

## A PATHWAY TO MINIMAL IMPACT WILDLIFE VIEWING?

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As the agency responsible for managing human interactions with wildlife in Western Australia, the Department of Conservation and Land Management (CALM) is faced with a complex issue. Wildlife is a significant component of the nature-based dominated tourism market in Western Australia. Tourists appear to expect naturalistic, easily accessible, close encounters with appealing wildlife, preferably in areas resembling a wilderness. Meeting this demand may result in serious risks to both tourists and the wildlife they seek to interact with. The legally driven conservation mandate of CALM operates to minimize impacts on natural areas and wildlife. Wildlife tourism demand is focused on opportunities for accessible experiences, preferably with close interaction and rare species. Somehow, a balance must be struck between the legal and ethical requirement to minimize risk to wildlife and human welfare while maximizing tourism market opportunities. This article presents a study of one way in which CALM has acted to ensure access to wildlife while attempting to minimize negative impacts.

Key words: Zoo; Wildlife tourism; Wildlife representation; Rare wildlife; Wildlife management

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### Introduction

Wildlife tourism is a significant part of Australia's tourism identity. The diversity of unique and charismatic fauna in combination with remoteness and rarity appear to have provided the ideal context for successful wildlife tourism operations. However, these very characteristics may also create difficulties with viewing access. The nocturnal habits of many Australian species, shy nature, geographical isolation, and even small size may also contribute to difficulties with ease of viewing. Coupled with this, tourists often have unrealistically high expectations

of wildlife experiences, such as touching or feeding, or witnessing a large number of individuals in a single location (Moscardo, Pearce, Green, & O'Leary, 2001). This may create a strong market demand for guaranteed close interactions with wildlife that may be difficult to provide. One method of providing ease of viewing rare nocturnal animals is through a captive wildlife facility.

Wildlife tourism, in a noncaptive setting, may potentially have negative impacts on the wildlife and associated ecosystems (Burns & Howard, 2003; Green & Higginbottom, 2001; Higginbottom & Hardy, 1999; Mallick & Driessen, 2003; Shackley,

1996). For example, Lewis and Newsome (2003) identified a demand for unregulated close interaction with sting rays in an uncontrived, natural setting. They observed that in these circumstances, there was a high risk of injury to both humans and stingrays in the absence of adequate management controls. Tisdell and Wilson (2002) noted the potential for a number of negative impacts on turtles as a result of interaction with humans. These included disturbance of natural behavior, reduction of nesting sites, and damage to nests. The particular character of the impact is specific to the species of wildlife, the geographical location, the type of interaction, the numbers of individual people and wildlife, the season, the stage of life cycle, and so on. Because of these potential risks, natural resource managers often consider wildlife tourism to be a threat to conservation goals and visitor safety (Sinha, 2001).

Zoos present an opportunity to facilitate tourist-wildlife interactions in a controlled environment with strong educational conservation-focused messages. Zoos meet demand for interactions with rare animals and large groupings of animals in a single location, with little risk to the species population as a whole, or the tourists. Thus, using zoos as a wildlife tourism interface may work to resolve some of the complex management issues faced by conservation agencies in noncaptive settings.

Zoos have traditionally been entertainment venues for the viewing of exotic wildlife exclusively displayed for human pleasure (Acampora, 1998; Anderson, 1995). While this may still arguably be the case, what visitors find entertaining has changed over time (Benbow, 2000). Past examples such as the London Zoo Chimpanzee Tea Party and dancing bears appear to have lost much of their appeal (Jamieson, 1995). There seems to have been a shift from a demand for circus-style performing animals to more natural representations of wildlife (Shackley, 1996). This preference revolves around animals acting in a perceived natural manner within a pleasant natural outdoor setting with educational interpretation (Benbow, 2000; Moscardo, Woods, & Greenwood, 1999). While Mason (2000) noted that zoos housing animals in unnatural conditions was a factor in deterring visitation, Hancocks (2001) commented that though "the public display areas may be luxuriantly green . . . behind the scenes the nineteenth century still exists" (p. 137). He claims that

the naturalistic design of enclosures is purely aesthetic and does not provide any practical benefit to the captive animals, who spend most of their time locked in concrete and metal cages out of public view.

Benbow (2000) noted that the lack of representation of ecological context at zoos (simply displaying animals in concrete and metal cages) reinforced perceptions of nature as a source of exotic entertainment. Although modern zoos seek to replicate naturalistic settings for captive wildlife, both Acampora (1998) and Anderson (1995) pointed out that this is simply a variation on the exotic entertainment theme. Anderson (1995) stated that zoos are designed to pander to popular conceptions of domesticated wildlife in a sanitized setting. The domesticated aspect arises from the chance to get close to a large number and variety of animals and view them at will in the absence of any threat to safety. In addition, the naturalism displayed may not reflect true natural habitat because zoos tend to prefer selective displays containing the unusual, the noisy, and the colorful. The shift toward naturalism in many zoo displays would seem to be driven primarily by aesthetic appeal and entertainment value in a non-threatening setting to a greater extent than the practical needs of captive animals.

Ings, Waran, and Young (1997) provided an interesting insight into the demand for sanitized representations. Although they found a significant number of visitors considered providing live prey to predators was acceptable, there was also a significant number who had an aversion to providing captive predators with live prey, especially while on view to visitors. This attitude was associated with a biological hierarchy where the concept of feeding live insects to lizards was considered more acceptable than feeding live rabbits to cheetahs. Most zoos compromise by feeding carcasses to predators, despite knowledge that suppressing hunting behavior is deleterious to well-being. Another example of public influence was at a popular safari park in Israel, where it was decided to feed the animals a kosher diet during the religious period of Passover (Macintyre, 2005). Acampora (1995) goes as far as stating that the association between conservation, education, and zoos is a false or misguided premise. That is, zoos afford a representation of wildlife determined more by the dominant sociocultural paradigm than wild-

life-centered efforts to conserve or educate. As a result, Acampora claims most zoos ultimately house animals in enclosures that stymie their natural instinct and promote perceptions of human dominion, or mastery, over animals. While this may be an extreme view, the point is that although zoo visitor preferences have shifted from a "circus"-style representation of exotic wildlife to more naturalistic representations, the character and design of zoos mainly provide for the aesthetic demands of visitors more than the needs of captive wildlife (Benbow, 2000).

While the representation of naturalness is an important factor in the contemporary appeal of zoos, being able to touch and feed the animals may also be expected by tourists (Tribe, 2001). This is somewhat of a paradox in which visitors wish to see wild animals acting naturally in a natural setting while being amenable to physical contact with humans. This links with comments by Ings et al. (1997) and Miller (2003) relating to the phenomena of visitors tending to associate captive wildlife with domestic animals. This may explain the strong wish to get close to or possibly touch wildlife (Schanzel & McIntosh, 2000). To this end, removal of barriers between tourists and captive wildlife can function as a popular draw card (Tribe, 2001). Removal of barriers and design of a zoo such that it enables captive wildlife to perform instinctive behaviors and "break off" contact with human visitors at will represents a stance centered more on wildlife protection than the human demand for wildlife viewing (Acampora, 1998). Such arrangements may result in any educational messages being communicated in the context of animal welfare and conservation rather than human dominion over nature.

Native wildlife sanctuaries or open range zoos may represent a departure from the traditional metropolitan zoo and its association with confined animals and exotic entertainment. Earth Sanctuaries properties, such as Warrawong, in South Australia, are areas of fenced-in natural habitat, as opposed to artificially created habitat. These sanctuaries were intended as islands to conserve the last remnant populations of endangered marsupials, but also attract visitors interested in viewing these animals (Harris & Leiper, 1995). The Australian Wildlife Conservancy also operates sanctuaries for native animals. As with Earth Sanctuaries, Australian

Wildlife Conservancy purchased land containing natural habitat and enclosed it with vermin-proof fencing before eradicating nonnative animals within the enclosure. Their primary aim is for the conservation of rare and endangered native animals. Again, this has attracted visitors wishing both to view rare wildlife and contribute to their conservation through donations and access fees (Australian Wildlife Conservancy, 2005).

Along a similar vein, orangutan sanctuaries such as those on Borneo and Sumatra were established primarily to conserve an endangered species. The orangutan sanctuaries differ slightly from the Earth Sanctuaries and Australian Wildlife Conservancy sites in that they are focused on a single species and are not a single enclosed area of habitat. Sanctuaries such as Sepilok (Sabah) consist of a range of facilities, from cages through to 45 km<sup>2</sup> of open forest reserve designed to repatriate ex-captive orangutans. Tourism infrastructure includes a visitor center, walk trails, and viewing platforms. The similarities with the Australian sanctuaries lie in the primary focus on conservation that has attracted a tourism market (Russon, 2005).

This article presents a case study of a captive wildlife tourism product, Barna Mia in Western Australia. Built and operated by the state government conservation agency, the Department of Conservation and Land Management (CALM), it presents rare native animals in their natural habitat with a strong focus on conservation. However, it was specifically built to attract tourists to the region, rather than acting primarily as a means for conservation. It is a showcase of the wildlife being bred in a much larger facility nearby, not open to the public. This case study is placed within a context of zoo tourism and opinions on wildlife management in captive and noncaptive situations, including the complexity of managing human interactions with wildlife. It explores the visitor response to a conservation agency's attempt at tapping the tourism market for close interactions with rare native wildlife in a closely managed, minimal impact context that departs from traditional zoo experiences.

#### Barna Mia

Barna Mia was constructed within a large protected remnant woodland, known as Dryandra Woodland,

in the central southern Wheatbelt of Western Australia, approximately 165 km southeast of the state's capital, Perth. The central southern Wheatbelt is an area of heavily modified agricultural landscape that separates the temperate, relatively populous southwest corner of the state from the more arid regions. It is an area of about 45,000 km<sup>2</sup> with a population of 18,000 residents (2001 census) and is dominated by grain- and sheep-based agriculture. It is characterized by broad-acre landscapes, scattered blocks of remnant native vegetation, and sparse population. The Western Australian Wheatbelt region has and does experience regular boom and bust periods determined by climate and agricultural prices and a narrow economic base. As a consequence, recent decades have seen a move toward economic diversification through development of alternate economic activities (such as tourism) to act as buffers against falling agricultural returns.

While the Wheatbelt is an agricultural area mostly cleared for grain and sheep production, it has a scattering of remnant native vegetation pockets. These are often no more than a few hectares of severely degraded habitat (Hobbs, 2003). The Dryandra Woodland is unusual as a relatively large area of remnant native vegetation. It is actually an interconnected cluster of remnant native vegetation blocks, totaling 28,000 ha, the largest of which is 12,000 ha. For this reason, Dryandra Woodland is significant owing to its relatively large size, ecological health, and subsequent role as a sink for displaced and rare Wheatbelt fauna and flora. Dryandra is also an important recreation resource primarily used by visitors from nearby rural towns. It does not figure highly as a Western Australian tourism destination. Annual visitation totals around 6000 visitors, most of whom are from the Wheatbelt region. Access to and around the woodland is afforded via a network of unsealed roads and walk trails. The unique character of Dryandra Woodland and the rare wildlife living there were viewed as potentially lucrative tourism draw cards. Further development of the woodland, through the construction of Barna Mia, was viewed as a means for encouraging increased tourism in a region with a low tourism profile, ideally injecting much needed revenue into the local economy.

Barna Mia is made up of a 2.5-ha enclosure and an architecturally designed visitor center. The en-

closure is an area of the woodland surrounded by electrified, vermin-proof fencing to keep feral predators out and the captive fauna in. The visitor center is incorporated into the fence line and acts as the animal feed preparation facility, visitor education center, merchandise sales area, end of tour snacks and drinks venue, and the gateway into the enclosure. At the time of the survey, the facility housed five fauna species: the Bilby, Rufous Hare-wallaby, Banded Hare-wallaby, Burrowing Bettong, and the Western Barred Bandicoot. These are small, rare marsupials that were either endangered or locally extinct. A fox eradication program coupled with the breeding program has resulted in the reestablishment of rare marsupial populations in Dryandra Woodland. Barna Mia was as a means of allowing tourists to view the rare fauna involved in the breeding program that is mainly carried out in a much larger (20-ha) enclosure nearby.

Because the animals at Barna Mia are nocturnal, all tours are conducted at night. Small groups of visitors meet the CALM guide at a location in Dryandra Woodland known as Old Mill Dam. From there, the guide leads the visitors in a convoy of cars through the woodland (on gravel roads) to the actual facility, about 7 km away. The act of traveling from the meeting point to an undisclosed location on the woodland may add to the sense of traveling into an isolated, wilderness-type area. On arrival the guide leads the group into the visitor center itself. The visitors are seated in an open plan area and the guide presents a 45-minute description of the history of Dryandra Woodland, CALM's fox eradication program, the breeding program, and Barna Mia itself. The presentation is followed by a walk through the enclosure that may last from 45 minutes to over an hour depending on how many animals are seen. The guided walk incorporates a defined walk trail loop of packed sand through the enclosure with three feeding stations.

During the guided walk, the animals are fed fresh chopped fruit and feed pellets placed in plastic feed trays. This forms part of the nightly feeding regime for the captive animals and takes place whether or not visitors are present. When conducting a tour, the guide uses the feed to attract animals closer to the tour group. Visitors take part in this process by placing the trays of food allocated to them by the guide in the clearings. The guide then points out the ani-

mals using a spotlight with a red filter (to minimize disruption of the animals' night vision). This process is repeated at each of the feeding stations.

### Method

This study is based on a survey of visitors and discussion with CALM managers. The Barna Mia visitor survey was conducted between April and September, 2003. It consisted of a series of questions relating to how satisfied the participant felt with their experience of Barna Mia. Satisfaction was quantified using a 4-point scale ranging from 1 (very low satisfaction) to 4 (very high satisfaction). Participants indicated their level of satisfaction on the scale and then were requested to write a comment relating to the reason for the satisfaction rank they gave. The survey began with a question relating to the experience as a whole before addressing each designated stage of the experience individually. The satisfaction questions were followed by some basic demographic and tourism activity related questions as outlined in Table 1.

Discussion with CALM staff established the management regime for the captive wildlife in the enclosure. Given that Barna Mia was integrated with the Dryandra Woodland rare marsupial breeding program and CALM is driven by a legal mandate to conserve wildlife, it was assumed that the facility was operated to ensure the well-being of the captive wildlife. As part of the management of the facility, CALM conducts regular monitoring of the captive wildlife to ensure each species population is in good condition. Population size is regulated to prevent

overcrowding by removing young from Barna Mia to the larger breeding enclosure as seen fit. The removed animals are incorporated in to the species reintroduction program. The ranger in charge of the facility commented that the animals in the smaller Barna Mia enclosure were breeding more successfully than those in the larger 20-ha enclosure nearby. Based on this knowledge, the assumption was made that the needs of the wildlife were being met to the extent possible within the confines of a 2.5-ha enclosure frequented by guided tours.

### Findings

A total of 85 surveys were received. While this may appear to be a low response rate, the consistency of the responses and satisfaction rating suggests the survey provides a good indication of visitor response to the experience. Respondents consistently ranked their satisfaction with the experience very highly. The mean overall satisfaction ranking for the experience was 3.75 with the response range being from 3 to 4 on the 4-point satisfaction scale. The aspects of the experience respondents identified in connection with their positive overall satisfaction rating are outlined in Table 2.

Of particular interest was the apparent perception of some respondents that the relatively small enclosure at Barna Mia provided an experience of animals in a wild or noncaptive context. This affirms the intentions in the original plans for the provision of an experience of rare marsupials in a natural setting. More than a third of the respondents (34.1%) commented on the natural surroundings or the posi-

Table 1  
Summary of Barna Mia Questionnaire

Question	Options Provided
Please indicate your overall satisfaction with the Barna Mia experience by circling one of the numbers on the scale below.	Satisfaction scale
What is the main reason for the overall satisfaction ranking you gave the Barna Mia experience?	Open ended
Please indicate your satisfaction and the thing you remember most for each stage of your experience this evening: The presentation given before the guided walk The guided walk around the enclosure Refreshments and browsing on return to the building after the walk. The information displayed in the building Stopping at the feeding stations during the walk	Satisfaction scale with space for comments
General demographic questions	As appropriate

Table 2  
Reasons Associated With Positive Satisfaction Rating of  
Barna Mia Experience ( $n = 85$ )

Response Category	%
Seeing rare wildlife never seen live before	65.9%
Educational/informative experience	40.2%
Naturalistic character of facility/experience	34.1%
Friendly/knowledgeable guide	28.0%
Close proximity of wildlife to visitors	18.3%
Not like a zoo	15.9%
Association of facility with wildlife conservation	14.6%
Appreciated facility design and presentation	11.0%
Enjoyed having new/unusual experience	11.0%
Animals were cute/entertaining	4.9%
Enjoyed seeing night sky	2.4%

tive experience of seeing animals in a natural setting. This view is illustrated by examples of statements selected from this subgroup: “The opportunity of seeing Bilbies in the wild” (respondent #20); “seeing the animals in the bush” (respondent #53); “Able to see rare animals in natural habitat” (respondent #83); “It was fantastic to see the animals in their natural environment” (respondent #22).

The feeling of being “in the wild” may have been enhanced by several factors: the sense of remoteness created by driving from the meeting point at Old Mill Dam 7 km through the woodland at night to Barna Mia; the indistinguishable difference between habitat inside the enclosure to that outside; a lack of barriers between visitors and the animals and the absence of constraints on animal movement through the enclosure. The enclosure was built in such a manner that it enclosed an area of the woodland rather than having habitat installed. This meant the vegetation and physical surroundings within the captive facility were the same as that without, reducing the impression of being “inside” and enclosure. In addition, the necessity for nocturnal tours of the enclosure meant the perimeter fence was obscured by the night darkness. While vegetation in the enclosure is primarily low scrub with a few scattered trees that do little to obscure vision, the low level of lighting and location of the walk trail in the center of the enclosure meant that perimeter fencing was difficult to see. This illusion may also be enhanced by visitors not having to pass through a gate in a fence to enter the enclosure but rather passing from the main building and through a glass door.

In addition, the wildlife within the enclosure have freedom of movement that is only constrained by the inconspicuous perimeter fence. The enclosure enables wildlife to carry out instinctive behaviors such as foraging, burrowing, or avoidance. The five species are free to mingle with little apparent human control over their movement.

Comments suggesting the respondents had experienced animals in a natural setting seem at odds with the captive nature of the experience as well as the artificial feeding regime used to attract animals to the feeding stations. The feeding is done in an overt way, using plastic trays and including audience participation that was by no means natural. This perhaps is indicative of attitudes toward the feeding of animals in a wildlife tourism context whereby the use of food may be seen as acceptable when used to provide access to experience animals of interest. In addition, the feeding regime may be legitimized in the eyes of the visitor by the officially condoned nature of the activity.

While a minority of respondents commented on their experience of wild animals in a natural habitat, most appeared conscious of the captive nature of the experience. This did not seem to detract from the satisfaction rating as the comments were associated with high rankings. This was probably because the captive experience enabled viewing of animals that would be very difficult to find in a noncaptive setting. The following statements from this group demonstrate the manner in which this view was expressed: “We saw all of the animals that were kept in the enclosure”; “a great viewing experience that we will probably never have in the wild”; “Done as naturally as possible—perfect . . .”; “seeing the wildlife on their own terms under relatively natural conditions.”

While most of the respondents indicated an awareness that the enclosure presented wildlife in what was effectively a contrived setting, there were many comments indicating a disassociation with the concept of a zoo. This appeared to be a product of the freedom of movement wildlife had and the lack of barriers to movement within the enclosure. This may also relate to the association between the term “zoo” and what could be seen as the traditional urban design—with a broad range of species and genera held in distinct enclosures separated from visitors by various forms of barrier. Although Barna Mia is a type

of free-range zoo, visitors did not consider it as such: “Seeing the animals close up, doing things they would do naturally. Not just a cage at the zoo”; “Tour extremely informative and the enclosure shows the animals in their natural habitat acting naturally—unlike a zoo.”

While visitors apparently distinguished between Barna Mia and perceptions of a zoo as well as positively commenting on the naturalness of the experience, there was still a strong element of demand for close interaction with the wildlife. For example: “Loved the close interaction with the animals”; “I was able to see animals I have never seen in the wild before and they were friendly”; “[I enjoyed] Viewing of animals at very close range”; “[I enjoyed] Close contact with the animals.”

Thus, while visitors appeared to consider the naturalistic representation of animals “in their own habitat” being able to “act naturally,” the ability to interact in a fashion similar to domesticated animals also factored strongly in the positive response. This appears to highlight a paradox between wanting captive wildlife to have access to free-range natural habitat but also to exhibit attraction behavior toward human observers. Not all visitors were happy with this type of behavior. A small percentage (2.3%) made negative comments in relation to the perception that the wildlife was “too tame” or that domestication had eroded the quality of the experience. Comments were as follows: “The animals seemed a bit tame”; “Saw the same animal over and over again.”

Despite the small number suggesting this detracted from the experience, the majority of responses seemed to indicate that an element of domestication was favorable as it allowed close viewing. In particular, the opportunity for the wildlife to actually mingle with the tour group, moving between seated visitors was considered particularly favorable.

### Conclusion

Barna Mia provides access to rare animals visitors would not otherwise view in a natural setting. The character of the experience, driving 7 km into a woodland at night, viewing apparently free-range wildlife, seeing a variety of species in one place, and the requirement for nocturnal tours adds to the sense of entering a remote wilderness location. The

free-range design of the enclosure creates the impression of a natural habitat that is “not like a zoo” but still allows easy access to otherwise rare and difficult to view species. The perception that the animals are free roaming and “choose” to make contact with visitors works against the human domination paradigm commented on by Acompara (1998). The style of guided tour that incorporates the nightly feeding of the wildlife provides the hint of domestication in what are perceived to be wild animals, catering for the visitor demand for close encounters.

While visitors respond favorably to the experience, the wildlife appear to experience minimal negative impacts as a result of being in the enclosure. The lack of barriers within the enclosure allows for freedom of movement and avoidance of visitors when needed. The enclosure was designed such that it includes natural habitat of the woodland, enabling instinctive behaviors to be carried out. In addition, the wildlife within the enclosure appear to be in good health as indicated by success in breeding, physical appearance, and regular consumption of food.

The alternative to viewing the rare species at Barna Mia would involve travel to remote regions at considerable expense (time and money wise). This may also come with the risk of not actually viewing the wildlife of interest owing to its elusive behavior and small size. Barna Mia also provides a controlled environment in which the risk to visitors and wildlife is minimal. The potential negative impacts of tourism operation focused on noncaptive populations of such rare species are reduced while the feeling of being “in the wild” is still catered for. As a free-range zoo located in a natural area remote from urbanization, Barna Mia appears to act as an effective compromise between wildlife tourism demand and captive wildlife needs.

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