

THE CHUDITCH: A SPOT-ON MARSUPIAL

by Dr Melody Serena

The largest carnivorous marsupial found in W.A. is known to scientists as *Dasyurus geoffroi*, from the Greek for 'furry tail', and the surname of an eminent British zoologist. To the European settlers of W.A. the animals were 'native cats'. This name is misleading: as a marsupial, or pouched mammal, the native cat is more closely related to kangaroos than house cats. An apter name is 'Chuditch', as used by aborigines of the Albany region. The name mimics the animals' most characteristic call: short, sharp cries resembling the sound of dry sticks snapped underfoot. The call is used aggressively to defend food or threaten an intruder. Thus, loosely translated, the name Chuditch actually means 'Scram! Get out of here!! Never come back again!!!'.



When the Endeavour first sailed into Botany Bay, Chuditch occupied much of Australia west of the Great Dividing Range. In W.A. they inhabited virtually all of the State south of the Fitzroy River and its tributaries. This range declined dramatically with the establishment of Europeans: rabbits, foxes, house cats, sheep, goats, cattle, and humans. The last Chuditch disappeared from the central deserts in the late 1940s or early 1950s. Today, the species appears to be restricted to the jarrah and wandoo forests located east of the Darling Scarp.

Research into Chuditch ecology is the first, fundamental step towards conserving the species. Aspiring Chuditch biologists are well warned, however, that their study species is secretive, solitary, largely nocturnal, and quite uncommon even within its remaining range.

In order to keep track of individuals, my co-worker Todd Soderquist and I rely heavily on the technique known as radio telemetry. Study animals are fitted with radio collars consisting of a miniature transmitter and battery attached to a thin brass collar which also functions as an aerial. Each transmitter emits a steady stream of radio wave 'beeps' which are translated into sound with the help of a highly sensitive telemetry receiver. Because each transmitter broadcasts on a different frequency, or channel, unseen animals can be identified as well as located. By repeatedly locating animals, we can map their home ranges, describe patterns of den and habitat use, and eventually determine when and how they die. Knowing the exact whereabouts of animals also greatly improves our success in trapping them to monitor reproduction and seasonal changes in health.

Chuditch typically breed in May or June, with litters appearing in late May, June and July. The pouch encloses six teats, and hence a maximum of six offspring. Large families are the rule: of 26 mothers examined last year, 18 carried six babies

and four others had five. Large average litter size is paralleled in this species by low life expectancy. Fully half of the females mentioned above were reproducing for the first time, at one year of age. Based on tooth wear, none appeared to be more than three years old.

Each infant Chuditch remains wedded to a teat for at least the first seven weeks of life. By this time, fine hairs are sprouting on each ungainly head, and spots are appearing on each naked, pink back. By eight to nine weeks the rapidly developing youngsters have essentially outgrown the pouch, and are left in a burrow while their mother forages.

Two pre-eminent facts govern a Chuditch's choice of dens: Chuditch taste good; the world is hungry. At no time do these facts apply more urgently than when young have recently emerged from the pouch. At the age of nine weeks, Chuditch are about as competent to fend for themselves as newborn puppies or kittens. They are toothless, blind, and at best scantily clad by fur. Even shivering is still beyond their ability. It follows that the design of nursery dens reflects an additional basic rule: baby Chuditch must be kept warm.

Nursery burrows are often located under large and fairly indestructible objects like boulders, logs and living trees. Tunnels leading to the den chamber are typically narrow — not much wider than an adult Chuditch — and two metres or more in length. In the one nursery den which we have excavated, the main den chamber was protected by nearly a vertical metre of soil and roots. The chamber itself was the shape of a nissen hut, 90 cm long, 40 cm wide, and 20 cm high at the middle. Heaped along one side were over 14 litres of dry eucalypt leaves, along with a few parrot feathers and a piece of string. With so much effort invested on their behalf, it is not surprising that the mortality of den young, like that of pouch young, appears to be very low.

Playing follow-the-leader at 15 weeks of age (right).

A newly fitted radio collar. Transmitter and battery are protected by coats of beeswax and epoxy, while plastic tubing surrounds the brass collar (below).



Todd Soderquist



Todd Soderquist

Todd Soderquist



(a)

Todd Soderquist



(b)

Todd Soderquist



(c)

Todd Soderquist



In September or October, at the age of 14 weeks, juveniles begin to explore the world outside their den. Still a bit wobbly when walking, their ruling passions remain those of an infant: milk and sleep. Growth is correspondingly rapid. Late in their 14th week of life, a typical litter of six gains nearly 25 grams — roughly three per cent of its mother's total weight — each day. Remarkably, despite the enormous energy drain which this implies, female Chuditch usually remain in good condition throughout the time of dependent den young. Some even manage to put on fat during this period. Their secret appears to be mostly a matter of careful timing. By breeding in winter, mothers ensure that den young are raised in spring when the forest is both literally and figuratively in productive bloom.

By the age of five months, juvenile Chuditch are small-scale editions of their elders: fully furred and enviably agile. While their mothers may still be producing some milk, the young are in fact fully capable of an independent existence. This potential is soon realized as the young cease denning with their mothers, and leave her home range to look for one of their own.

To a biologist, an animal's 'home range' is simply the area within which it lives and breeds. For a female Chuditch living along the Murray River south of Dwellingup this typically entails an area of three to four square kilometres or more, all of which probably serves as her kitchen at one time or another. Included within is a bedroom/nursery area of one to two square kilometres where her dens are found. It is probably not practical for a female Chuditch to defend the entirety of such a large area as her exclusive domain. In any event, the cardinal rule governing rights of female neighbours appears to be that kitchen space may be shared, but bedroom space may not.

Adult male Chuditch are even more solitary than their female counterparts: the sexes associate only to breed, and male parental responsibility ends with insemination. Male Chuditch also have much larger home ranges than females, with dens distributed over an area of 4-6 square kilometres. In part, this may reflect the fact that males weigh about 50 per

Development of pouch young:

(a) Five-day old Chuditch in pouch.

(b) Four weeks after birth. Whisker follicles are well-developed, but lips and eyelids remain fused and ears barely defined.

(c) At nine weeks, juveniles can crawl and are sparsely covered with fur.

Large hollow logs often serve as Chuditch dens (left).

cent more than females, and so require a bigger 'larder'. Perhaps even more importantly, it means that each male's home range typically overlaps with those of several females — thereby improving his chances of successfully mating during the short annual breeding season.

The mainstay of the Chuditch diet is insects, along with occasional lizards, birds and small mammals. They eat little vegetable matter in the jarrah forest, although this may be more a matter of limited availability than inherent prejudice. In captivity, Chuditch relish a wide variety of cultivated fruits and roots: banana, peach, beans, squash, carrots, peas, avocado. All food items are normally conveyed to the mouth by the forepaws, which can grasp efficiently. Judging by captive behaviour dexterous forepaws are also essential foraging tools — used to fossick through leaf litter, search deep within the crevices of rotting logs, and even snatch insects on the wing.

Like many sharp-toothed animals, Chuditch have long held a reputation for being 'vicious'.

The native cat is the most savage of all the small animals in Western Australia. . .It is like the dingo in that it won't harm you unless it is cornered. Then it will put up a real fight for its life. A domestic dog usually won't attack a dingo or native cat on account of their viciousness.

A.B. Facey, *A Fortunate Life*

Thus forewarned, we donned leather gloves when handling wild Chuditch during the earliest days of our research. This practice was soon abandoned, however, as we realized the animals were generally too intimidated by our presence to even consider trying to bite. Few even struggled, as long as we kept their eyes covered when handling them.

As we learn more about Chuditch, we begin to identify the factors limiting their survival and abundance. By translating this knowledge into appropriate management practices, we hope to ensure the long-term survival of the species, and — someday — provide the basis for its reintroduction to areas of historic habitat. □

If my mouth wasn't full I'd shout 'Scram! Get out of here!! Never come back again!!!'

All the world's your oyster when you're 13½ weeks old.



Toad Soderquist



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Contents	Page
Down by the Riverside by Colleen Henry-Hall	3
Vanishing Desert Dwellers by Dr Andrew Burbidge <i>et al</i>	7
Urban Antics: Looking out my back door by Andrew Cribb	13
Relics of a Long Lost Land by Dr Barry Wilson	14
Wiluna's Fashion Farm by Stephen Davies	18
Old Charley's Legacy by Rachel Smolker	24
Blueprints for the Future by Dr S. Shea and R. Underwood	28
The Nostalgic Naturalist	34
by Old Timer	
The Chuditch: A Spot-on Marsupial by Dr Melody Serena	36
On the Verge by Penny Hussey	40
Mangroves by Dr Vic Semenuik	44
Letters	47



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COVER PHOTO

Shipwreck at Broome (Jiri Lochman).

EDITORIAL

For more than 100 years W.A. has recognised the importance of protecting significant areas of its natural heritage.

Today, about 4.5 million hectares of our State is classified as national parks, vibrant natural museums ranging from the hardwood forests of the south-west to vast inland deserts that represent our unique terrestrial flora and fauna.

Until now, however, there has been a missing element: the marine environment.

Clearly, its absence has made our park system less representative of W.A.'s environment, especially considering that the State has some 12700 km of coastline.

Recently a start was made to address this imbalance with the official opening of the Marmion Marine Park, W.A.'s first marine park.

The primary objective in establishing this park, which is located on metropolitan Perth's doorstep, is to conserve significant examples of our marine heritage, and to encourage public understanding, appreciation and continued enjoyment of the marine environment in ways which will leave it unimpaired for future generations.

These same values apply to the proposed Ningaloo Marine Park which is situated along 260 km of the State's coastline south of Exmouth. Ningaloo will be vested in the National Parks and Nature Conservation Authority as a marine park in July.

Both of these marine parks not only allow for the development of proper management techniques to protect the marine environment, but also to enhance recreation.

Marmion reef has long been a popular holiday destination for many Western Australians who fished for the huge groper and crayfish offshore, and swam in the protected lagoons.

Ningaloo might be less well known because of its isolation, but the tourist industry is expected to promote this area of our coastline and the adjacent Cape Range National Park and, as a consequence, it will become one of the State's premier tourist attractions.

The establishing of marine parks will provide many benefits.

Some intangible, such as the knowledge that future generations will be able to appreciate areas of unspoiled natural beauty.

Others more tangible, such as the enjoyment of visiting a marine park.

There will also be benefits in terms of jobs created and the expansion of a growing and viable tourist industry.

Furthermore, marine parks will provide ecological benchmarks for research into natural processes and into the relative effects of marine and coastal uses.

W.A. has a responsibility to protect special marine environments and to encourage public appreciation of these areas now and in the future.

Our marine parks will do this.