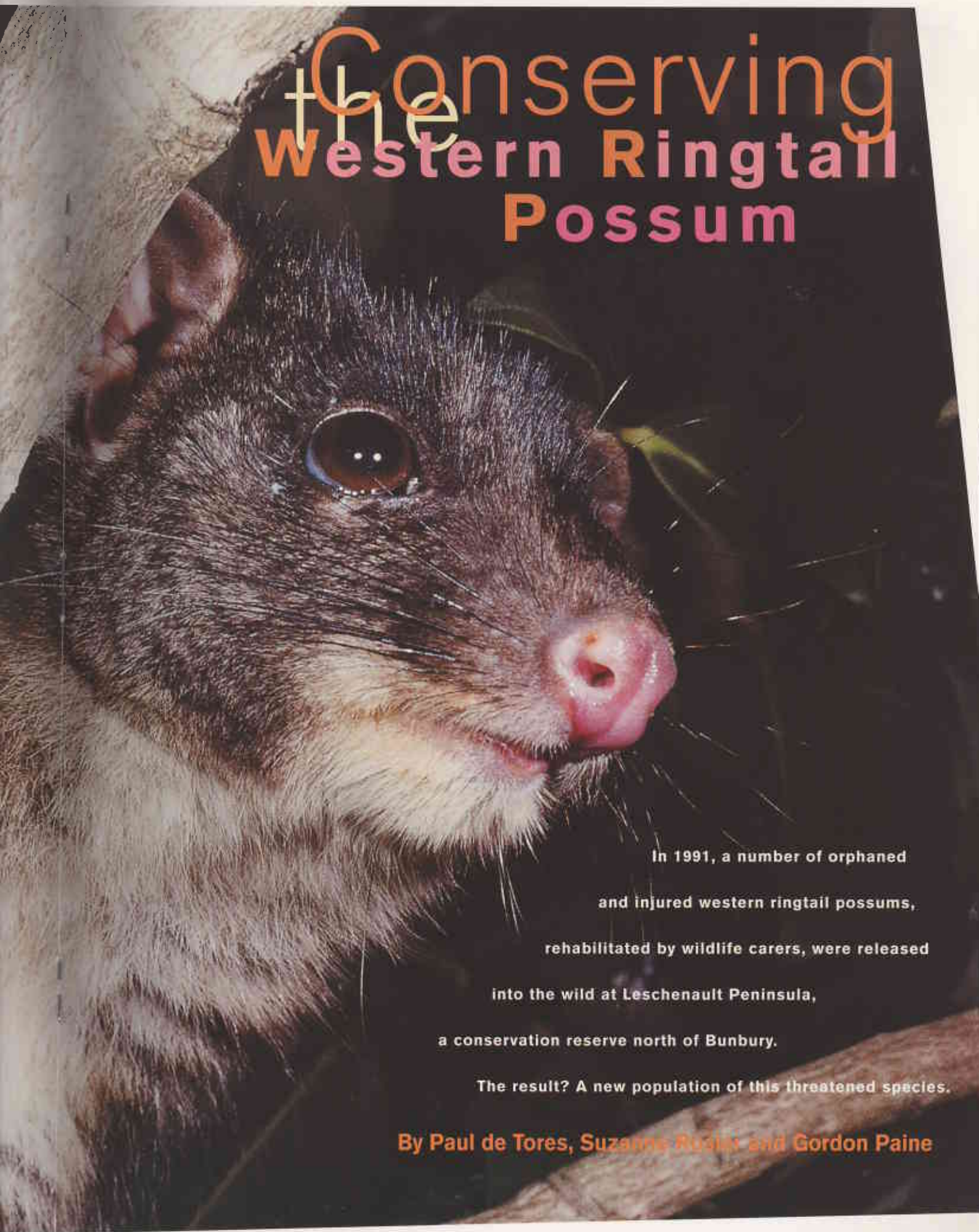

Conserving the Western Ringtail Possum

In 1991, a number of orphaned and injured western ringtail possums, rehabilitated by wildlife carers, were released into the wild at Leschenault Peninsula, a conservation reserve north of Bunbury. The result? A new population of this threatened species.

By Paul de Tores, Suzanne Rosier and Gordon Paine

The western ringtail possum (*Pseudocheirus occidentalis*) is a threatened species occurring naturally only in the south-west corner of Western Australia. Its distribution formerly covered a larger area of the south-west. Clearing for agriculture and urban development, and predation by foxes and feral cats, have taken a heavy toll over the past century-and-a-half. By the 1980s, this led to the need for recovery action.

Oddly enough, this threatened species is relatively common in the towns of Busselton and Albany. Within Busselton townsite, western ringtail possums are frequently injured by domestic pets or motor vehicles. In the peak of summer, many possums are also found suffering from heat stress. Often, when an adult female possum is seriously dehydrated, injured or killed, its pouch young is unharmed. If orphaned, these young are unable to survive in the wild. Many of the dehydrated, injured or orphaned possums are rescued and passed on to wildlife carers who nurture and rehabilitate them. Once rehabilited, these possums are usually suitable for release.

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The western ringtail possum (*Pseudocheirus occidentalis*).
Photo – Ann Storrie

Left: An orphaned western ringtail possum, in the care of Norval Watts, Busselton.
Photo – Paul de Tores

Below: A male western ringtail possum, foraging in banksia.
Photo – Ann Storrie

Until 1990, rehabilitated possums from the Busselton area had been released in nearby conservation reserves and elsewhere. Release areas included Ludlow Tuart Forest (north of Busselton) and Locke Nature Reserve (between Busselton and Dunsborough). However, the fate of the released possums was unknown.

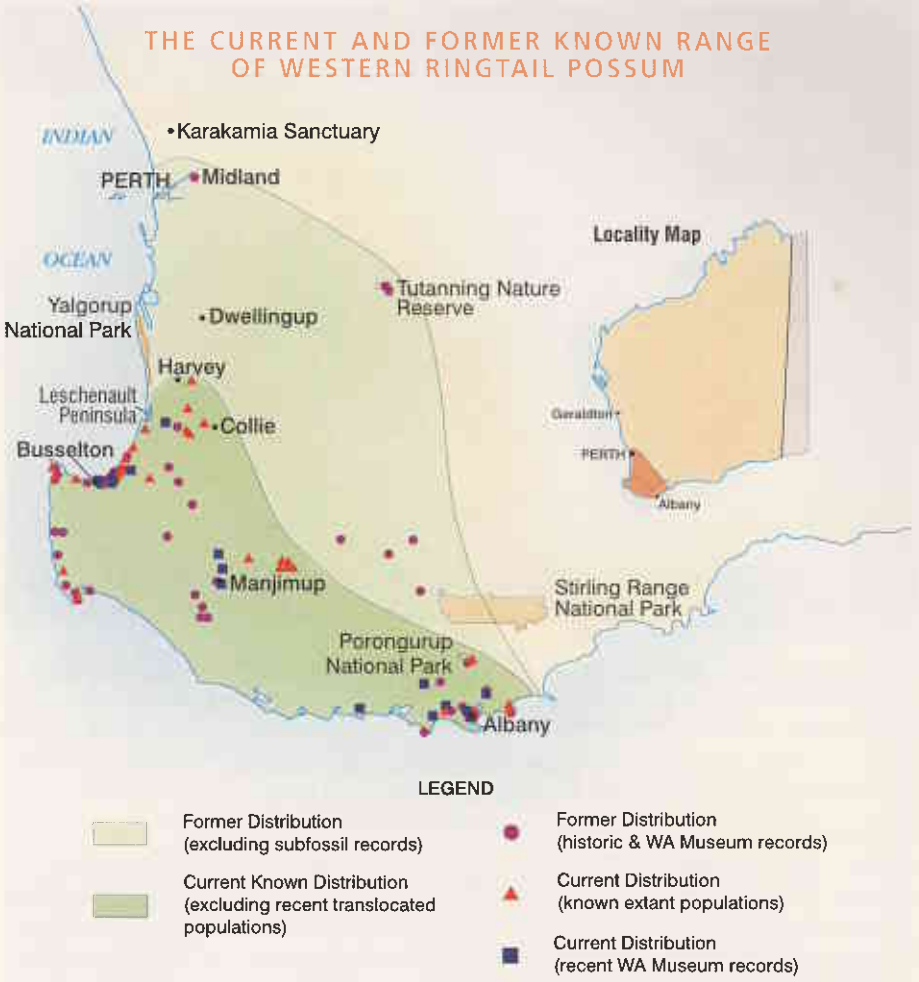
In 1991, Barbara Jones, in conjunction with the Western Australian Museum, undertook a short pilot study to follow the progress of released rehabilitated western ringtail possums. Five western ringtail possums were fitted with radio-collars and released at Locke Nature Reserve. Within six weeks, four were dead; the condition of the retrieved carcasses indicated fox predation.

Leschenault Peninsula Conservation Park had also been identified as a potential release site for the western ringtail possum. Leschenault has extensive stands of peppermint (*Agonis flexuosa*), the preferred diet of western ringtail possums, and healthy stands of tuart (*Eucalyptus gomphocephala*), which provide suitable tree hollows.

Leschenault Peninsula has a further advantage over Locke Nature Reserve: it is more easily maintained against foxes. Studies in eastern Australia have recorded the remains of ringtail

Right: The former and current distribution of the western ringtail possum.
Source – Western Australian Museum (published and unpublished records); published and unpublished historic records; and populations known and confirmed by authors.

Below right: Peppermint fringed by tuart trees at Leschenault Peninsula. *Inset:* An aerial view of Leschenault Peninsula, from its northern end.
Photos – Paul de Tores



possums in the scats (droppings) and stomachs of foxes. Although larger than the common ringtail possum of eastern Australia, the western ringtail possum falls within the range of medium-sized mammals known to be susceptible to foxes. Given this, and the demonstrated conservation value of fox control in other studies in Western Australia and the results from Locke Nature Reserve, it was clear that fox control would be required before embarking on further releases of rehabilitated possums.

Leschenault is a narrow north–south aligned peninsula approximately 11 kilometres long, with a 600-metre-wide neck at its northern end. This narrow neck is the only possible point for invasion by foxes. Fox control, through '1080' baiting, began at Leschenault in 1991 and a monthly baiting program has been maintained. '1080' poison does not harm native wildlife, but is lethal to introduced predators. Baiting is now an integral part of CALM's Western Shield program (see 'Western Shield', *LANDSCOPE*, Winter 1996).

FOUR CRITERIA

The long-term conservation goal of the Leschenault release program was to establish a new population of western ringtail possums within secure conservation estate and extend the species range—a major step in the recovery process for any threatened species.

There were four criteria used to measure success. Would the released possums survive? Would they produce young? Would the young survive to sexual maturity and also produce young? And would the population increase and become self-sustaining?

Eight rehabilitated possums were released on 30 September 1991. They

A POSSUM BY ANY OTHER NAME . . .

Ngwayir is listed in the *Noongar Dictionary 1997* (compiled by Rose Whitehurst) as the Nyoongar word for ringtail possum. However, there are a number of variations to this word, including *ngora, nguarer and ngwarer* (see the Western Australian Museum's publication by Peter Bindon and Ross Chadwick titled *Nyoongar Word List from the South-West of Western Australia*). The records of G. F. Moore from 1884 recorded *ngora* as the Aboriginal name for the ringtail possum.

There were probably four different dialects in the south-west, but the differences in spelling and pronunciation may also be explained by the attempts of white settlers to record an English spelling of the Aboriginal pronunciation. E. A. Hassell (an early settler who had property Jerramungup), in a hand-written undated note, thought to be from about 1894, commented: "*the trouble is at this late date that so many names have been so hopelessly mutilated by the white people* [that they are now not understood by the Aboriginal people]".

E. A. Hassell's hand-written exercise book titled 'Aboriginal Vocabularies' referred to the ringtail possum as *wamp*. Included in the Hassell collection of notes and family papers is a list of place names (no author identified) which records Wamperup as 'place where black possum' (the suffix *-erup* means 'the place where'). *Wampum* is also believed to refer to the spun fur of possums. It is possible that today's place-name *Perup* may be a contraction of *Wamperup*.

G.C. Shortridge, when reporting on the Australian fauna specimens collected during the Balston Expeditions of 1904–1907, also recorded *wormp, moilyer* and *ngnuara* as Aboriginal words for the western ringtail possum.

It seems that Aboriginal people used both *wamp* and *ngwayir* (or one or more of its derivatives) when referring to the ringtail possum.

Pseudocheirus occidentalis – the western false hand

The genus name (*Pseudocheirus*) for the western ringtail possum is derived from the Greek *pseudes* meaning 'false' and *keirus* meaning 'hand', with the species name (*occidentalis*) being derived directly from Latin for 'western'. The reference to a false hand comes from the western ringtail possum's ability, like that of all members of the family *Pseudocheiridae*, to oppose two fingers against the remaining three in a way similar to the truly opposable thumb and four fingers of the human hand.

The western ringtail possum's hand-like grip.
Photo – Paul de Tores

Above: Suzanne Rosier with radio-tracking equipment.
Photo – Paul de Tores

were fitted with radio collars and their progress monitored. Survival was impressive; by January 1992 there had been no recorded deaths.

This initial indication of success gave the team the confidence to proceed with further releases, and 11 more rehabilitated possums were released in early January 1992. The first death from the 19 possums was not recorded until late January 1992; the cause of death was attributed to heat stress. By March 1992, there were only three recorded deaths. The cause of the later two was unclear, but neither carcass showed evidence of predation. The next recorded death was not until January 1993.

The first criterion for success—survival—had clearly been met.

In addition to monitoring survivorship, it was also important to know whether the released possums established dreys or other rest sites, including tree hollows. Dreys are nests constructed from vegetation in the immediate foraging vicinity and are usually comprised of peppermint foliage.

The first drey was recorded on 8 November 1991, less than six weeks after the initial release. Several dreys were subsequently recorded, with six of the eight possums from the initial release using them regularly. The first use of a tree hollow was recorded on 2 December 1991.

Above left: Barbara Jones and Kath Meathrel securing a nest box in a mature peppermint. Nest boxes were used as release points for the initial releases.
Photo – Paul de Tores

Above: Tuart tree in the Ludlow Forest.
Photo – Jay Sarson/Lochman Transparencies

THE POPULATION GROWS

The two criteria of producing young were also met. This is best demonstrated with a case history.

A female possum was orphaned in summer 1991–92 as a result of clearing to establish a residential development in Busselton. She was rescued from the site after her mother was thought to have been killed. At that stage, she was a small, furred young, weighing approximately 100 grams, and would normally be dependent on her mother.

During the following eight to nine months, she was nurtured by the carer who rescued her. She was initially fed with a dropper, graduated to a bottle, and was then fed with a variety of native plants, predominantly peppermint. By November 1992, she weighed 910 grams. She was fitted with a radio-collar and released at Leschenault on 22 November 1992.

Subsequently, she produced seven young—four females and three males. The first was recorded in May 1993. He too was eventually fitted with a radio collar and was regularly recorded sharing a drey with his mother. He later moved from his mother's 'home range' and established a territory three to four kilometres to the south. Two of the female young were monitored until they reached sexual maturity. Both have now been recorded with pouch young. Unlike the male young, both females have stayed within their mother's home range.

On 2 August 1996, the mother was found dead. She was in a peppermint

Below left: The first recorded drey at Leschenault.
Photo – Paul de Tores

Below: A typical drey in a peppermint tree.
Photo – Paul de Tores

THE WESTERN RINGTAIL POSSUM

Until recently, the western ringtail possum was considered a subspecies of the common ringtail possum (*Pseudocheirus peregrinus*), well known in eastern Australia. The common ringtail possum occurs over a wide range of habitat along the eastern seaboard, from north Queensland to the south-east of South Australia, as well as in Tasmania. Four subspecies are recognised within this range.

In contrast, the western ringtail possum, from the south-west of Western Australia, is restricted to coastal and near-coastal peppermint (*Agonis flexuosa*) woodland and eucalypt forest. Its range extends from the Harvey River, east of Harvey, south along coastal and near-coastal areas to east of Albany. Within this range the distribution is patchy; the only known inland populations where peppermint is absent are at Perup forest and nearby forest blocks north-east of Manjimup, jarrah-blackbutt sites near Collie, and karri-marri forest in Porongurup National Park. Records from the Western Australian Museum and from former known populations indicate that the western ringtail possum's geographic range has contracted significantly, chiefly because of loss of habitat and threats from foxes and feral cats. Populations known from Wheatbelt areas as recently as the early 1970s and the Perth metropolitan area in the 1930s are now locally extinct.

In 1983, the western ringtail possum was placed on Western Australia's list of threatened species.

tree in a position offering little protection from the rain of the previous night. She had died within the previous 12 hours, probably of exposure. She had survived for nearly five years, had produced seven young, and helped to establish the new population.

The fourth criterion—a growing, self-sustaining population—has also been met. Spotlight searches at night indicate that the population is increasing (see graph). These spotlight searches have also revealed a dramatic increase in the number of sightings of brushtail possums, presumably a result of the 1080 fox-baiting program.

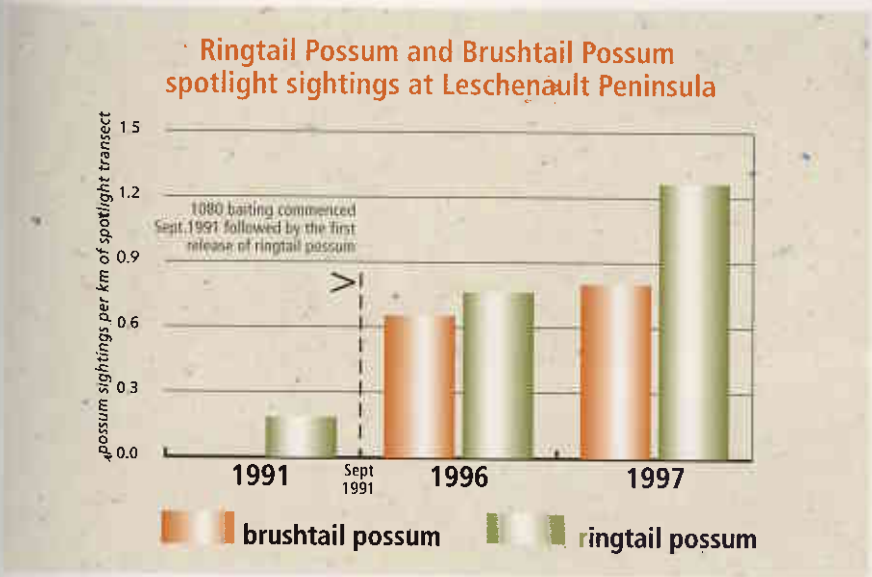
THE FUTURE

The releases at Leschenault have continued: 103 rehabilitated possums were released between September 1991 and March 1997. A sub-set of these has been radio-collared and monitored, with recorded use of 127 dreys and 44 tree hollows. There have been deaths, but only two of these appear to be the result of predation; one was attributed to a cat, the other to a raptor.

Carrying out fox control is undoubtedly a major reason for the success. Not only do the Leschenault data contrast dramatically with the earlier releases at Locke Nature Reserve; they contrast just as dramatically with a similar study at Ku-ring-gai Chase National Park on the northern outskirts of Sydney, NSW. In the NSW study, 113 ringtail possums (the closely related common ringtail possum, *Pseudocheirus peregrinus*) were released in the park. Like the Leschenault releases, the possums had been orphaned and rescued by wildlife carers. Unlike Leschenault, there was no fox control carried out at Ku-ring-gai. Of the 113 released possums, 86 were known to have died. Fox predation was responsible for 39 of these deaths, cat predation for 28.

Monitoring of the Leschenault Peninsula population will continue.

Left: Foraging western ringtail possums with their conspicuous long tails. The tail is often white for up to half its length.
Photo – Ann Storrie



On the basis of the success of the releases, western ringtail possums have now been released at Yalgorup National Park, Karakamia Sanctuary and within the northern jarrah forest south-east of Dwellingup. Foxes are being controlled at all sites.

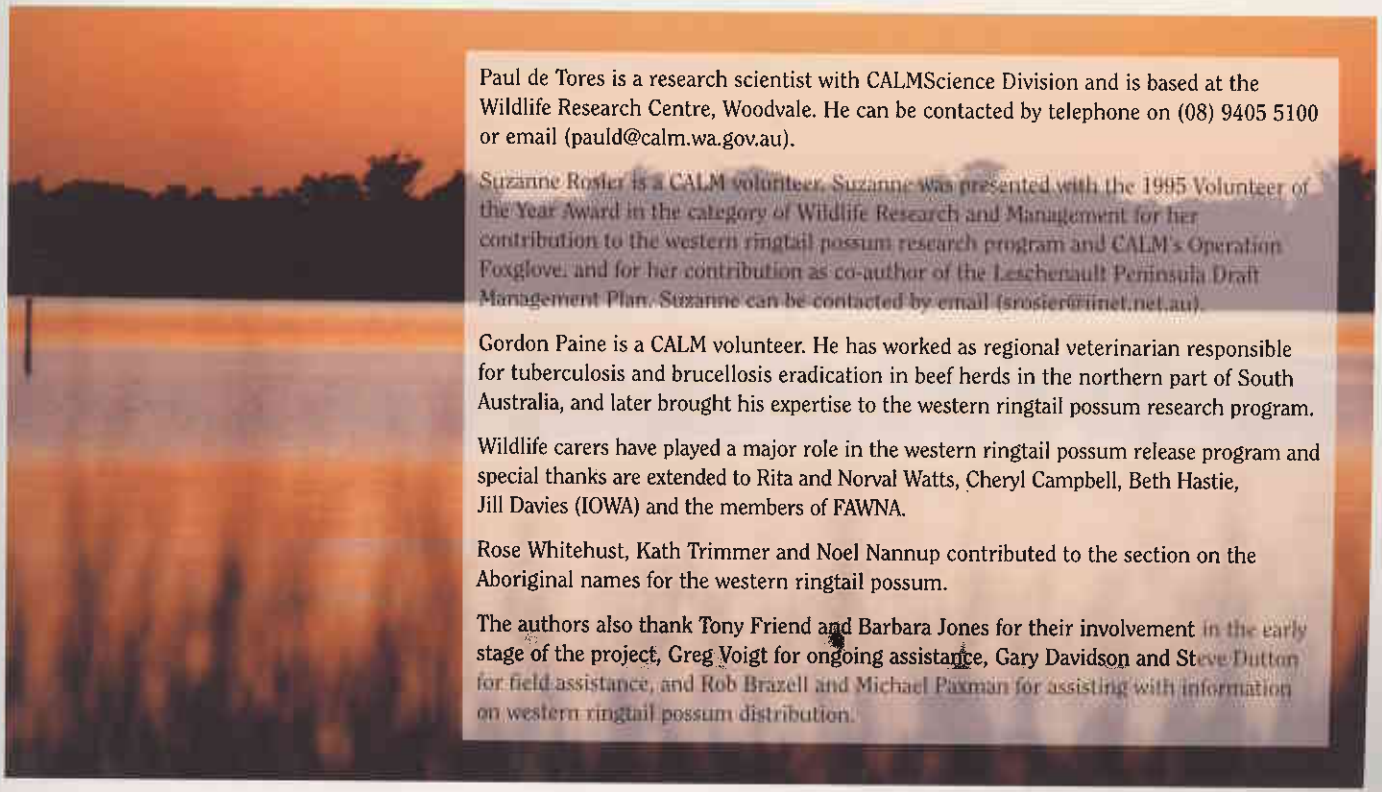
The possums released at Karakamia Sanctuary and the northern jarrah forest were rehabilitated possums from wildlife carers. The possums released at Yalgorup National Park were from sites scheduled for clearing at Busselton. They were caught prior to clearing and released without being held in care.

The results from all sites are promising, with young now recorded from Karakamia and Yalgorup National Park. If the releases are as successful as Leschenault, we can expect to establish several new populations of the western ringtail possum in areas where it has become locally extinct.

Top: An adult female western ringtail possum emerging from a tree hollow. Her young is visible in the hollow.
Photo – Paul de Tores

Below: The sunset silhouette of Leschenault Peninsula.
Photo – Paul de Tores

Above: Possum peering through eucalypt foliage.
Photo – Ann Storrie



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Suzanne Rosier is a CALM volunteer. Suzanne was presented with the 1995 Volunteer of the Year Award in the category of Wildlife Research and Management for her contribution to the western ringtail possum research program and CALM's Operation Foxglove, and for her contribution as co-author of the Leschenault Peninsula Draft Management Plan. Suzanne can be contacted by email (srosier@iinet.net.au).

Gordon Paine is a CALM volunteer. He has worked as regional veterinarian responsible for tuberculosis and brucellosis eradication in beef herds in the northern part of South Australia, and later brought his expertise to the western ringtail possum research program.

Wildlife carers have played a major role in the western ringtail possum release program and special thanks are extended to Rita and Norval Watts, Cheryl Campbell, Beth Hastie, Jill Davies (IOWA) and the members of FAWNA.

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