

MITCHELL'S WOMBAT IN SOUTH AUSTRALIA

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SUMMARY

The distribution and status of *Phascodomys mitchelli* in South Australia are discussed. Material of the species from the South-Eastern Division of South Australia is compared with that from highland districts of east Victoria and New South Wales and found to be close thereto. The use of a sub-specific name based on *P. niger* Gould 1863 to distinguish the former, as done by Iradale and Troughton, is contraindicated. The status of *P. niger* is considered and reasons given for sinking the name or limiting it to varietal usage.

In preparing a general account of the hairy-nosed wombat (*Lasiorchinus latifrons* Owen) in South Australia, various matters involving the associated bare-nosed wombat have come up for consideration. This is the species variously known in recent years as *Vombatus hirsutus* Perry, or *Vombatus ursinus platyrhinus* Owen, but which earlier was long known by the well-stabilized if technically irregular term, *Phascodomys mitchelli* Owen. Longman (1939) has given reasons for rejecting Perry's name *hirsutus* and these are accepted by Tate (1951), and until much more impressive evidence of the distinctness of *platyrhinus* is presented, there are obvious advantages in retaining the well-used and earlier *mitchelli*, and this course is followed here.

While *L. latifrons* is a prominent and characteristic South Australian animal, *P. mitchelli* in this State is a mere outlier of the main eastern population, and being a much more obscure living creature, its status and distribution are less known. The chief matters to be discussed in this note are (1) the detailed distribution in South Australia, (2) the relation of the South Australian population to that of Victoria and New South Wales, and (3) the status of *Phascodomys niger* Gould, 1863.

DISTRIBUTION

The main occurrence of Mitchell's Wombat in South Australia lies almost entirely within the South-Eastern Division of the State, but has a slight north-western extension into the lakes region at the Murray mouth. The most southerly record supported by material is at Port Macdonnell on the far south coast, and the most northerly at Murray Bridge (Wood Jones, 1924), but it is uncertain whether the latter, being based on two cave skulls, is a true riverine extension of recent time or is sub-fossil. Apart from this minor incursion, the species has not been reported from any part of the true mallee area, as we know it here, though many of the Coorong sites are fringed on the landward side with the mallee-like *Eucalyptus angulosum*. I know of no records west of the Murray River.

The South-Eastern Division has its northern boundary at lat. 35°50' south approximately, and includes the lands to the south between the Victorian border and the sea. Its five counties have an area of about six million acres and include the highest rainfall areas of the State, with mean annual falls rang-

ing from 30 inches in the south to 20 in the north. In strong contrast to the eastern habitats of the species, which lie for the most part in highland areas with altitudes ranging up to 5000 feet or more, the present district is flat and low-lying, much of it being but little above sea level, and its highest points (except for a few volcanic cones) are but a few hundred feet and are to be found on the crests of the numerous lines of consolidated dunes which rib the country from south to north. Its south-central portion is subject to winter flooding and the vegetation varies from extensive low heaths of leptospermums, banksias and casuarinas to sclerophyll forest of considerable growth, consisting mostly of *E. obliqua* and *E. viminalis* with a floor fairly densely covered with bracken and low shrubs.

P. mitchelli occurs sporadically at least over most of this area, with the possible exception of the north-east corner beyond the railway line in the counties of Cardwell and Buckingham. Its permanent colonies, however, are largely restricted to two long, narrow, north-south zones, the first following the coast and the second more or less parallel to the Victorian border. The coastal zone is especially characteristic and presents features quite different from either the heath or stringy bark forest. Much of it is treeless or sparsely clad with the so-called dry land titree (*Melaleuca pubescens*). Limestone rangelets or low cliffs or outcrops are frequent, and the terrain is diversified by swamp and freshwater lakes of considerable extent, and is interlaced by dense jungles of melaleucas and giant cutting grass (*Gahnia* spp.). This type of habitat is best developed in the 60-mile tract between Kongorong and Robe, where it may be 10 miles deep or more, and includes portions of the Mt. Burr, Woakwine, Black and other ranges and the chain of lakes from Lake Bonney to Lake Hawden. It is here that the best chance of permanent survival of *P. mitchelli* in South Australia lies, as much of it is comparatively inaccessible and unutilized, and shelters some huge warrens with great cave-like entrances which are known to have been occupied for the century or more of European settlement.

The physiographical unit most characteristic of the ecology of *P. mitchelli* in this part of the country is created by a combination of low limestone cliffs and breakaways in which the entrances to the warrens are commonly situated, adjacent to a freshwater swamp or lake-shore, where the roots of swamp plants which form the staple of its diet are easily excavated, and the whole is commonly occluded by dense, fringing thickets. Such combinations are also found north of Robe (though in much less depth) throughout the coastwise portions of Macdonnell and along the landward side of the Coorong in Cardwell up to the south and eastern shores of Lakes Albert and Alexandrina, but the numbers of wombats fall off considerably as one goes north. The eastern tract is much narrower and does not extend as far north as the coastwise one, and is considerably less rugged and secluded. It extends, with numerous breaks, along the border country from County Caroline in the south almost to the Tatiara. The Cave Range and the Gap Range between Padthaway and Naracoorte are typical, but the colonies here are smaller and more exposed to human interference than on the coast.

These two main belts of permanent occupation act as reservoirs from which, from time to time, excess wombats are pushed out from overcrowded warrens to exploit new habitats of suitable character in the intervening areas. The process is highly selective as to sites and level heaths, in particular, are seldom, if ever, colonized. In 1920, for example, wombats from near the inflow of the Murray into Lake Alexandrina invaded a sandy undulating area of broom and callitris scrub in the Hundred of Seymour between Tailem Bend and Cooks Plains. This is the most northerly occurrence in South Australia of which I

have personal knowledge, and in much the most arid surroundings, but it was short-lived. Similar excursions from the Coorong give fluctuating wombat populations to the long chain of depressions known locally as the Floodwater, which lies parallel with the Coorong in County Cardwell, and which is occasionally flooded with freshwater by an overflow from the lower south-east district. Some of these colonies are as much as 17 miles from the coast.

The habits of wombats in these newly established communities are often somewhat different from those in the parent colonies. In the latter, especially when in proximity to settlements, they are generally excessively shy, quite strictly nocturnal and cryptic in all their movements, and until motor transport with its night-lighting of roads and paddocks by headlamps became common, it was not unusual to find settlers who had spent a lifetime in close proximity to occupied warrens without once sighting the occupants. It is usually very difficult to get specimens from these old warrens in deep limestone. The inmates are wary of traps and pitfalls and will endure long periods of fasting in the burrows, or break out through a new exit, rather than risk ground that has been interfered with, and short of bulldozing the whole structure into rubble and driving the animals into nets, little will avail.

In about 1930, a relatively new colony was located in the Hundred of Joanna near the Victorian border. I visited it in 1933 and found it situated in stringy bark forest on a rise of deep sandy soil carrying a heavy growth of bracken. Burrows were numerous over an area of two or three acres, and the occurrence was atypical in that there were no limestone or other rocky outcrops anywhere in the vicinity, and wombats were much more in evidence than is usually the case, and had been doing heavy damage to fencing. With the aid of a settler and a fox terrier, we were able to obtain four very easily in a morning's work. The procedure was to send the dog into the warren to locate the wombat. On his doing so, the latter attempts to crush the dog against the roof of the tunnel by butting upwards with his powerful hindquarters, and careless or overeager dogs are sometimes killed in this way. When the two make contact, a muffled uproar ensues, which is easily located at the surface, so that one may dig directly down upon the disputants, release the dog and secure the wombat. They struggle violently when taken and are extremely powerful, but make no attempt to bite if the head is avoided. They were despatched easily with chloroform. In May, one large female was found to be carrying a naked pouch young.

Most of the burrows here were quite shallow and short, sometimes no more than two feet deep and ten feet long, but in one case where the wombat could not be overtaken, the burrow had extended 40 feet from the entrance and descended to six feet when the attempt was abandoned. Two years earlier, this same settler, using the same technique (but without the anaesthetic) had killed 29 wombats in this colony within a few weeks.

This is much the easiest method of obtaining undamaged specimens, but is only practicable under the unusual circumstances of the above occurrence. In the high country between Tumbarumba and Batlow in the Tumut district of New South Wales, I have seen *P. mitchelli* taken very easily by flooding the warrens by short circuiting the heads of creeks with a shallow race to the mouth of a burrow at a lower level.

Increase in land utilization in the South-Eastern Division of South Australia, which has been greatly accelerated in recent years, will inevitably reduce the total wombat population to some extent. But short of a widespread epidemic of disease or systematic persecution with extermination as its deliberate object,

there seems no reason why *P. mitchelli* should not maintain a strong hold in this State indefinitely.

THE RELATION OF THE SOUTH AUSTRALIAN POPULATION TO THAT OF VICTORIA AND NEW SOUTH WALES

Although no detailed work has been done which would justify a fixed opinion on the matter, it is easy at the present time to gain the impression by random interrogation that *P. mitchelli* is much less well represented in the Victorian districts west of Melbourne, than elsewhere in its overall range. In south-eastern South Australia on the one hand, and in north-eastern Victoria, Gippsland, and south-eastern New South Wales, on the other, the presence of wombats is universally known to bush naturalists, if only through the evidence of worked warrens. But in much of western Victoria, there seems to be little or no such knowledge of it. This is substantially true, for example, of such "likely" areas as the Otway Peninsula and the Grampian Hills, which abound in what would be considered typical wombat country in this State.

The only recent occurrences known to me (excepting the immediate vicinity of the border) are in the (Victorian) Black Range west of the Grampians and at Bridgewater Bay in the Portland District, east of the Glenelg River. The latter is an apparently vigorous colony and stragglers from it have been seen in the Surrey River scrubs, twelve miles north, and in earlier years it evidently had a coastal and sub-coastal extension to the east, as specimens in the National Museum, Melbourne, come from Port Fairy (1912), Warrnambool (1857), and Mortlake (1911); other western specimens in the same collection are from Colac (1866) just north of the Otway Ranges, and Lyonville (1908) on the Dividing Range.

If a discontinuity does actually exist between the population of New South Wales and eastern Victoria, on the one hand, and the South-Eastern Division of South Australia on the other, it would tend to support the action of Iredale and Troughton (1934, p. 34) in applying a sub-specific name to the latter, though, as I shall show, the name used and the characters on which it is based, have been erroneously chosen. Meanwhile, as no direct comparisons have hitherto been made, I have assembled the relevant material which is available locally, and done so, with results which are summarized below under the three heads of dimensions, pelage and cranial characters.

The South Australian material from the South-Eastern Division includes 11 skins and 21 skulls, which are fully localized and a further five skins and nine skulls which are from Zoological Garden exhibits in Adelaide and which are probably of the same precaptive origin as the rest. The Victorian and New South Wales collections comprise seven skins and eight skulls all fully localized and are from the Wombat Range area south-east of Benalla in north-east Victoria and from the Murray Range area of the Tumut district of New South Wales. The data quoted and conclusions drawn, are based entirely on the localized material.

EXTERNAL DIMENSIONS

Reliable dimensions, personally made upon animals in the flesh, are available for four examples only—three of them from the Joanna colony of South Australia mentioned above, and one from the Tumut district of New South Wales. These are quoted in full below for record purposes (Table 1), but are of little use in a comparison of populations, owing to marked differences of age, the New South Wales specimen being very aged and emaciated, and the others

scarcely adult. Dimensions of total length and pes length have been collected from the skins examined, but they are so often falsified by distortion, that to quote them here is to confuse the issue. All that can be said here under this head is that the average size of the eastern highland animal may be a little larger than in South Australia, and the feet perhaps proportionally stouter and with heavier digits and claws. However, the skull series from South Australia contains examples much larger than any belonging to the South Australian skins examined, and considerably larger than the largest eastern skulls available, so that even in this there is uncertainty.

TABLE 1.

	South Australia			N.S.W.
	♂ Young adult	♀ Sub-adult	♀ Young adult	♂ Very aged
Total length: dorsal contour	865 mm	825 mm	895 mm	960 mm
Tail: from anus	62	52	47	—
Tail: from dorsal flexure	28	27	20	—
Chest girth	630	580	650	640
Mid girth	—	—	—	730
Manus length	70	68	77	83
Nail of 3rd digit	22	21	27	33
Pes length (s. u.)	83	78	82	98
Nail of 3rd digit	23	23	27	29
Ear, length	68	70	70	70
Ear, max. breadth	40	38	36	43
Rhinarium to eye	72	67	72	85
Eye to ear	90	90	97	100
Eye, intercanthal width	18	17	18	—
Weight in lbs.	43	35	48	51

External dimensions of *Phascogale mitchelli* Owen.

PELAGE

In general colour, the South Australian skins, with one exception, are a comparatively uniform batch of grizzled drab dorsal colour. The basal colour on the dorsum is a variable brown or drab, rather markedly contrasted with the terminal (external) effect, which is a blend of brown or drab ticked with the dull white or ivory of the sub-terminal band and with the black or bistre of the tips and guards. There is a fairly constant darkening on the crown and nape and sometimes on the rump, and the back may be irregularly mottled where the basal colour is locally more in evidence than the grizzling. The facial areas are pale drab and less ticked than the back, and there is a patch of greyish white at the base of the ears. The sides are grizzled like the back, but paler and the entire ventrum is externally pale drab or greyish white without grizzling, except for a variably developed belt across the mid-belly. The ear backs and dorsum of manus and pes are darkened to a variable brown or drab without grizzling. Length of coat, density and coarseness all vary within wide limits.

The single exception represents the "yellow" phase of Thomas (1888) and of Gould (1863, op. cit. pl. 58). The dorsal coat is very short, rather soft and a uniform pale buffy drab, very obscurely ticked with slightly darker buff. There is practically no darkening or other differentiation of crown, ear backs, manus or pes, and the sides and ventrum are much like the back.

The "black" phase is absent from the South Australian material examined, though Wood Jones (1924, p. 264) records it as occurring here. The ear in all the South Australian specimens is small and normal for *Phascolomys*.

The eastern batch of seven skins from east Victoria and New South Wales are much more variable, but fall into two camps—four "blacks" and three grizzled greys. The latter are very similar indeed to the South Australian skins of the same category, but have a denser and somewhat longer coat, and ventrally are darker and more grizzled over the mid-belly, though this is not constant.

The four "blacks" are erythristic rather than melanistic variants, and are very uniformly coloured on all surfaces. The entire dorsum is a rich ferruginous umber with a variable overlay of black or bistre, but scarcely any ticking. The distinction of the basal dorsal colour from the terminal external colour which is a marked and constant feature of the grey pelage from both areas, is very much reduced and the sides, ventrum, limbs, manus, pes and ear backs are all coloured much like the back. The coat is sometimes conspicuously coarse and bristly on the forebacks and arms. I cannot confirm the opinion of A. S. le Souef (1926), that the two main colour phases occur in uniform mutually exclusive populations. Both in the Victorian and New South Wales portions of the collection, "blacks" and greys were taken in close proximity. There appears to be no cranial distinction whatever between them.

When examples in corresponding phases of pelage are compared, the general agreement between the eastern specimens here examined and those of south-eastern South Australia is quite close in spite of the marked physical differences in their habitats. With adequate series there is little doubt that a considerable proportion of the grey skins from the two areas would be virtually identical.

CRANIAL CHARACTERS

The range and approximate mean for 14 cranial dimensions of four adult skulls from east Victoria and New South Wales, on the one hand, and 13 adult skulls from the South-Eastern Division of South Australia are shown in Table 2. As more than half the crania are not sexed, the sexual factor has been ignored in the group comparison. The age criterion generally adopted was the closure of either one or both of the basicranial sutures. There is much irregularity in this closure as between the two sites. Usually the posterior (basioccipital-basisphenoid) precedes the anterior (basisphenoid-presphenoid), but there are numerous exceptions. However, the time of closure at either site is sufficiently delayed to exclude obvious sub-adults, and is a better guide than the coronal suture, which is occluded much earlier. The values quoted for the basicranial and basifacial axes and the facial index are approximate only as the landmark when the suture was closed had to be estimated from the general appearance of the bone and this was sometimes unrevealing.

The range for the South Australian group is invariably wider than for the eastern four, and provides in every case a $\pm$ overlap of the latter. The difference in the means exceeds 2 p.c. in only two values. The length of diastema is lower (-5 p.c.) in South Australian skulls, and the anterior palatal foramina also lower (-17 p.c.). The latter figure is calculated upon the maximum length observed; but the pair are often very unequally developed and when a mean value of both is employed, the difference drops to (-10 p.c.). From this very unequal sample, therefore, it might be inferred that the South Australian skull is metrically very close to that of the Victorian and New South Wales highlands, with perhaps a tendency to a slightly shorter muzzle region,

and a rather decidedly shorter anterior palatal foramen. It shows no reduction in overall size, but on the contrary its largest examples somewhat exceed the largest available from the eastern group.

In non-metrical characters, the skulls from the two groups show very marked individual variation, though the range of this is necessarily somewhat greater in the larger South Australian series, and the average age in the eastern group is somewhat higher. Even so, it is possible to select numerous pairs from the two areas which are virtually identical both in size and structure and this correspondence would probably be increased if more eastern material were available.

TABLE 2.

	Eastern Victoria and Southern N.S.W. 4 Adults (♂♀)	South Eastern South Australia 13 Adults (♂♀)	N.S.W. 1 Adult	S. Aust. 1 Adult
Greatest length	176.9-186.0 (182.6)	166.6-198.9 (180.1)	186.0	187.7
Basal length	158.9-165.0 (161.9)	148.8-176.9 (161.3)	165.0	161.8
Greatest breadth	129.0-136.0 (133.6)	121.7-146.5 (134.3)	134.1	135.5
Nasals length	71.0- 76.9 (73.6)	68.1- 82.3 (72.0)	76.9	72.9
Nasals greatest breadth	50.5- 56.5 (53.4)	48.9- 57.7 (53.9)	53.9	55.9
Least interorbital breadth	53.5- 63.5 (57.8)	52.0- 65.8 (58.0)	58.5	58.7
Least intertemporal breadth	43.3- 47.2 (45.8)	41.1- 52.5 (45.8)	46.7	48.7
Palate length	103.0-111.5 (107.9)	96.5-119.2 (108.1)	111.5	111.2
Diastema length	38.1- 44.5 (41.3)	33.0- 47.9 (39.3)	44.5	39.5
Ant. palatal foramina	12.9- 13.7 (13.4)	9.7- 14.0 (11.1)	13.5	11.0
Basiscranial axis	51.5- 52.5 (51.9)	16.0- 58.0 (50.8)	51.5	50.5
Basifacial axis	107.5-116.5 (112.3)	103.8-120.5 (110.8)	116.5	111.1
Facial index	204.7-226.2 (216.6)	194.8-236.5 (217.1)	226.2	219.8
P ⁴ -M ⁴	51.0- 53.6 (52.1)	45.7- 55.5 (51.4)	51.2	53.7

Skull dimensions of *Phascolomys mitchelli* Owen.

The slight differences which have been brought to light by this examination of external and cranial characters are much less impressive than the general agreement and suggest that the two groups studied are essentially one population and that the discontinuity in the range in western Victoria (if real) is of very recent origin.

Whether such differences as can be made out call for trinomial distinction may be left for future work on more comprehensive series to decide, but from what has been done it is obvious that a name based on *P. niger* Gould, a form supposedly of small size, with an ear like *Lasiorchinus* and black coat colour, is quite unsuitable.

THE STATUS OF *P. NIGER* GOULD 1863

In 1863, Gould (op. cit. text to Pl. 60) made a brief reference under this name to a Zoological Gardens exhibit in London of a melanistic bare-nosed wombat, which was stated to have a long, pointed ear as in *Lasiorchinus latifrons*. No material of the original specimen is certainly preserved, it was not figured, and its place of origin was unknown. Attempts have been made to supply all three of these deficiencies with the result that the name and what it connotes have fallen into inextricable confusion. Thus:

(1) Thomas (1888, p. 215) selected a specimen "h" of the British Museum collection as the "probable type of *P. niger* Gould". This, however, is an enormous wombat with a skull of basal length 185 mm., which is far larger than the largest examples in the collection which I have just examined, which

includes some unusually large crania. This circumstance conflicts sharply with the later ideas which evolved as to the nature of *P. niger* which have tended to regard it as a small or even dwarfish form.

(2) Tate (1951, p. 7) considered that Gould had figured *P. niger* in his Mammals of Australia, though he admitted that the name was not directly associated with any illustration. The two plates 55 and 56 of blackish wombats in Gould's work are both labelled *P. vombatus* and represent blackish phases of the Tasmanian wombat (*P. tasmaniensis* of later authors) which has normally short ears which are sufficiently well shown. They do not, in my opinion, represent Gould's *P. niger*.

(3) Gould (1863, text to plate 60) attempted to make good the deficiency of locality by equating *P. niger* to a blackish form described by the natives to Angas (1861) as inhabiting the Murray scrubs of South Australia and contrasted by them with a "big yellow fellow". Here again Gould fell into confusion which has been confounded by some later commentators. His attempts to link *P. niger* with the dark wombat of the river front is defeated by the obvious identity of this animal with *Lasiorchinus latifrons*. A frequent, perhaps even normal colour of well-nourished young adult *Lasiorchinus* in fresh pelage is a dark, blackish grey—the mottled reddish grey skins which are common in collections are nearly always from emaciated, aged and feeble wombats which abound in most warrens and are easily collected by reason of their habit of basking in a semi-comatose condition on top of the burrow. To the natives, who are connoisseurs of meat, the "black"-coated examples would hold pride of place in their accounts to a stranger, while the supernumary "greys" might well be overlooked. No wombat is a permanent denizen of the deep mallee areas of South Australia, but *Lasiorchinus* alone does penetrate it from the River Murray flats to a depth of a mile or two, in the reaches between the Chucka Bend and Morgan. On the other hand, the "big yellow fellow" fits some phases of *P. mitchelli* quite well and both species would be known to natives who hunted the lower reaches of the river and the area about the lakes and the Murray mouth, and who presumably were Angas's informants. Krefft's record of *P. niger* from Pt. Lincoln (*infra*) and that of R. Tate (1879) from the Bunda Plateau of the Eucla district, are probably both based on the same misconception as the above.

In the century which has elapsed since Gould wrote, no evidence of recent wombats other than *Lasiorchinus latifrons* has been adduced in the regions between the Murray and the Western Australian border, except at the southern extremity of Eyre Peninsula where the rainfall rises to nearly 20 inches and reaches the limiting value of the *P. mitchelli* habitats of the South-Eastern Division of the State. The existence here of a small wombat of *Phascogomys* type is confirmed by the presence of material in the South Australian Museum. Krefft (1871, 1872) reported the presence of *P. niger* Gould in the same area, and although the record was probably due to confusion with *L. latifrons*, it has prompted Iredale and Troughton (1934) to postulate the existence of a subspecies of *P. mitchelli* corresponding in characters to Gould's original statements on *P. niger* as to its melanism and long pointed ear (and to which has been later added small size as well), and ranging from western Victoria over the whole of lower South Australia to Eyre Peninsula. This conception, however, is quite erroneous and cannot stand, firstly, because bare-nosed wombats are quite absent from the greater part of the supposed range, and secondly, because the largest population of *P. mitchelli* within this range is almost impeccably normal in its large size, and short ear, and has a low incidence of melanism.

Clearly, if the name *niger* is to be used at all, it must be restricted to a small area at the apex of Eyre Peninsula. I am of opinion, however, that as a taxonomic concept, Gould's *P. niger*, without material, authentic locality or adequate description, and constantly susceptible of three interpretations, is altogether too nebulous to serve any practical purpose of classification, and its retention (like that of *Macropus elegans* Lambert in the Macropodidae), will be a stumbling block to the clarification of wombat terminology in this part of Australia. It should either be discarded or reduced to varietal or tetranomial use, as Tate has done (1951).

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