A new dunnart from Australia's tropical sandy deserts

by N. L. McKenzie

The Australian genus *Sminthopsis* comprises mouse-sized marsupial predators known as dunnarts; they are nocturnal and most prey on ground-dwelling anthropods such as spiders, bettles and insect larvae.

About twelve species are currently recognised in the genus. One of the largest is the Long-tailed Dunnart reported in a previous issue, of *SWANS* (Vol. 11 No. 3) but most are somewhat smaller with shorter tails. *Sminthopsis* can be divided into two broad categories: species with thin tails and those having fat (incrassated) tails.

Specimens of a new species of dunnart were captured during the 1979 biological survey of the Great Sandy Desert. Superficially, they resemble another desert-dweller, the Hairy-footed Dunnart *Sminthopsis hirtipes*. Both species have golden brown backs contrasting with white undersides and a diffuse head stripe; both have a slightly incrassated tail, about the same length as their body, hairy foot pads, and similarities in one of the teeth characters generally used by zoologists to separate *Sminthopsis* species (no entoconids on their lower molar teeth). Even the preferred habitats are similar; both species live on the spinnifex covered sandplains and dunes of the Australian arid zone.

▲ Desert Dunnart *Sminthopsis spp.* (Photo N. L. McKenzie).

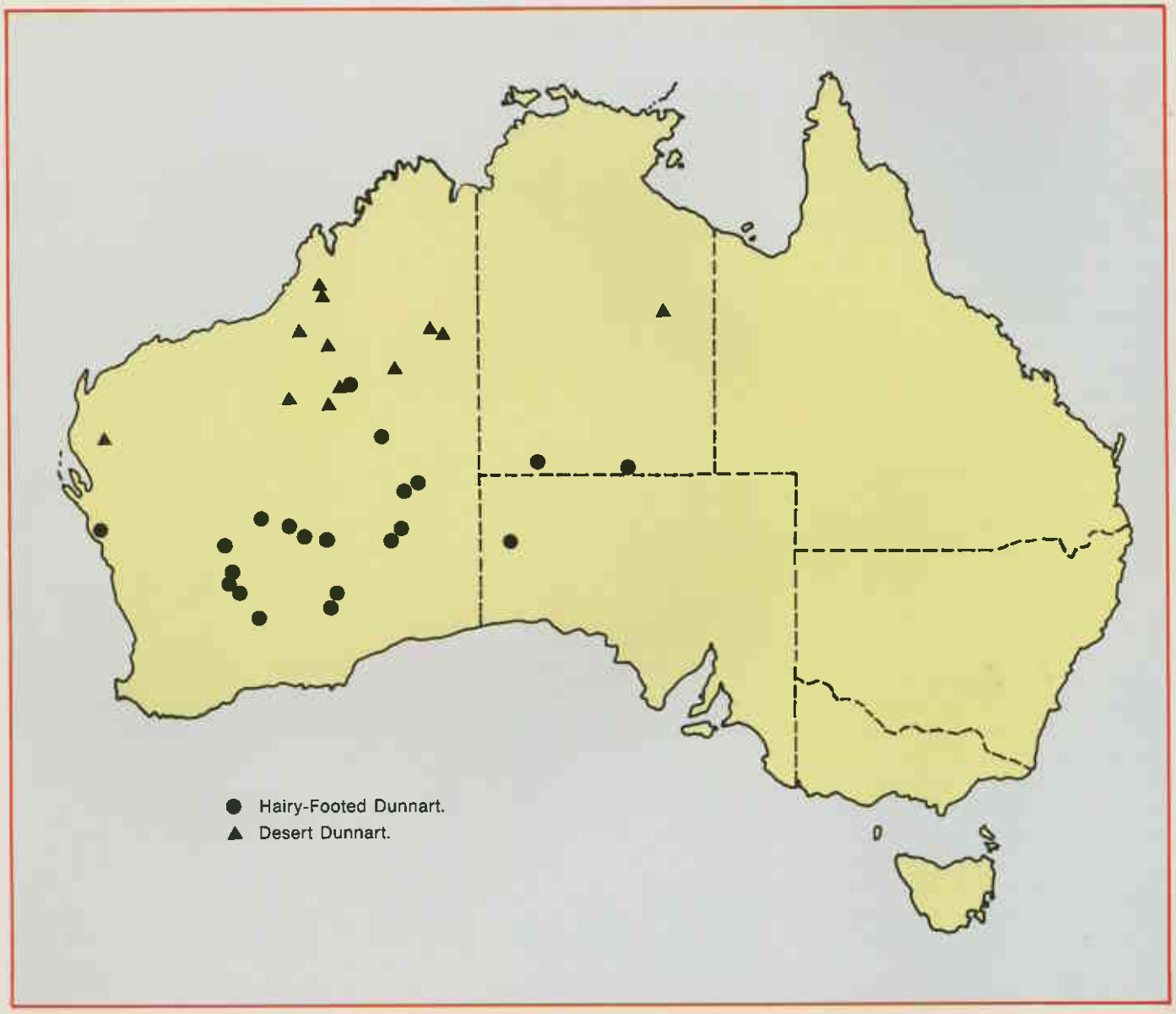
Although much smaller in size than *Sminthopsis hirtipes*, the Hairy-footed Dunnart, the Great Sandy Desert specimens were all sub-adults; it was conceivable that the size discrepency and other differences noted in the hindfoot pads, fur colours, and skulls were due to a combination of age and geographic factors.

This uncertainty was eliminated in August 1981 when we captured adult specimens in the proposed Edgar Range Nature Reserve on the southern edge of the South-west Kimberley. The series included a female with pouch young and males with large scrotal testes. The adults showed the same anatomical differences from *S. hirtipes* as had our sub-adults.

A description of the new species is currently submitted for publication in the *Australian Zoologist*. It is intended that the species will be named after Mr W. K. Youngson who was there when we caught the first specimen and who, for nine years, assisted me in biological survey work throughout Western Australia.

The published description of a new mammal species generally includes a careful anatomical account of the animal's skull and external characteristics. The description is mainly based upon one specimen which is thereafter called the "Holotype" and stored in an especially secure cupboard in a museum. Several other specimens are nominated as "Paratypes" which are usually selected to encompass any anatomical variation noticed within the new species. "Topotypes" are specimens from the same locality as the "Type". Thus, a specimen may be both a Paratype and a Topotype.

The anatomical characteristics in which the new species is different from other related species must be discussed; comparative tables of external and skull measurements, and ratios of measurements, are usually included nowadays. In the published scientific description, a summary of these comparisons is



▲ Known distribution of the two species of Sand-Dwelling Dunnarts with hairy feet in 1981.

▼ Typical habitat of the Hairy-footed Dunnart in the Queen Victoria Spring Nature Reserve of the Great Victoria Desert. (Photo N. L. MacKenzie).

▼ Habitat of the Desert Dunnart in the proposed Edgar Range Nature Reserve. (Photo N. L. MacKenzie).

▲ Hairy-footed Dunnart *(Sminthopsis hirtipes)* foot-underside. (Photo Copyright A. G. Wells).

▲ Desert Dunnart foot-underside. (Photo Copyright A. G. Wells).

▼ Hairy-footed Dunnart *(Sminthopsis hirtipes)* foot-side view. (Photo Copyright A. G. Wells).

▼ Desert Dunnart foot-side view. (Photo Copyright A. G. Wells).

called the "diagnosis" and is a valuable aid in writing keys to separate all the species in that genus. Ideally, a search should be made of collections in museums elsewhere to see if further specimens of the newly recognised species have previously been collected.

The hindfeet are the best distinguishing feature of the new species: *Sminthopsis hirtipes* has hindfeet 18 to 20mm long (excluding the claws) whereas the hindfoot of adult (Desert Dunnarts) range from 13 to 14mm long. The soles and pads of the Desert Dunnart are clearly more granulated and less hairy than *S. hirtipes;* the large pads at the base of the toes are not nearly so completely fused as in *S. hirtipes*.

▲ Typical habitat of the Desert Dunnart in the Great Sandy and Little Sandy Desert. (Photo N. L. McKenzie).

▼ The Hairy-footed Dunnart *Sminthopsis hirtipes* (Photo Copyright A. G. Wells).

The Desert Dunnart is known throughout arid sandy habitats of tropical Western Australia; the Western Australian Museum has a single juvenile specimen from the eastern side of the Northern Territory (M15882; 19°51'S, 136°02'E). In Western Australia it has so far been collected in the Tanami and Great Sandy Deserts, northern parts of the Little Sandy Desert, the Gibson Desert, Carnarvon Basin, and the far southern edge of the South-west Kimberley (see map).

The animal favours sandplain and sand dune country supporting spinifex (*Triodia* and *Plectrachne*), shrubs and, sometimes, open low trees. Its closest relative, the Hairy-footed Dunnart, occupies structurally similar vegetations on sandplains and sand dunes in the southern (temperate) half of the Australian arid zone. It was described in 1898 from a Northern Territory specimen collected at Station Point, near Charlotte Waters, Northern Territory.

Both the supposed rarity of the Hair-footed Dunnart and the delayed discovery of the Desert Dunnart are a product of inappropriate collecting techniques. Today's clearer understanding of the species' distributions, habitats and survival status can be attributed to the gradual adoption of pit trapping techniques for biological survey work since 1975. Neither species should be considered rare or endangered.

In Western Australia, the Hairy-footed Dunnart is known from Kalbarri National Park and the Wanjarri, Neale Junction and Queen Victoria Spring Nature Reserves. Although the Desert Dunnart has not been collected in any existing conservation reserves, populations are known in the proposed Edgar Ranges Nature Reserve.