

FOOTPADS OF WESTERN AUSTRALIAN DASYURIDS

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The Western Australian Museum has been actively investigating the footpad structure of the small dasyurid marsupials with a view to improving identification of the species involved. The first group examined in detail has been the genus *Sminthopsis* (Dunnarts) which can cause considerable confusion for identification in the field. We would welcome feedback on the presentation or difficulties encountered when using these photographs as an aid in identification.

Dunnarts (Sminthopsis spp.)

The photographs of the plantar surfaces of the feet, produced below, show that many species can be quickly and clearly identified by an examination of footpad structure as well as the positioning of the granules and their markings. However, several species remain difficult to tell apart and other external characters should be considered to assist in identifying them correctly. These should include pelage characteristics as well as head-body, ear, hind-foot and tail lengths which are generally presented in available field guides. A guide to the morphological characteristics of the manus and pes are given in Figure 1.

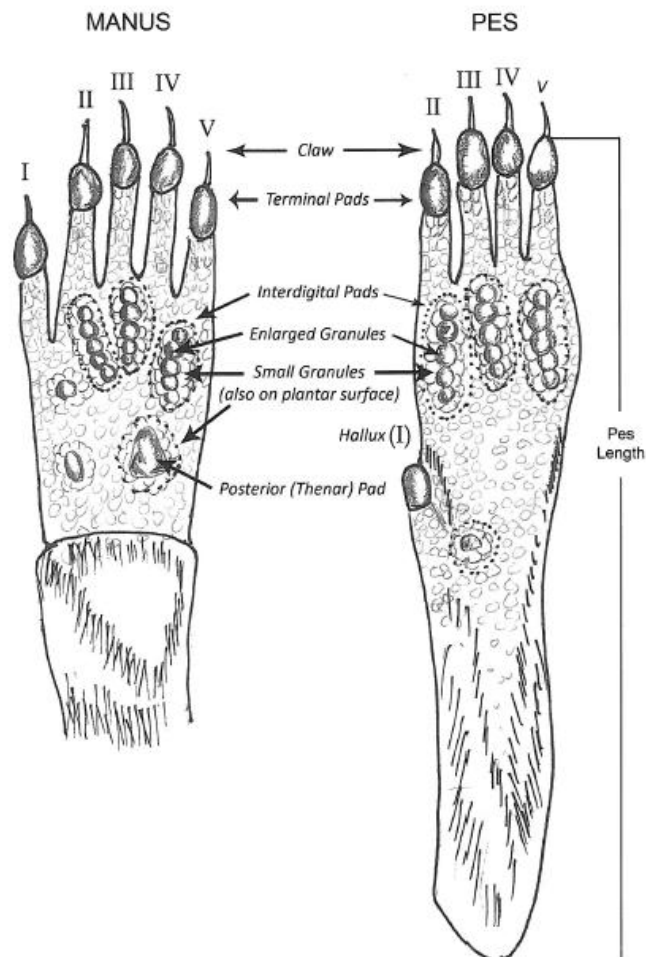


Figure 1: Morphological features of Dasyurid manus and pes.

Dunnarts of the *Sminthopsis* 'murina' group

Since the taxonomic revision of this complex by Kitchener, Stoddart and Henry in 1984 (*Records of the Western Australian Museum* 1984, **11** (3): 201-248) there remains some difficulty in assigning individuals to some of the composite species (*S. griseoventer*, *S. gilberti*, *S. dolichura*, *S. ooldea*) that occur in south-west Western Australia. It is likely that cryptic taxa remain to be described in this group (as is also the case in the Striped-faced Dunnart *S. macroura*) and a detailed molecular and morphological revision is required for all species.

The table below illustrates measurements from Kitchener *et al.* 1984 (although their revision did not include *S. ooldea*) and Menkhorst and Knight 2001 (*Field Guide to the Mammals of Australia*). All measures are presented in millimetres:

	<i>S. griseoventer</i>	<i>S. gilberti</i>	<i>S. dolichura</i>	<i>S. ooldea</i>
Tail	82 (65-98)	80 (75-90)	93 (85-105)	(60-93)
Head-Body	65-95	80-90	85-95	55-80
Hind-foot (Pes)	16.3 (16-17)	17.9 (17-20)	16.7 (16-17)	(13-15)
Ear	17.7	21.1	19.3	
Ventral Pelage	Grizzled Grey	Creamy-white	White	White

Plates

Where possible we have included photographs of the manus (fore-foot) and pes (hind-foot) of either holotypes or paratypes. However, many of these 'types' reside in other institutions and several are held as 'dry skin' specimens rendering them inappropriate to clear photography of desiccated footpads. We have also tried to pair species where there is a similarity of footpad structure, and often distributional overlap, so as to make comparisons easier, not to reflect taxonomic relationships.

- Plate 1** *S. hirtipes* and *S. youngsoni*
- Plate 2** *S. crassicaudata* and *S. granulipes*
- Plate 3** *S. griseoventer* and *S. gilberti*
- Plate 4** *S. dolichura* and *S. ooldea*
- Plate 5** *S. macroura* and *S. butleri*
- Plate 6** *S. virginiae* and *S. psammophila*
- Plate 7** *S. longicaudata*

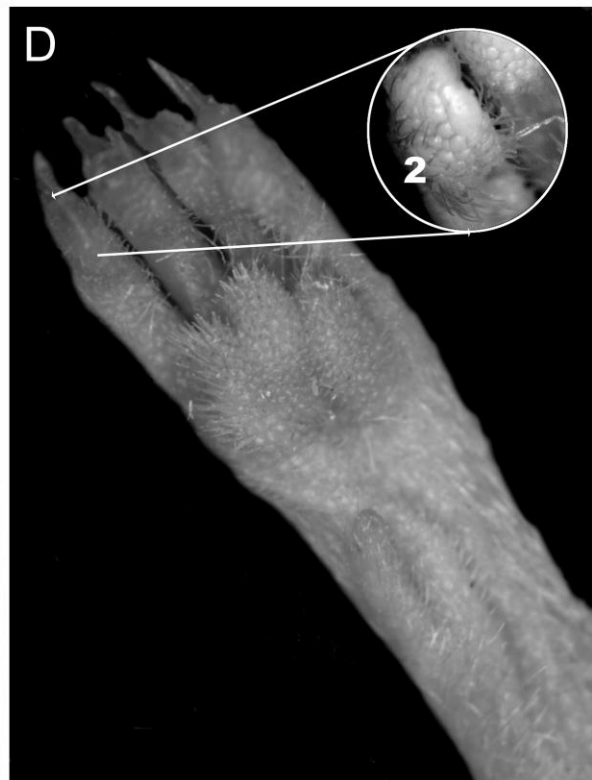
Plate 1

Sminthopsis hirtipes

Terminal Pads: Pes: densely haired, with a central row of enlarged granules (1)
Interdigital Pads: Manus: single tri-lobed pad. Pes: between II-IV fused and lobed, covered in small granules and long hairs.

Sminthopsis youngsoni

Terminal Pads: Pes: with one enlarged granule (2)
Interdigital Pads: Pes: between II-IV partly fused and lobed, covered in small granules and shorter hair (bristle like)



A) M35105 *S. hirtipes* manus
C) M29120 *S. hirtipes* pes

B) M51982 *S. youngsoni* manus
D) M49044 *S. youngsoni* pes

Plate 2

Sminthopsis crassicaudata

Terminal Pads: smooth on pes and manus

Interdigital Pads: Pes: between II-IV separated and covered in small rounded granules. Manus: flat

Sminthopsis granulipes

Terminal Pads: granulated on pes and manus

Interdigital Pads: Pes: between II-IV partly fused distally and covered in small angular granules. Manus: deeply 'wrinkled'



A) M51086 *S. crassicaudata* manus
C) M51086 *S. crassicaudata* pes

B) M50426 *S. granulipes* manus
D) M 53437 *S. granulipes* pes

Plate 3

Sminthopsis griseoventer

Terminal Pads: smooth with a short groove proximally
Interdigital Pads: between II-IV separated and with 3-4 enlarged granules of similar size



Sminthopsis gilberti

Terminal Pads: smooth with a short groove proximally
Interdigital Pads: between II-IV separated and with 3-4 enlarged granules, apical one largest



A) M9972 *S. griseoventer* manus
C) M9972 *S. griseoventer* pes

B) M668 *S. gilberti* manus
D) M18718 *S. gilberti* (Holotype) pes

Plate 4

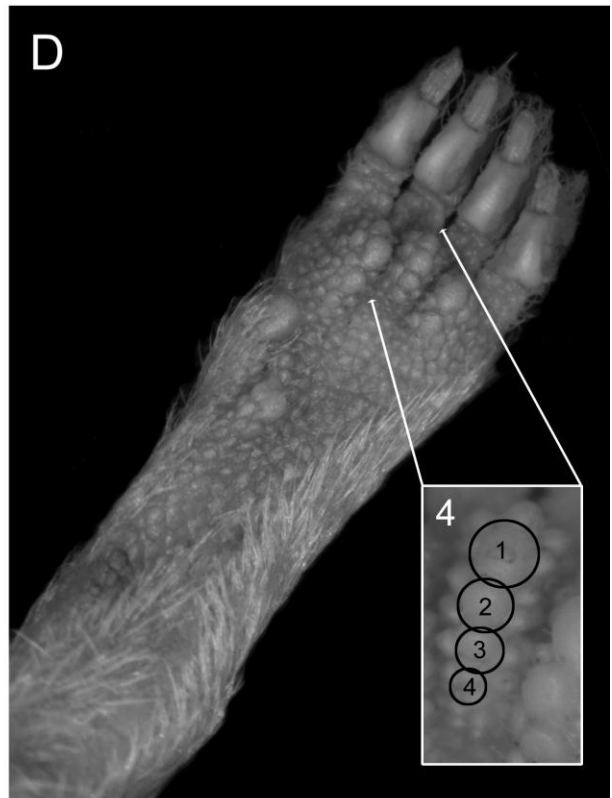
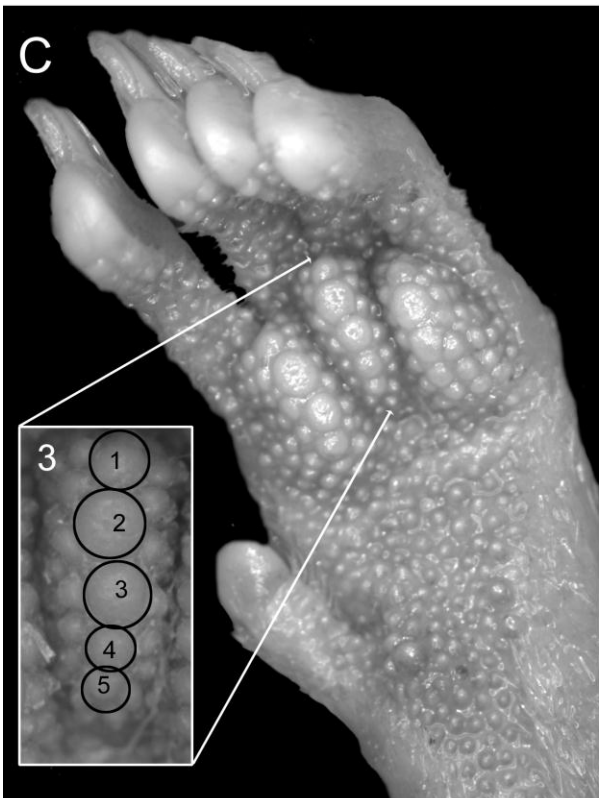
Sminthopsis dolichura

Terminal Pads: smooth with a short groove proximally
Interdigital Pads: between II-IV separated and with 5 enlarged granules decreasing in size proximally (3)



Sminthopsis ooldea

Terminal Pads: smooth with a short groove proximally
Interdigital Pads: between II-IV separated and with 3-4 enlarged granules decreasing in size proximally (4)



A) M17985 *S. dolichura* (Holotype) manus
C) M17985 *S. dolichura* (Holotype) pes

B) M5259 *S. ooldea* manus
D) M5259 *S. ooldea* pes

Plate 5

Sminthopsis macroura

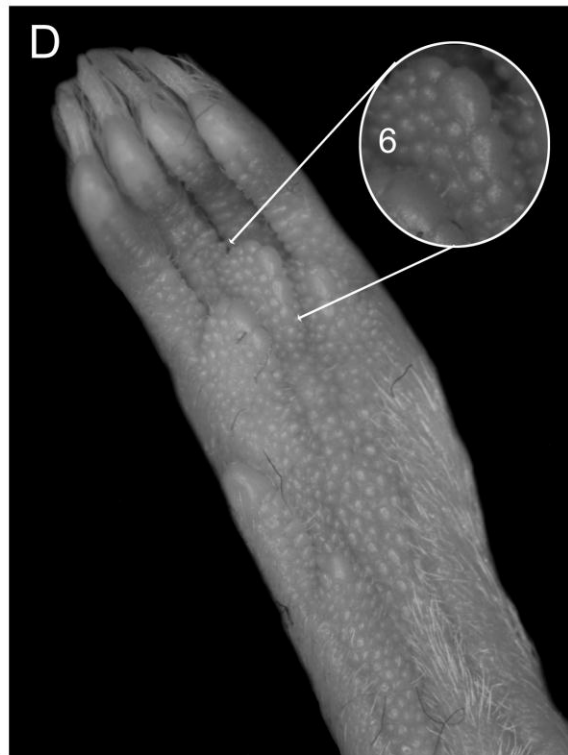
Terminal Pads: smooth

Interdigital Pads: Pes: between II-IV separated with 2-3 enlarged broad granules, apical one larger and broader than proximal ones (5)

Sminthopsis butleri

Terminal Pads: smooth

Interdigital Pads: Pes: between II-IV separated with 2-3 enlarged narrow granules, apical one more elongate than proximal ones (6)



A) M55116 *S. macroura* manus
C) M55141 *S. macroura* pes

B) M7157 *S. butleri* (Paratype) manus
D) M7157 *S. butleri* (Paratype) pes

Plate 6

Sminthopsis virginiae

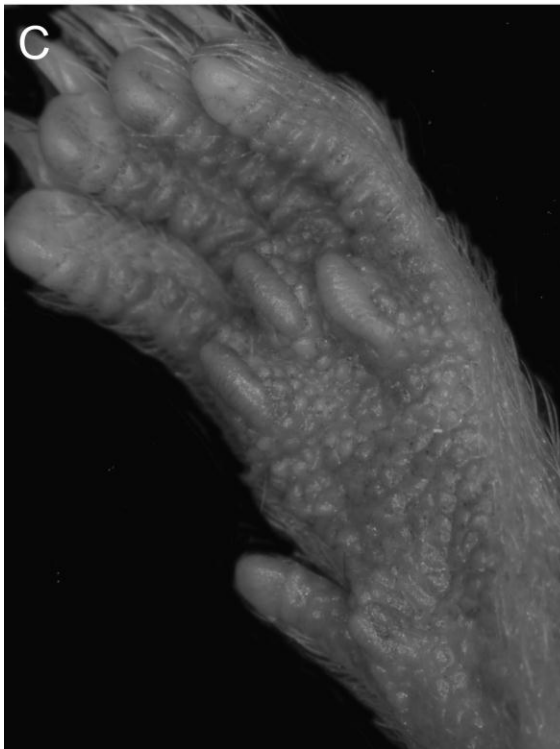
Terminal Pads: smooth

Interdigital Pads: Pes: between II-IV separated with one enlarged, elongated and raised granule

Sminthopsis psammophila

Terminal Pads: granulated

Interdigital Pads: Pes: between II-IV strongly raised with II and IV bifid, covered in small angular granules



A) M21989 *S. virginiae* manus
C) M21911 *S. virginiae* pes

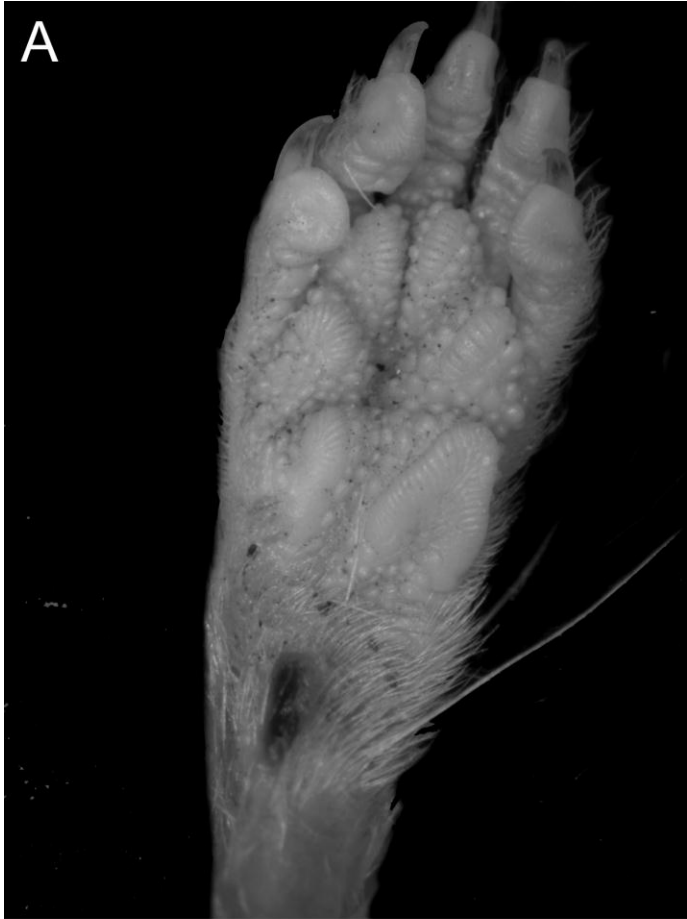
B) M23226 *S. psammophila* manus
D) M23226 *S. psammophila* pes

Plate 7

Sminthopsis longicaudata

Terminal Pads: Pes: smooth with transverse shallow transverse grooves

Interdigital Pads: Pes: between II-IV partly fused with one very elongated, raised and striated granule



A) M46144 *S. longicaudata* manus



B) M24100 *S. longicaudata* pes