo, domestic dogs and wolves. However, early Australian artists had none of these in their environment, thus I suggest their depictions of thylacines relied upon other physical features.

Dog-Like Features

The term ‘dog-like’ indicates a dog-shaped head and tail, legs of approximately equal lengths, and a trunk that is of approximately equal thickness throughout its length. ‘Kangaroo-like’ indicates a head with a long tapering snout, front limbs markedly shorter than hind limbs, and a trunk that thickens or bulges at the waist and posterior end. A dog-like head allows for the exclusion of animals such as Tasmanian devils, possums and bandicoots. Anatomically, the thylacine’s snout is slightly tapered, its front limbs are slightly shorter than its hind limbs, and its trunk narrows at the waist and posterior end. The dog-shaped head of the thylacine bears no resemblance to that of *Thylacoleo*, which has a flat cat-like snout and lower jaw (Rich and Vickers-Rich 1994:188–189, 192–193; White 1990:228–229).

Regarding the length of the forelimbs on thylacine paintings, Brandl (1973:195) noted they are often exaggerated, suggesting that artists may have depicted the animal this way to distinguish it clearly from the more frequently painted kangaroos with their short forelimbs. This feature is important in relation to the interpretation of the two paintings under discussion here.

Variable Posture of the Hind Feet

Another feature of thylacines is their long hind feet, differing from their forelimbs, and comparable to human feet and hands. Movie footage of living thylacines reveals the changing posture of their hind feet. The animals walk on their paws, elevating the ankles and posterior portions of the feet. However, when standing erect, the complete hind feet are placed flat on the ground with the ankle joints nearly at right angles, similar to standing humans. Aboriginal artists often depict the distinct ankle joints and large hind feet of the thylacine, seen in some of the examples shown herein.

Tail Tuft or Brush

Researchers are aware of an additional characteristic of thylacines: the presence of short hairs producing a small tuft at the end of the tail, first recognised by Brandl (1972:29), who described it as a 'brush'. This feature is depicted on a number of paintings in both the Kimberley (Walsh 1994:284–285) and Arnhem Land (Figures 8 and 9); most paintings, however, depict the tail with a smooth, rounded end. One consideration is whether the tail tuft is gender specific. However, it appears on both male and female thylacine paintings (Figures 8 and 9). Another is whether artists depicted tail tufts only when the tail was elevated, such as might occur if the animal was threatened or aroused; however, the tuft appears on tails that are both elevated and lowered.

Photographs and movies taken of living thylacines before their extinction in 1936 have been examined specifically for signs of this tufted tail, but, being so small, it appears to be lacking on most tails, which have ends appearing rounded or pointed. European paintings of the thylacine show no depiction of a tuft. Further thylacine research has included the examination of preserved specimens on public display at the museums of Tasmania, WA and the Natural History Museum in London (Figure 10). Figure 11 shows the tail detail of the London specimen. Although the tail tip appears slightly damaged or broken, long hairs are clearly visible at the end of the tail, which are absent more proximally.

Lewis (1977:101) examined five mounted thylacines in the South Australian Museum and observed 'a definite though irregular and flat-lying brush on the last 10 to 15 centimetres of the tail'. Similarly, Lord and Scott noted 'The young have more pronounced stripes and a distinct crest on the tail' (as cited in Paddle 2000:46). Stevenson recalled that a juvenile thylacine in captivity 'would stick its bristles up and snarl'



Figure 10 Preserved thylacine in the Natural History Museum, London (photograph by author).



Figure 11 Tail tip detail showing long hairs of tail tuft (photograph by author).

at the approach of a stranger (cited in Paddle 2000:46). One photograph of a young thylacine at the London Zoo ca 1906 has a short line of low raised hairs visible along the top of its distal tail end (Paddle 2000:53).

This tail tuft or crest, more prominent in juveniles, normally lying flat against the tail and flaring only when the animal is aroused, is easily overlooked. As an anatomical feature of thylacines it has been depicted by observant Aboriginal artists. It is noted that artists who depicted the tail tuft on their thylacine paintings often included whiskers (Figures 8 and 9). Both whiskers and tail tufts appear on the first two northern Australian paintings that were interpreted as possible representations of *Thylacoleo* (Murray and Chaloupka 1984:111).

Variable Ear Outline

Ear outline has been proposed as an identifier for thylacine paintings. On the one hand, Woodhouse (2012) stated 'all of the oldest and youngest rock paintings of thylacines that I have seen show ... a dog-like attitude with sharply pointed ears'. On the other hand, Tacon et al. (2011:167) listed one of their criteria for distinguishing thylacine paintings as being 'ear shape/size (short, rounded)'.

Thylacine ears on living specimens were described as 'large, oval and carried erect, even when the owner was asleep' (Paddle 2000:54). However, for the interpretation of paintings I suggest this is an unreliable identifier, because the ears are depicted in a variety of ways. Movies of living thylacines show that, anatomically, thylacine ears were round, but could appear pointed when viewed from certain angles, particularly when the animal twitched its ears, turning them sideways. Thus, whether ears are depicted as pointed or rounded reflects the variations found in nature.

Periorbital Pallor

Of great importance for the discussion here is the eye area. Akerman and Willing (2009) noted what appeared to them to be a large eye painted as two concentric circles, and suggested this was likely to be a 'significant element of the animal's identity'. On this I agree, and suggest that the two concentric circles do not represent one large eye, but an eye with surrounding colouration, distinctive of the thylacine. While preserved museum thylacine specimens are too faded to examine colouration around the eye adequately, early thylacine photographs reveal the thylacine eye was surrounded by a thin ring of black pigmentation, surrounding which was a larger circle of light-coloured fur extending beyond the orbit that varied in intensity amongst individual animals (Figure 12). Henry Richter, an early European artist, highlighted this feature on his paintings of thylacines (Figure 13).

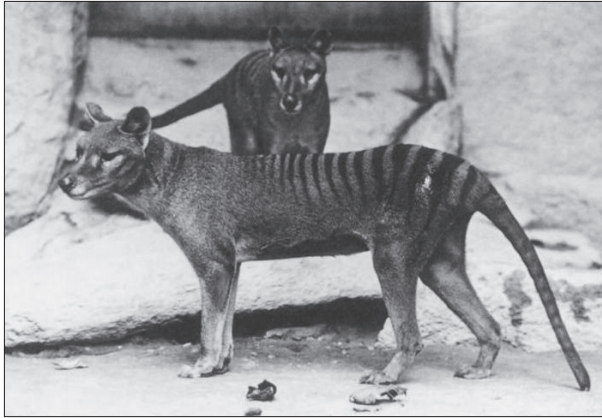


Figure 12 Thylacines with typical pallor around the eyes. Washington DC National Zoo, ca 1904 (Smithsonian Institution Archives).



Figure 13 Painting of a thylacine by Henry C. Richter. Plate 53, Volume One, *The Mammals of Australia*, by John Gould, 1863 (reproduced with permission).

Reassessment of the Purported *Thylacoleo* Motifs

Akerman and Willing (2009)

Akerman and Willing's (2009) argument was based on a distorted image of the motif, resulting from parallax error due to the photograph having been taken at an oblique angle, with the camera positioned to the right of the figure. This resulted in the enlargement of the front section of the motif in relation to the rear end. In their drawing (Figure 1A), the animal's hind limb is one-third the thickness of the forelimb, and one-half the thickness at the point joining the limbs to the body. A photograph and drawing (Figure 14) taken at right angles to the painting reveal the true proportions: the hind limb is approximately three-quarters the thickness of the forelimb where it leaves the body, and two-thirds the thickness midway down the proximal section of limb. Subsequently, Akerman and Willing's (2009) argument that the motif represents an animal with a large head and

forelimb, massive jaw muscles, underdeveloped hindquarters and cat-like features is not supported.

There are also internal inconsistencies in the drawings provided by Akerman and Willing (2009). The hind limb appears long and thin in their Figure 2, but short and fat in their Figure 4. The forelimb in their Figure 2 shows a different paw arrangement to that drawn in their Figure 3. Yet, much of their argument for a *Thylacoleo* interpretation is based on paw shape and size.

Woodhouse's drawing (Figure 1B) added a second animal in front of the first, but is similarly distorted to that of Akerman and Willing's (2009), leading him to conclude that 'The head is large compared to the rest of the body and has a large eye', and also that 'The male front paw is large and wide and is uplifted in a feline attitude' characteristic of a *Thylacoleo* (Woodhouse 2012). The photograph he provided reveals that his camera position was placed at the head of the first animal and that he used a wide angle lens, producing distortion with subsequent reduction in the relative size of the back of the animal.

When the motif described by Akerman and Willing (2009) is viewed from directly in front, a different picture emerges (Figure 14). From this position, one can observe a dog-like animal with marsupial genitalia, hind paws, a smooth stiff tail and stripes, bearing much greater similarity to a thylacine.

The paws on the motif discussed by Akerman and Willing (2009), particularly the front paw, are described as 'massive clawed paws'. Two reasons account for the large paws. First, there is the problem of distortion of their image, thus erroneously producing a large front paw. Second, the painting is not executed in a true-to-life naturalistic style. The artist has painted the head, tail and body of the animal in profile, but flipped the front paw to illustrate toe detail in plan view, making it larger than it would otherwise be. Further, no claws are visible on their example, only paws. In fact, other paintings that are clearly of thylacines do depict long claws (Figure 8).

Akerman (2009)

With reference to the second purported *Thylacoleo* motif, in concluding Akerman (2009) noted, 'While it is possible that the painting depicts a thylacine, the likelihood that it represents a *Thylacoleo* must be seriously considered.' Seen in Figure 2, this animal appears dog-like, has marsupial genitals, hind paws, a stiff tail and stripes. A distinctively long hind foot, different in shape from its front paw, is reminiscent of a thylacine.

The animal is depicted as twice the size of the human figure, suggesting it might represent a large animal, rather than a thylacine. However, this would be too large even for *Thylacoleo*, described as weighing 130 kg, with a length of 1.90 m (Clode 2009:20). A feature of northern Australian Aboriginal art is that human-animal associations often portray the animal as disproportionately larger than the human figure. Another Kimberley human-animal hunting scene could equally be interpreted as a man spearing a giant kangaroo twice his size (Figure 15). There are numerous examples, including macropods, birds and fish that are painted two to three times the size of the associated human figures (Welch 2004:49–52). It follows that the relative size of an animal is not a good identifier for species.



Figure 14 Photograph of alleged *Thylacoleo*, taken at right angles to the rock wall without distortion (photograph reproduced courtesy of Kim Akerman, supplied by DigsPhotos) (lower drawing provided by Ken Mulvaney).



Figure 15 Man spearing a 'giant' macropod (kangaroo or wallaby), Kimberley. Height = 32 cm (photograph by author).

The 'Style' of Motif Depiction

Should a *Thylacoleo* painting be present in northern Australian rock art, it would be expected to bear characteristics of the most ancient art. These include: (a) depiction in a relatively naturalistic style; (b) outline with infills consisting of irregularly placed dots, dashes or wavy lines; and (c) pigment residues bonded to the rock surface, generally deep red to blackish in colour. Figure 7 is the back section of a weathered thylacine from this Archaic Period.

The motif described by Akerman and Willing (2009) demonstrates none of these features. It is painted in outline

with bright orange-red pigment and lacks infill, other than its stripes and a line across the front paw. The line work is crude and angular, with the front paw depicted in plan view. These features belong to the Painted Hand Period in the Kimberley rock art sequence (Welch 1993:104–106), possibly aged between 3000 and 8000 years. The short line across the animal's front paw is also a characteristic of paintings during the Painted Hand Period (Welch 1993:104, Figure 11, 1999:309–310, Figure 158). Similar lines often cross through motifs, as if dividing them into segments, though in this example there appears to be only one dividing line. Another thylacine painting from this period (Figure 4A) represents a running thylacine with legs outstretched, painted in bold outline, with dividing lines across the elbow region, chest, tail and hind limb, and surviving with orange-red pigment.

The motif discussed by Akerman (2009) is an earlier rendition of a thylacine and, as quoted in his paper, I suggest that the simple human figure belongs approximately within the Tasselled Figure Period. This is the period of time when human figures first flourished in Kimberley art, following the Archaic Period.

The Question of Superimposition

In their description of the alleged *Thylacoleo* motif, Akerman and Willing (2009) noted:

A number of other paintings, but of a dark mulberry colour, appear to have been superimposed upon the main painting at some later date. These include: (i) a small painting, possibly a 'Clothes Peg' Bradshaw (Gwion) depicting a female figure with raised arms.

They further noted 'The figure is exceptionally clear and without any overpainting that obscures major features' (Akerman and Willing 2009).

Close examination reveals that the motif is in fact painted over an earlier female Straight Part Figure (Figure 16). As the Straight Part Figure Period immediately precedes the Painted Hand Period (Welch 1993), this superimposition suggests the motif belongs to the relatively late Painted Hand Period, consistent with its artistic style. The misreading of the human figures as lying over the thylacine motif, rather than the other way around, is due to an interesting optical illusion occurring when superimpositions of early art are assessed from a distance. Paintings with dark red to blackish pigment often appear more recent than those having lighter colours. In the field, I use a 10x magnifying lens to assess such superimpositions and avoid this bias. Here, close examination of Figure 16 is sufficient to arrive at the correct order of superimpositioning. There is no superimpositioning of the motif reported in Akerman (2009) to suggest its relative age.



Figure 16 Detailed view of the thylacine painted over earlier Straight Part Figures, Kimberley (photograph courtesy of DigsPhotos).

Conclusion

Thylacoleo is argued to have become extinct approximately 46,000 years ago. In contrast, the thylacine was still living on mainland Australia approximately 3500 years ago. Although purported by others to represent *Thylacoleo* (Akerman 2009; Akerman and Willing 2009), I have argued that two painted rock art motifs from the Kimberley region possess all the anatomical characteristics of thylacines, and are painted in artistic styles with pigment residues inconsistent with their being of great antiquity. Indeed, superimposition of one thylacine painting over earlier human figures supports the notion that it was painted during the Painted Hand Period, i.e. the Holocene.

Acknowledgements

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