

A NEW FOSSIL WALLABY (MARSUPIALIA; MACROPODIDAE) FROM THE SOUTH EAST OF SOUTH AUSTRALIA.

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A new wallaby, *Congruus congruus* gen. et sp. nov., is described, from a cave fill presumed to be of late Pleistocene age. While agreeing in some characters with many other macropodine genera, it most resembles *Prionotemnus* and *Protemnodon*.

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Mammal faunas from the cave fills of the Naracoorte area have been reported by Williams (1980), Wells *et al.* (1984) and Pledge (1990). These caves have yielded big samples of medium to large macropods, but, so far, few new forms have been reported, notably *Sthenurus maddocki* (Wells and Murray 1979) and *Sthenurus* 'P17250' (Prideaux *et al.*, in press). Just as the highly distinctive but apparently rare vombatid *Warendja* is known from four specimens from only two localities, so it might be expected that, as collections grow and are examined critically, specimens of rarer forms will be discovered.

The unique type specimen was compared directly with all specimens available in the fossil and modern mammal collections of the South Australian Museum. It was prepared by hardening with dilute Bedacryl after it was decided that it was too delicate to be safely handled; nor could a patina of fine sand, cemented with lime, be removed without losing bone. The teeth of the left-hand side were hand cleaned.

Tooth numbers follow Archer (1978). The composition of the Macropodinae used is that of Flannery (1989) but without *Hadronomas* (Murray, 1991).

Fig. 2 contains an orientation symbol consisting of an arrow pointing to the anterior and an upturned U representing the tongue or lingual side.

SYSTEMATICS

Family MACROPODIDAE Gray 1821
subfamily MACROPODINAE Thomas, 1888

Congruus congruus gen. et sp. nov.

Holotype

P33475 (registered in the palaeontological collection of the South Australian Museum), a nearly complete adult skull with P³, M², to M⁵ both I² and left I³, missing anterior part of left nasal, the right zygoma, part of right temporal and mastoid. The incisors show moderate wear. P³ is unworn. The molars grade from the moderately worn M² to the unerupted M⁵.

Locality

S.O.S. cave (5U132) just south of Naracoorte in the South East of South Australia.

Age

Late Pleistocene by faunal association.

Etymology

From the Latin for agreeable or harmonious.
Gender masculine.

Diagnosis

Congruus agrees in many of its character states with other members of the Macropodinae, but more closely resembles *Protemnodon*, *Prionotemnus*, *Kurrabi*, *Wallabia* and *Macropus*. It can be distinguished from the other macropodine genera by many characters, including lack of canine, long diastema, higher-crowned molars, entire palate and size.

Congruus is distinguished from *Protemnodon* by possessing a deflected rostrum; a P³ shorter than most molars (M³, M⁴, M⁵); a rather small masseteric process, not extending down to the line of the alveolar margin; and by lacking a large labial groove on I³.

It differs from *Prionotemnus* in possessing a more anterior placement of the infraorbital foramen; a less distinctly grooved P³, with a wider

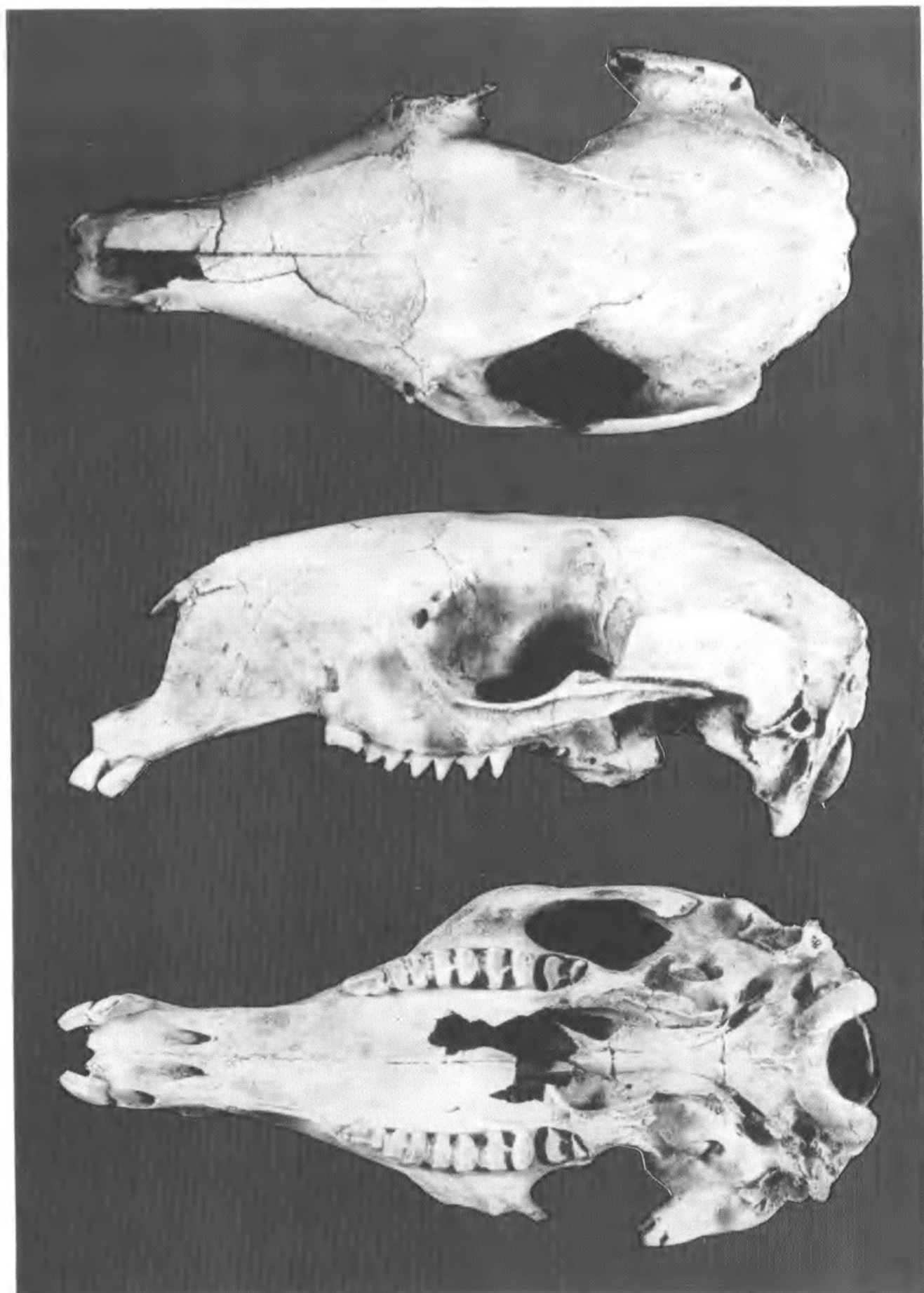


FIGURE 1. *Congruus congruus* holotype skull P33475, x 0.75.

TABLE 1. Measurements (mm) of skull of *Congruus congruus* (P33475, holotype).

Description	mm
maximum length sans teeth	160.0
maximum height	59.4
maximum width of frontals	50.3
maximum width of nasals	36.7
length of diastema between alveoli	39.9
palate width at mid-diastema	20.8
rostrum width at mid-diastema	22.6
maximum width of occiput	21.8
width of postorbital constriction	31.2
height of premaxilla	30.7

longitudinal basin; a P^3 shorter than M^2 ; higher-crowned molars with longer, more procumbent anterior cingula; a forelink on M^2 and M^3 ; and well-developed posthypocristae. It differs in lacking the deep groove well within the labial surface of I^3 .

From *Kurrabi* it may be distinguished by its relatively short P^3 ; shorter, more anterior masseteric process; less elongate molars, having an oblique posthypocrista and lacking a distinct posterior fossette.

From *Wallabia*, *Congruus* is distinguished by its lacking a prominent labial groove on I^2 ; well developed labial crests on all molars; and an anterior nasal spine. It is further distinguished by possessing procumbent incisors, an entire palate, a P^3 shorter relative to the molars, with a smooth longitudinal basin; and by having the anterior portion of the brain case less constricted.

It differs from *Macropus* in lacking the distinct anterior (postorbital) constriction of the brain case; a groove on the labial surface of I^2 ; a developed posterior fossette on the molars; and the inflation of the nasal part of the rostrum, relative to the anterior palate. *Congruus* is distinguished from *Macropus* by possession of more procumbent incisors; an entire palate; a well-developed ovale crest; oblique posthypocristae; and in having the loph-crests less bowed or preparacristae less developed.

Description

The skull, in general aspect, is lightly built, with a relatively large brain case, comparing in its gracility, with many living *Macropus* species.

From the side the skull presents a generally flat dorsal profile. The incisors and premaxillae are procumbent. No anterior nasal spine is present but in this position the premaxillae are smooth and depressed. The deep rostrum is arched dorsally and is near the plane of the flattened, somewhat

depressed frontal bones and the slightly raised frontoparietal region. The parietals decline towards a slight lambdoidal crest. A large diastema reveals a palate declining from a rather level cheek tooth row. The infraorbital foramen is above the anterior half of P^3 . The orbit appears relatively small and the zygomatic arch, light and shallow. The masseteric process is opposite the protoloph of M^4 , and small, not reaching the level of the alveolar margin.

From above, the rostrum tapers evenly forward from the lacrimals, and is flat sided without lateral inflation of the nasal part. The nasals have a broad, fairly straight contact with the frontals, on a line with the lacrimal foramina. The frontal bones are broad and flat, inflated laterally, above the orbit, and slightly depressed, centrally, on their common suture. The anterior part of the brain case is not greatly constricted postorbitally as it is in many macropodine genera. There is no sagittal crest and the temporal foramen is small.

From below, the incisive foramina are small. There are no canines. The palate, anterior to the cheek teeth, nearly equals the width of the rostrum above. The palate appears to have been entire. Pterygoid cavities, appearing small, have their lateral borders formed by prominent anterior-directed ovale crests. The alisphenoid bulla is slightly inflated and the auditory process is short.

Teeth.

I^1 is unknown but the alveolus is slightly larger than that of I^2 , rounded, narrowed ventrally and not much compressed laterally.

I^2 shows no sign of an occlusal groove, perhaps, due to wear. The corresponding structure on I^3 is attenuated and may indicate that the groove was much reduced or lacking on I^2 . A broad shallow groove runs parallel and just anterior to the posterolabial edge, of I^2 , which is raised and ridge-like.

I^3 has a narrow and shallow occlusal groove

TABLE 2. Measurements (mm) of upper cheek teeth of *Congruus congruus* (P33475, holotype)

	Length	Anterior width	Posterior width
P^3	9.8	4.6	5.0
M^2	8.6	6.9	7.1
M^3	10.6	8.1	7.8
M^4	11.5	8.6	8.2
M^4 (estimated)	10.4	8.9	8.0
$P^3 - M^4$	37.7	—	—
$P^3 - M^2$ (estimated)	48.1	—	—



FIGURE 2. *Congruus congruus* holotype P33475, stereopair of left cheek teeth, x 1.5.

which opens near the posterior edge of the labial surface so that the small lingual crest is barely visible and the groove so formed is barely visible on the labial surface. I have interpreted a pit, midway along the posterolabial edge of this tooth, as pathological but of localised effect and not associated with any general distortion of the crown – a view supported by the alveolus of the right I^3 which indicates a very similar tooth. It is probable that all the incisors were high crowned, and that, their relative sizes were $I^1 > I^2 > I^3$. Their combined outline in occlusal view was probably U-shaped.

P^3 is a little longer than M^3 . Its outline is not concave labially. There is a prominent labial crest with anterior and posterior cusps, with three indistinct cuspules and ridgelets between. There is a prominent posterolingual cusp, lower than the posterior cusp, and connected to it by a ridge, behind which is a small shallow posterior fossette. From the posterolingual cusp, a lingual cingulum runs forward, and is notched at one third of the tooth length, then is somewhat raised, before ending, almost opposite the anterior cusp. This cingulum, together with the main crest, forms a smooth longitudinal basin.

The upper molars are plain and quadrate, becoming more elongate and increasing in length from M^2 to M^4 and probably M^5 . The anterior cingulum is broad and shelflike with a shallow

basin between it and the protoloph to which it is connected by a preparacrista. A low forelink is present on M^2 and M^3 but not visible on M^4 or M^5 . The width and length of the anterior cingulum increases from M^2 to M^5 . The anterior width of M^2 is less than its posterior width but near equal in the other molars. The lophs have their apical width nearly equal to the basal width, not markedly narrower as in many *Macropus* and *Kurrabi*. A midlink is formed just lingual to the middle of the transverse valley by the postprotocrista, there is a small contribution from the metaloph. A shallow basin is formed in the transverse valley by an extension of the postparacrista on M^2 and M^3 , but not, M^4 and M^5 . The posterior face of the metaloph is rather plain and flattened, with a distinct posthypocrista rising obliquely to join the base of the metacone, where a small groove separates it from a much less distinct, near vertical, postmetacrista. Together they do not form a centrally placed fossette, seen in many forms, including *Macropus*, *Protemnodon*, *Thylagale*, *Wallabia* and *Onychogalea*. A much reduced postlink is discernible on M^4 .

DISCUSSION

The age of this material is inferred from its

association with *Thylacinus* and *Sthenurus* P17250 material with very similar preservation. This *Sthenurus* is known from the dated deposits of Victoria Cave (Wells *et al.* 1984) and the Henschke Fossil Cave (Pledge 1990), Naracoorte, and Green Waterhole (Newton 1988), Tantanoola.

Discovery of further specimens, particularly those with the lower dentition and deciduous cheek teeth, should add to the understanding of this form and, in particular, clarify its relationship to *Prionotemnus*.

One's attention is drawn to the prominent nasofrontal development of this species, which is presumably an autapomorphic character. Comparisons can be made with the similar structures found in *Onychogalea unguifera* and, if its function were known, it would allow conclusions about the functional adaptation of the fossil form.

In *Congruus* a combination of many primitive

macropodine features seem to be the foundation, overlain by apomorphy in the form of the whole skull giving it the general aspect of a modern-looking kangaroo. While this is adding to the increasingly large puzzle that is macropod phylogenetics, it is to be hoped that future study of this specimen will shed light on the major pathways followed by this family in its great evolutionary flowering through the latter half of the Neogene to the present.

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