

JOURNAL OF VERTEBRATE PALEONTOLOGY

SUPPLEMENTARY DATA 1

Tarsals of Sespedectinae (?Lipotyphla) from the Middle Eocene of Southern California, and the Affinities of Eocene “erinaceomorphs”

TONYA A. PENKROT<sup>\*,1, 2</sup> and SHAWN P. ZACK<sup>2,3</sup>

<sup>1</sup>College of Letters and Sciences, Arizona State University, Phoenix, Arizona, 85004, U.S.A.,  
tpenkrot@asu.edu;

<sup>2</sup>School of Human Evolution and Social Change, Arizona State University, Tempe, Arizona,  
85287, U.S.A.;

<sup>3</sup>Department of Basic Medical Sciences, University of Arizona College of Medicine-Phoenix,  
Phoenix, Arizona, 85004, U.S.A., zack@email.arizona.edu

\*Corresponding author.

## APPENDIX S1. PHYLOGENETIC MATERIALS EXAMINED

**Institutional abbreviations**—**CM**, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, U.S.A.; **SDSNH**, Department of Paleontology, San Diego Natural History Museum, San Diego, California, U.S.A.; **UCMP**, University of California Museum of Paleontology, Berkeley, California, U.S.A.; **UM**, Museum of Paleontology, University of Michigan, Ann Arbor, Michigan, U.S.A.; **USNM**, United States National Museum of Natural History, Department of Paleobiology, Washington, D.C., U.S.A.; **USNM-M**, United States National Museum of Natural History, Division of Mammals, Washington, D.C., U.S.A.; **YPM-PU**, Princeton University collection, Yale Peabody Museum, Yale University, New Haven, Connecticut, U.S.A..

*Macrocranium*—*M. junnei*: UCMP 216723, 216725, 216728, 216892-4

*Purgatorius*—*P. sp.*: UCMP 197509, 197517; Chester et al. (2015)

Micromomyidae—*Dryomomys szalayi*: Chester et al. (2015)

*Butselia biveri*—Ziegler (2009); Smith and Smith (2012)

*Crypholestes vaughni* (dental only, see text for tarsal specimens): SDSNH 55830, 76809, 76844, 78809; Novacek (1976)

*Proterixoides davisi* (dental only, see text for tarsal specimens): SDSNH 42638, 46634, 46642, 47458, 47459, 47779, 48117, 56165; Walsh (1998)

*Sespedectes* spp.—*S. singularis* (dental only, see text for tarsal specimens): SDSNH 62354, 62570, 62571, 69318, 94740, 94741, 94752; Novacek (1985). *S. stocki*: Novacek (1985)

*Litocherus* spp.—*L. lacunatus*: UCMP 114364, UM 80803, USNM 20931, 21017; Gingerich (1983). *L. notissimus*: AMNH 33936; Simpson (1936). *L. zygeus*: UM 64508, 82026, YPM-PU 21390; Gingerich (1983).

*Patriolestes novaceki*—Walsh (1998).

*Scenopagus* spp.—*S. curticens*: Krishtalka (1976); Gunnell (1998). *S. edenensis*: McGrew (1959); McKenna and Simpson (1959); Krishtalka (1976). *S. priscus*: Krishtalka (1976).

*Solenodon* spp.—*S. cubanus*: USNM-M 49508. *S. paradoxus*: USNM-M 217255, 290520, 364952, 364953, 396963; Wible (2008)

Talpidae—*Talpa europaea*: personal collection, K. D. Rose; O’Leary et al. (2013). *Uropsilus soricipes*: USNM-M 256119, 260743, 574294, 574297, 574298, 574299; Ziegler (1971)

*Zionodon* spp.—*Z. satanus*: CM 71139; Dunn and Rasmussen (2009). *Z. walshi*: CM 71138, 71140-2, 71185, 80624; Dunn and Rasmussen (2009).

## APPENDIX S2. MODIFIED CHARACTERS

**3** Lower incisors: (0) 4, simple structure, similar-sized; (1) 4, first enlarged; (2) 3, simple structure, similar-sized; (3)\* 3 or 2, similar-sized, spatulate; (4) 3 or 2, first enlarged, simple; (5) 3, first two enlarged, simple; (6) first incisor of 3 or 2, or sole if one, enlarged and serrated; (7) 3 or 2, similar-sized, serrated/denticulate; (8) absent; (9) 3, second enlarged.

Revised stepmatrix for character 3:

	0	1	2	3	4	5	6	7	8	9
0	-	1	1	2	2	2	3	2	3	3
1	1	-	2	3	1	2	2	3	4	4
2	1	2	-	1	1	1	2	1	2	2
3	2	3	1	-	2	2	3	2	1	2
4	2	1	1	2	-	1	1	2	3	2
5	2	2	1	2	1	-	2	2	3	2
6	3	2	2	3	1	2	-	1	2	1
7	2	3	1	2	2	2	1	-	1	1
8	3	4	2	1	3	3	2	1	-	3
9	3	4	2	2	2	2	1	1	3	-

**50** Preultimate upper molar ectoflexus: (0) deep on M2, deep on M1; (1) deep on M2 , shallow on M1; (2) shallow on M2 and shallow or absent on M1; (3) absent.

Because the new state added to character 50, is at the beginning of the morphocline, states for all taxa sampled by Hooker are increased by one.

## APPENDIX S3. NEW AND REVISED SCORINGS

For previously included taxa (*Macrocranium*, *Purgatorius*, *Micromomyidae*), revised scorings are indicated by underlining.

### *Macrocranium*

3130121112 1000021003 0011001000 0110101111 0111123202 2120001111  
 0121302011 0101142211 3020112011 ???01100?? ?????0??00 41?????????  
 ??00?????1? 0?0???????? ????0?201?0 ??????101? ??????0??? 1?0?00?1?  
 ?0?11?00?0 ?0???????? ????01100 1011?0?02? ?????????? ?01?0?01?  
 ???201?4? 1?013?200 2112120110 2001103111 1014100112 1001310111  
0200100100

### *Purgatorius*

705???1?10 ???110003 0001100100 2130041021 0111122202 1122010110  
 0112202010 111113???? ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? 2002102[0&1]00 00001120?2 1013011203  
1003210141 ??????????

### *Micromomyidae*

704?331221 3020100001 1011001100 0030040122 0122124202 2122120110  
 0110302010 1001041111 001012?00? ?????????? ??????????0 ??????????  
 ???0??????? ?????????? ?????????? ????????01? ?????????? ??????0???  
 ??????????1 ?????????? ?????????? ??01000?3? ???2????? ???000111  
 0011110110 100011?200 2002102??0 1?2?1120?? ??13011203 00?321?14?  
 ??????0100

### *Butselia biveri*

??90??1?10 30[1&2]0011004 0101111000 0110110000 0110013100 0011020220  
 0002200000 120004???1 ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? ?????????? ?????????? ?????????? ??????????  
 ?????????? ?????????? 2202120110 20211120?3 1012000021 1001120111  
 ??????????

### *Proterixoides davis*

# APPENDIX 3S. (CONTINUED)

3?30[2&3]21112	3011020003	0011000000	0000121111	0110017202	2120101111
0011202011	01110[3&4]???1	?0????????	??????????	??????????	??????????
??????????	??????????	??????????	??????????	??????????	??????????
??????????	??????????	??????????	??????????	??????????	??????????
??????????	??????????	??????????	1202110100	10411130?1	1114400???
1203110122	?102??????				

## *Solenodon*

4090011220	2001020000	1001001000	0011300100	010?000102	0011111001
00?2200?21	0110250101	4021122[1&2]11	1111111010	2000011100	
6311010111	0000000011	0011011004	21210?0012	1120000010	1110000100
1100100211	3110000110	2011???3?1	1112?121?0	1012001000	1100110000
1231000111	?100100021	0000110310	1222100110	2041112012	1014010003
1203110111	0?00111000				

## *Talpidae*

2030221110	[0&1]???021006	0001101???	?000011132	3100010202	3110001021
0233[2&4]02021	2211050301	101012?[1&2]21	11??111111	2011110?00	
?1?1031111	?1002?0021	1001?1???04	?11[0&1]02[0&1]1[0&1]2	01?01121?2	
212?1???00	??1???00?	00010?12?0	?0??11?3??	?112?021?0	1001000010
1202110001	0113020211	1112201012	0000130300	1122100100	00201130?1
1013120101	0201000110	0?1201?00			

## *Zionodon*

??????1?00	??????????	??????0000	001120????	0???0???0?	4?2??????0
0??210?012	01?122????	??????????	??????????	??????????	??????????
??????????	??????????	??????????	??????????	??????????	??????????
??????????	??????????	??????????	?0?????0??	??????????	???0?????
??????????	?11?03200	2012110000	2011113112	1013110???	1001020141
????11????					

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