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A NEW SPECIES OF *THRASSIS* FROM BAJA CALIFORNIA, MEXICO (SIPHONAPTERA: CERATOPHYLLIDAE: OROPSYLLINAE)

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Abstract.—A new species of the ceratophyllid genus *Thrassis* Jordan, 1933, from Baja California is described. Its phylogenetic affinities in the subfamily Oropsyllinae are briefly discussed and its host preference for antelope ground squirrels of the genus *Ammospermophilus* is noted.

The history of the ceratophylline taxon here referred to as the Oropsyllinae may be traced to the work of Ioff (1936) in which the author erected the "sub-class" Oropsyllini. In it he placed the genera *Oropsylla* Wagner and Ioff, 1926, *Opisocrostis* Jordan, 1933, *Diamanus* Jordan, 1933, and *Thrassis* Jordan, 1933. Stark (1970) referred these genera to the Oropsyllinae Ioff, 1936, on the basis of their morphological similarities and their differences from other ceratophyllid genera. He went on to suggest that members of these genera are more generalized and are thus lower on the evolutionary scale in both morphological development and host preferences.

Today this subfamily contains the genera *Thrassis* and *Oropsylla,* and 45 species-group named taxa, 43 of which occur in the Nearctic Region. One of these is shared with the eastern Palaearctic Region as far west as Dagestan in the Caucasus Mountains west of the Caspian Sea. With few exceptions, fleas belonging to this subfamily parasitize sciuromorph rodents and some are known to play a major role in the maintenance of sylvatic plague in ground squirrel and prairie dog populations in western North America, and ground squirrels and marmots in Central Asia. For the present, these genera are viewed as being the most primitive in the family, with members of the subgenus (*Oropsylla*) being nearest the ancestral condition, parasitizing as they do the more primitive sciurids, the marmots or woodchucks, and ground squirrels of the genera *Spermophilus* and *Ammospermophilus.* Nowak (1991) placed these rodents between the chipmunks and the tree squirrels.

Smit (1983) demoted the previously recognized genera *Diamanus* Jordan, 1933, *Opisocrostis* Jordan, 1933, and *Thrassis* Jordan, 1933, to subgenera of *Oropsylla* Wagner and Ioff, 1926. He also erected the subgenus *Hubbardipsylla* for two species originally assigned to *Opisocrostis.* Although these taxa are obviously closely related, not all students of the order were in accord with this action, and Lewis (1990) restored *Thrassis* to full generic status, although not supporting the subgenera erected by Stark (1970).

Since its revision by Stark (1970), the genus *Thrassis* has remained static, with no additional taxa described or existing names synonymized. However, Stark (*in litt.*) recently suggested that *Thrassis spenceri alpinus* Stark, 1957 "is probably not a valid taxon, and may have been described from an aberrant specimen." I have examined the holotype male (USNM No. 104579) of this subspecies and, while it may be inseparable from the nominate taxon, it is not aberrant in any way that I can detect.

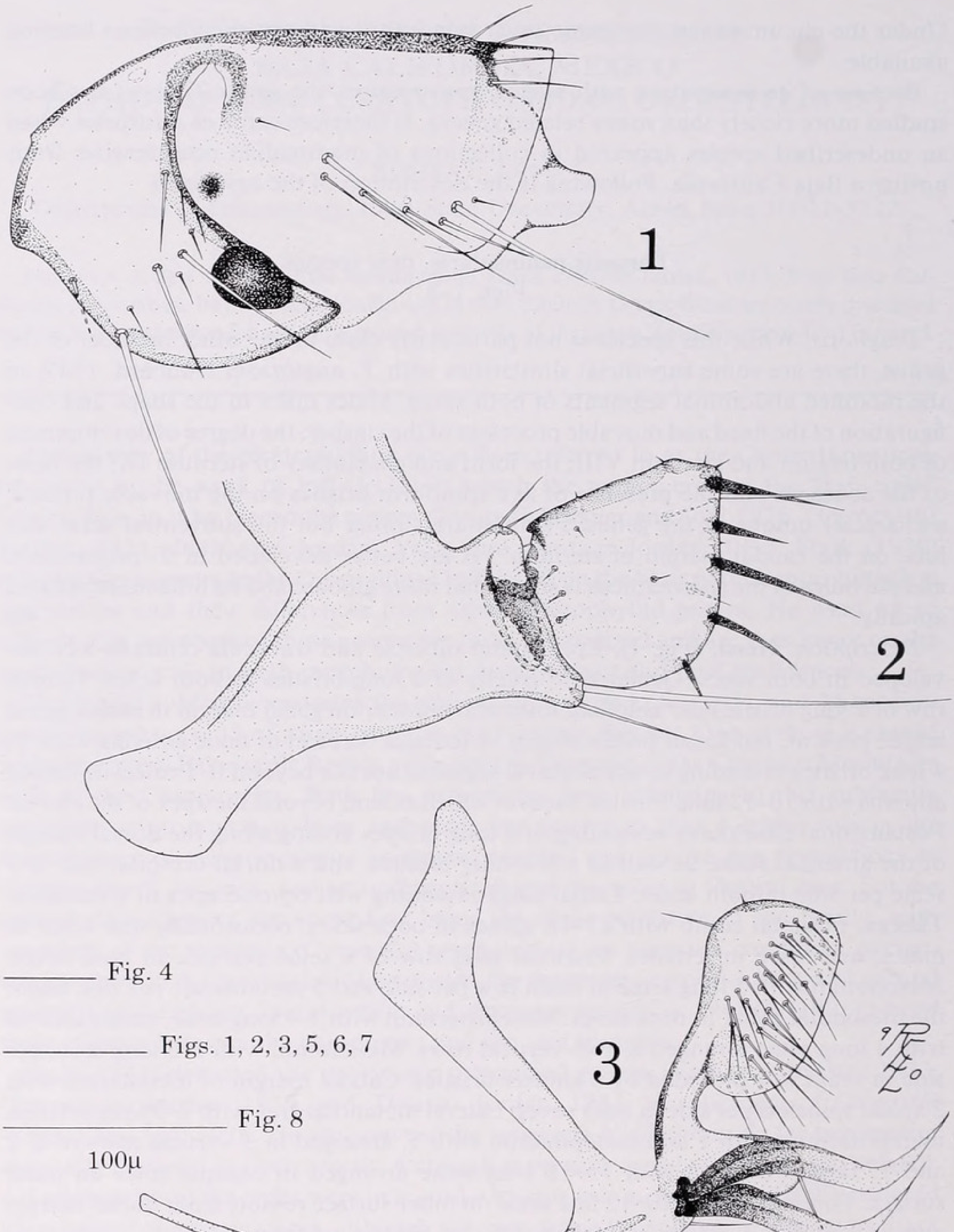
Under the circumstances the name must stand until additional collections become available.

Because of its association with plague transmission, the genus *Thrassis* has been studied more closely than many related genera. It therefore came as a surprise when an undescribed species appeared in collections of mammalian ectoparasites from northern Baja California. Following is the description of the new form.

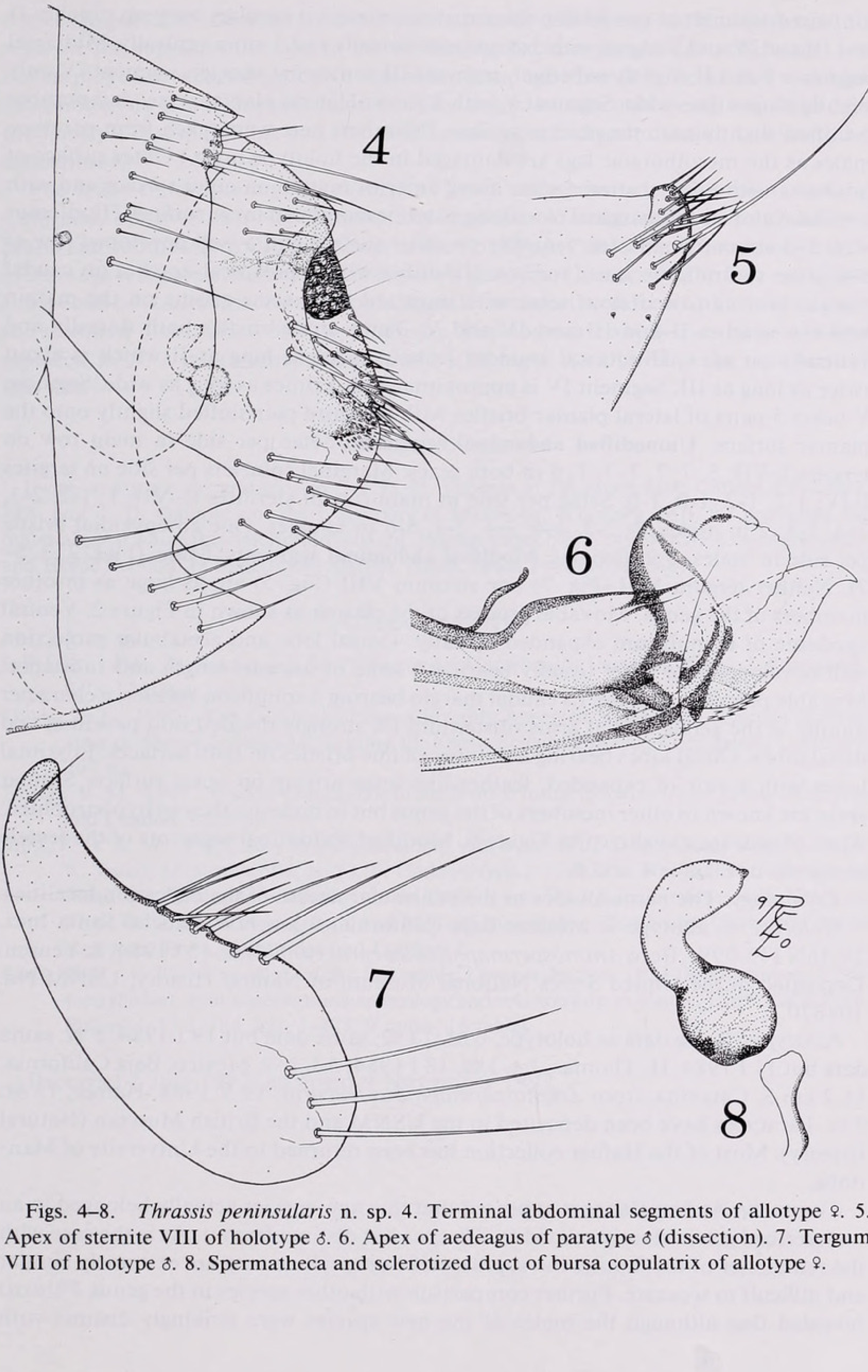
Thrassis peninsularis, new species
Figs. 1–8

Diagnosis: While this species is not particularly close to any other member of the genus, there are some superficial similarities with *T. augustsoni* Hubbard, 1949, in the modified abdominal segments of both sexes. Males differ in the shape and configuration of the fixed and movable processes of the clasper; the degree of development of both tergum and sternum VIII; the form and chaetotaxy of sternum IX; the form of the aedeagus and the presence of five spiniform bristles on the movable process, a character unique in the genus. Females are similar but the subventral sinus and lobe on the caudal margin of sternum VII are better developed in *T. peninsularis* and the bulga of the spermatheca is somewhat more globose and its hilla more inflated apically.

Description: **Head.** (Fig. 1). Eye, frontal tubercle and trabecula centralis well developed in both sexes. Ocular row usually of 3 long bristles in both sexes. Frontal row of 1 long bristle near antennal fossa and another on genal margin in males; genal bristle present, but fossal bristle absent in females. Pedicel of male antenna with 3–4 long bristles extending to apical claval segment but not beyond it. Pedicel of female antenna with 10–12 long bristles, most of which extend beyond the apex of the clavus. Postantennal chaetotaxy consisting of 2 long bristles arising along the dorsal margin of the antennal fossa, as well as a few finer bristles, and a dorsal occipital row of 3 setae per side in both sexes. Labial palpi extending well beyond apex of trochanter. **Thorax.** Pronotal comb with 17–18 spines in both sexes, occasionally one fewer in males, one more in females. Pronotal setal row of 6 setae per side in both sexes. Mesonotum with 5 long setae in main row per side and 5 pseudosetae per side under the mesonotal collar in both sexes. Mesepisternum with 3-4 long setae, mesepimeron with 4 long setae arranged in two vertical rows. Metanotum with 5-6 long setae per side in main row preceded by 3 shorter bristles. Caudal margin of metanotum with 2 apical spinelets per side in both sexes. Lateral metanotal area with 2–3 long bristles, metepisternum with 1 and metepimeron with 5, arranged in 3 vertical rows of 2, 2 and 1. **Legs.** Forecoxa with 15–18 long setae arranged in oblique rows on outer surface. Forefemur with 10–12 fine setae on outer surface remote from dorsal margin and a row of 3–4 on inner surface. Caudal margin of foretibia with 5 subapical notches bearing the following heavy bristles from base to apex: 1, 2, 2, 2, 2. Apex with 3 heavy bristles. Foretarsal segment II slightly longer than segments I or III, segment IV about as wide as long. Foretarsal segment V with 5 pairs of lateral plantar setae, the third pair shifted slightly onto the plantar surface. Midcoxa with an irregular row of fine submarginal setae along anterior margin on inner surface. Outer surface of midfemur bare, its inner surface with a row of 4–5 setae remote from ventral margin. Caudal margin of midtibia with 5 notches bearing pairs of stout setae.



Figs. 1–3. *Thrassis peninsularis* n. sp. 1. Head of holotype ♂. 2. Clasper of paratype ♂ (dissection). 3. Sternum IX of paratype ♂ (dissection).



Figs. 4–8. *Thrassis peninsularis* n. sp. 4. Terminal abdominal segments of allotype ♀. 5. Apex of sternite VIII of holotype ♂. 6. Apex of aedeagus of paratype ♂ (dissection). 7. Tergum VIII of holotype ♂. 8. Spermatheca and sclerotized duct of bursa copulatrix of allotype ♀.

Unpaired stout setae not arising from distinct marginal notches between notches II and III and IV and V. Apex with 3 stout setae dorsally and 3 more ventrally. Midtarsal segments I and II slightly subequal, segment III somewhat shorter, segment IV only slightly longer than wide. Segment V with 5 pairs of lateral plantar setae, pair number 3 shifted slightly onto the plantar surface. (Numbers here were taken from paratype males as the mesothoracic legs are damaged in the holotype male.) Outer surface of hindcoxa with a few scattered setae along anterior margin on outer surface and with a well developed submarginal row along anterior margin on inner surface. Hindfemur with 2–3 submarginal setae ventrally on outer surface and a well developed row of 6–8 setae ventrally on inner surface. Hindtibia with 5 preapical notches on caudal margin bearing paired stout setae with unpaired stout setae arising on the margin between notches II and III and IV and V. Three stout bristles both dorsally and ventrally on apex. Hindtarsal segment I about twice as long as II which is about twice as long as III. Segment IV is approximately 1.5 times as long as wide. Segment V bears 5 pairs of lateral plantar bristles with the third pair shifted slightly onto the plantar surface. **Unmodified abdominal segments.** Setae per side in main row on tergites I–VII; 5, 7, 7, 7, 7, 7, 6 in both sexes. Marginal spinelets per side on tergites I–IV; 1-2, 1-2, 1-0, 1-0. Setae per side in main row of sternites II–VII; 1, 1-2, 2-3, 2-3, 2-3, 2 in males, 1, 2-3, 3-4, 3-4, 2-4, 5-6 in females. One antepygidial bristle per side in males, 3 in females. **Modified abdominal segments: Male.** (Figs. 2, 3, 5–7). Neither tergum VIII (Fig. 7) nor sternum VIII (Fig. 5) are as large as in other members of the genus. Movable process of the clasper as shown in Figure 2. Ventral apodeme of manubrium expanded apically. Dorsal lobe and acetabular projection well developed, the latter usually bearing 2 setae of unequal length and substance. Movable process quadrate, its caudal margin bearing 5 spiniform bristles, a character unique in the genus. Distal arms of sternum IX strongly divided into proximal and distal lobes. Distal lobes bearing a number of fine bristles on both surfaces. Proximal lobes with a pair of expanded, feather-like setae arising on outer surface. Similar setae are known in other members of the genus but in none are they so hypertrophied. Apex of aedeagus as shown in Figure 6. Modified abdominal segments of the **female** as shown in Figures 4 and 8.

Etymology: The name alludes to the peninsular nature of the collection localities.

Holotype: ♂, allotype ♀. México, Baja California, 9 km NW Rancho Santa Inez, 29.46N 115.09W, from *Ammospermophilus leucurus canfieldae,* 15 I 1984, E. Yensen. Deposited in the United States National Museum of Natural History, USNM No. 104870.

Paratypes: Same data as holotype, 6 ♂♂, 13 ♀♀; same data but 19 I 1984, 5 ♀♀; same data but 11 I 1984, H. Thomas, 1 ♂, 3 ♀♀, 18 I 1984, 5 ♂, 7 ♀♀. México, Baja California, 11.2 km S. Catavina, from *Ammospermophillus leucurus,* 19 V 1988, Hafner, 15 ♂♂, 9 ♀♀. Paratypes have been deposited in the USNM and the British Museum (Natural History). Most of the Hafner collection has been returned to the University of Manitoba.

Comment: At first glance it appeared that this new species actually belonged to an undescribed genus closely related to *Thrassis* but distinct from it. As is the case with the remainder of the family, the supraspecific oropsylline taxa are extremely similar and difficult to separate. Further comparison with other species in the genus *Thrassis* revealed that although the males of the new species were strikingly distinct with respect to genitalic characters, there were no precise differences in characters used to separate the supraspecific taxa in the subfamily. Exclusively genitalic characters are not employed to separate genera in this order, although there is evidence that aedeagal morphology is useful in some families. This organ is only now being scrutinized in the family Ceratophyllidae and its value in taxonomic discrimination has yet to be determined.

The host *Ammospermophilus leucurus* has a rather broad range from western Colorado, northwestern New Mexico and northern Arizona, north to southwestern Idaho and southeastern Oregon, south to the tip of Baja California. Throughout much of its range it is parasitized by *Thrassis bacchi gladiolus* (Jordan, 1925). The nominate subspecies of *A. leucurus* extends only slightly into northern Baja California as does the southern distribution of *T. b. gladiolus.* The nominate subspecies of host is first replaced by *A. l. peninsulae,* and further south by *A. l. canfieldae,* the type host of this flea.

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