

On the cribellate spider *Zoropsis lutea* in Israel (Araneae, Zoropsidae)

Gershon Levy

Department of Zoology,
Hebrew University of Jerusalem,
Jerusalem 91904, Israel

Summary

Outlines of the family Zoropsidae (considered herein a valid taxon) and diagnostic characters of the genus *Zoropsis* are provided. *Zoropsis lutea* (Thorell), a primarily East Mediterranean cribellate spider, is redescribed and newly distinguished from the more western *Z. media* Simon and from *Z. rufipes* (Lucas) of the Canary Islands. A former distinction of a separate subspecies *asiatica* Kulczyński is found unjustified.

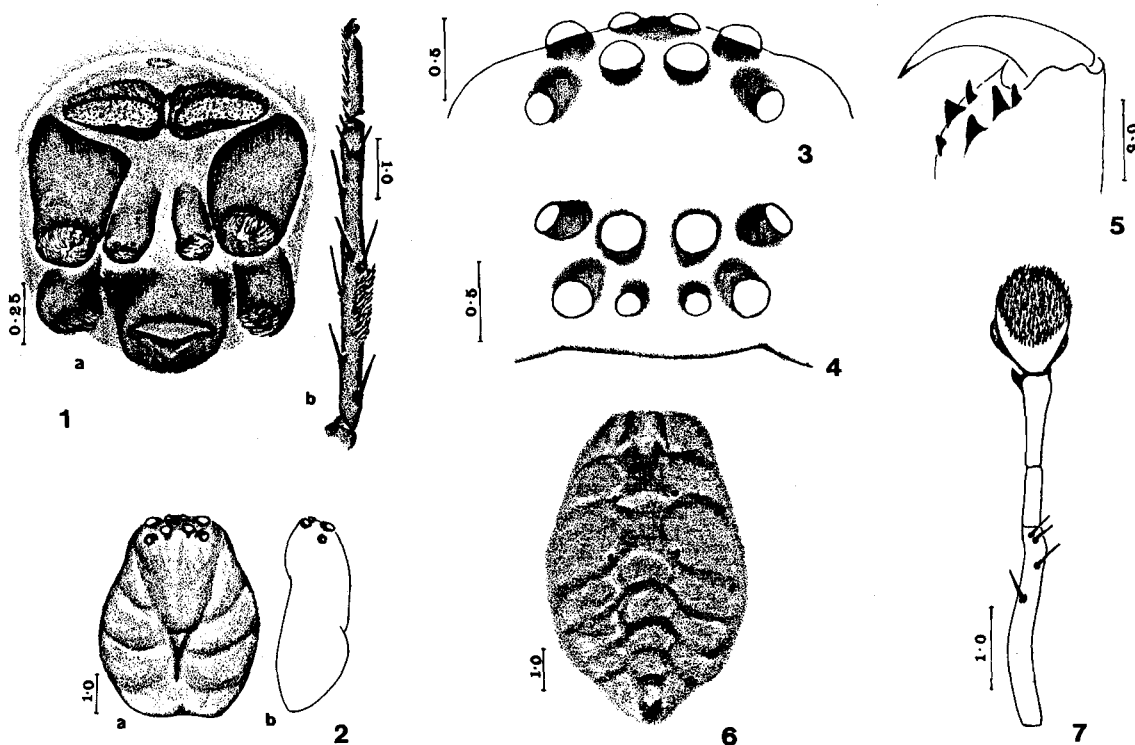
Introduction

During a recent study on Middle East Sparassidae (Levy, 1989) I not infrequently also came across misplaced *Zoropsis*, among specimens in collections sent from abroad. Despite their relatively large size, *Zoropsis* spiders are little known. In addition their cribellum often is rather indistinct and occasional misidentifications are thus likely to occur. Specific, detailed illustrations of the male palpal sclerites are scanty and inadequate, while in the females, to my knowledge, no drawings of their spermathecal structures have ever been published. The latter are of foremost

importance in the separation of close species. With the redescription below of *Z. lutea* (Thorell) the subgroup of *Zoropsis* species with a widened epigynal scape is tackled. The other subgroup of *Zoropsis*, that of *spiniimana* (Dufour), undoubtedly needs to be revised, preferably by someone with good access to fresh material; no member of this group reaches the Middle East.

Members of the family Zoropsidae Bertkau, 1882 are medium-sized to large spiders with a narrow, bipartite cribellum (Fig. 1a). The carapace has a longitudinal thoracic groove (fovea) and eight, distinctly circular eyes arranged in two rows (Figs. 2-4). Chelicerae are toothed (Fig. 5) and have a boss. Legs are armed with rows of strong macrosetae, the tarsi have trichobothria and have scopulae of variable density. The metatarsi have on dorsum, apically a soft, undivided membranous rim. There are two unevenly pectinated claws surrounded by thick claw tufts. Palpal endites have a distal, fine serrula and dense brushes of bristles on the mesal side. Labium is about as long as wide, swollen (rebordered) anteriorly and markedly shorter than palpal endites. The opisthosoma is oval with six spinnerets and a tracheal spiracle nearby (Figs. 1a, 6).

Lehtinen (1967: 373) has suggested the transfer of *Zoropsis* (and hence the Zoropsidae of which it is the type genus) to the family Zoridae Dahl, 1912 along with some genera of the Ctenidae and Pisauridae (summarised in Brignoli, 1983: 590). Zoropsidae however is the older name and undoubtedly in more



Figs. 1-6: *Zoropsis lutea*, female. **1a** Spinnerets, anal tubercle and bipartite cribellum; **1b** Distal segments of leg IV, showing calamistrum and macrosetae on metatarsus, scopula and claw tufts on tarsus; **2a** Carapace, dorsal view; **2b** Carapace, lateral view; **3** Eyes, dorsal view; **4** Eyes, frontal view; **5** Tip of left chelicera, inner view; **6** Opisthosoma, dorsal view.

Fig. 7: *Zoropsis lutea*, male. Left palpus, showing proportions of distal segments and mat of dense bristles on cymbium, dorsal view.

common use than Zoridae. Considering the eye pattern and the well-developed claw tufts of *Zoropsis* it does not fit well into Lehtinen's Zoridae. Therefore the family Zoropsidae should be considered a valid taxon. The Zoropsidae are usually placed in the Lycosoidea group of families but their genital characters seem to differ appreciably in having no coiled vulval ducts in the female and in possessing a distinct tibial apophysis in the male palpus, features absent in the Lycosidae. Regarding somatic characters *Zoropsis* is rather more similar to some of the Sparassidae than to the Lycosidae.

The present study is based on material deposited in the Hebrew University of Jerusalem. Localities in Israel are listed from north to south. Measurements are in mm. The proportional indices used are: carapace index (length divided by width), clypeus index (height of clypeus divided by diameter of anterior median eye) and patella + tibia index (combined length of both segments of leg I divided by length of carapace).

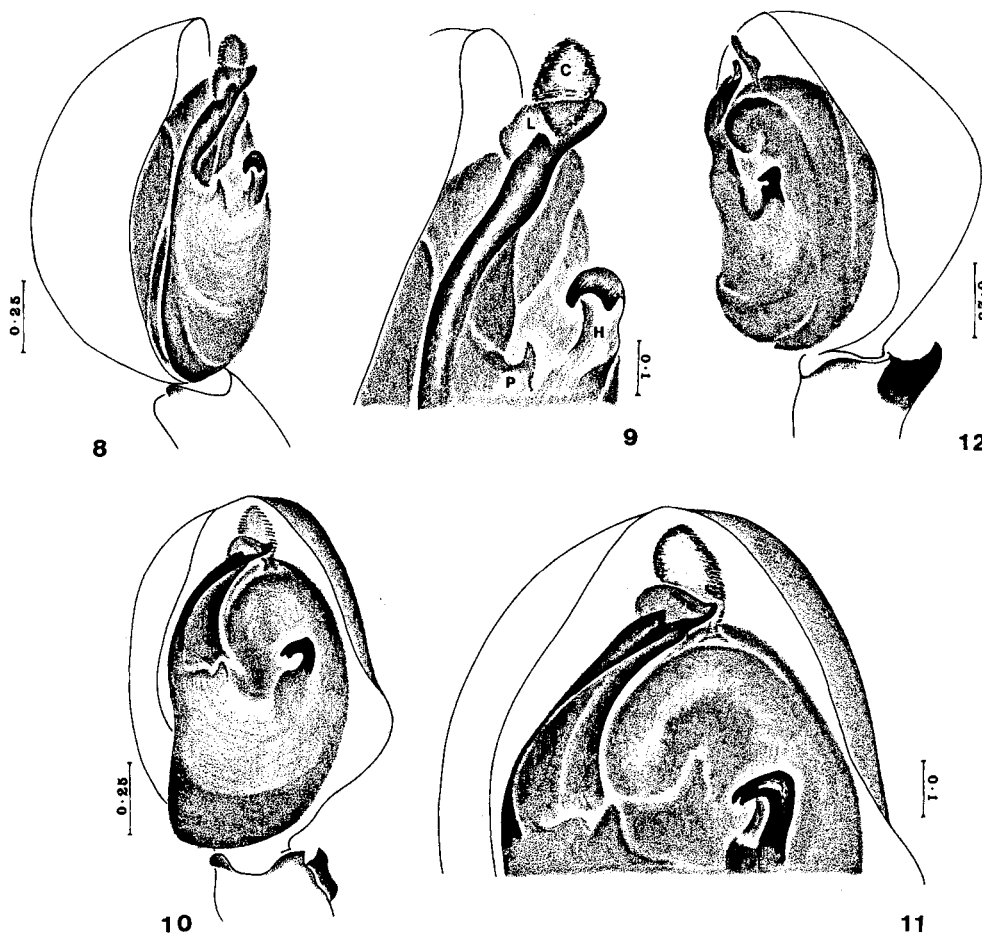
Genus *Zoropsis* Simon, 1878

Type species: Dolomedes spinimanus Dufour, 1820, Spain.

Diagnosis: Large cribellate spiders with calamistrum on hinder legs in form of dense group of bristles partly surrounding a portion of the metatarsus and not arranged in file-like order (Fig. 1b). Anterior median eyes appreciably smaller than other eyes (Fig. 4). Anterior eye row nearly straight, posterior row strongly recurved; posterior median eyes closer to anterior laterals than to posterior laterals (Figs. 3, 4). Male palpus with a lateral tibial apophysis, a basal retro-lateral widening of the cymbium and on bulb an apically notched, hook-like tegular apophysis (Figs. 10, 19, 22). Epigynum with slender, folding scape or with broad median scape attached by narrow stalk (Figs. 13, 17, 20).

Remarks: *Zoropsis* species are yellowish to dark coloured, often with separate or contiguous chevron-like markings dorsally (Fig. 6), sometimes pattern indistinct. The strong macrosetae on the legs show individual variation in number and thus cannot aid in the identification of the species. *Zoropsis* species, as stated by Dahl (1901: 189), are best distinguished by their genital characters.

About a dozen and a half species of *Zoropsis* have been described (Roewer, 1954; Bonnet, 1959; Brignoli, 1983). All are known only from the Old World. One species is found in Israel.



Figs. 8-12: *Zoropsis lutea*, male, left palpus. 8 Mesal view; 9 Tip of bulb, enlarged, mesal view (C = conductor, H = hooked tegular apophysis, L = translucent embolar lamina, P = membranous tegular process); 10 Ventral view; 11 Tip of bulb, enlarged, ventral view; 12 Retrolateral view.

***Zoropsis lutea* (Thorell, 1875) (Figs. 1-16)**

Zora lutea Thorell, 1875: 76; types ♂, ♀ from Crimea presumably in Zoological Museum, Helsinki University (not located). 2♀♀ syntypes, leg. v. Nordmann, Yalta, Crimea USSR (NRS, No. 221/1311; examined).

Zoropsis lutea: Simon, 1878: 330; Roewer, 1954: 1284; Bonnet, 1959: 4993.

Zoropsis lutea asiatica Kulczyński, 1911: 12, pl. 1, fig. 1; ♀ type of subspecies from Beirut, Lebanon (leg. P. Bovier-Lapierre) presumably in Warsaw. Specimens from Beirut (leg. I. Aharoni, March 1925; NMV, Inv. No. 12371; examined). Validity of separate subspecies rejected.

Description

Carapace yellow-brown partly mottled with short dark stripes; margins with about three blackish spots on each side (Fig. 2a). Anterior lateral eyes equal posterior medians; posterior laterals slightly smaller (Figs. 3, 4). Blackish chelicerae have 3 pro- and 3 retromarginal teeth, rarely 4 retromarginals on one chelicera (Fig. 5); no denticles in groove between rows of teeth and usually no bristles on inner lobe below fang (rarely one or two bristles on one chelicera). Labium dark, sternum light. Legs creamy to brown with dark, broad annulations. Fourth pair longest in female, first pair longest in male. Opisthosoma mainly drab yellow, occasional specimens with indistinct, dark markings on dorsum (Fig. 6).

Male

Measurements (5♂♂): Total length 7.3-9.5; carapace length 3.8-5.0, width 2.9-3.8; carapace index

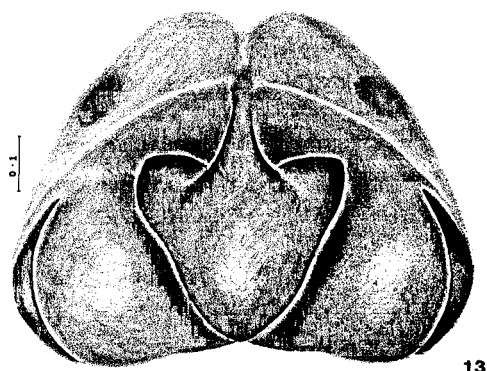
1.31-1.36; clypeus height 0.10-0.16; clypeus index 0.66-1.0; length of legs: I 17.4-22.1, II 14.8-18.7, III 11.6-15.1, IV 16.3-20.9; patella + tibia index 1.61-1.92.

Palpus (Figs. 8-12): Segments long and slender, bulb relatively small; cymbium covered dorsally with mat of dense short bristles (Fig. 7). Sclerotised, hooked, tegular apophysis (H) faces mesally a light, membranous, occasionally indistinct, fine and rather small tegular process (P; Figs. 8-10). Thick embolar division rises mesally and widens apically into a translucent lamina (L; Figs. 8-11). Membranous conductor (C) rises on narrow stalk at apex of bulb (Figs. 8-12). Black tibial apophysis extends laterally, barely rises above end of tibia (Fig. 12).

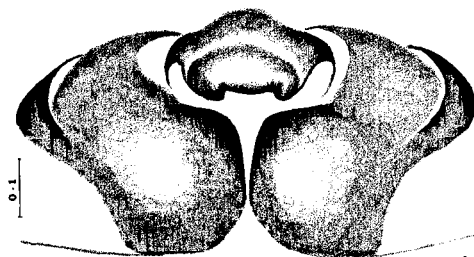
Female

Measurements (10♀♀): Total length 9.7-14.3; carapace length 4.7-6.0, width 3.5-4.4; carapace index 1.29-1.40; clypeus height 0.15-0.20; clypeus index 0.88-1.13; length of legs: I 15.2-19.0, II 12.5-16.7, III 11.1-14.1, IV 15.8-20.0; patella + tibia index 1.21-1.34.

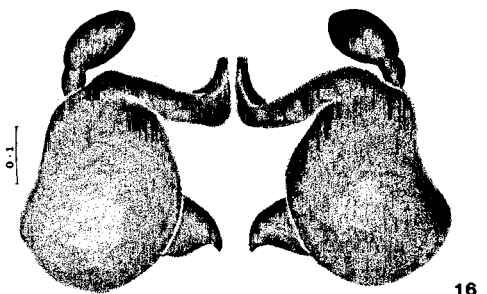
Epigynum (Figs. 13-16): Far sides of plate flanked by dark, narrow sclerotised folds (Figs. 13, 14). Slender stalk attaches large median scape; scape widens laterally into shoulder-like extensions and reaches epigastric furrow posteriorly without projecting beyond edge (Fig. 13); shape of wide median scape varies appreciably (Fig. 15). Spermathecae large, robust, with uniform texture throughout (Fig. 16); small ovoid bodies connected by a slightly curved tube project on apical side of spermathecae (Fig. 16).



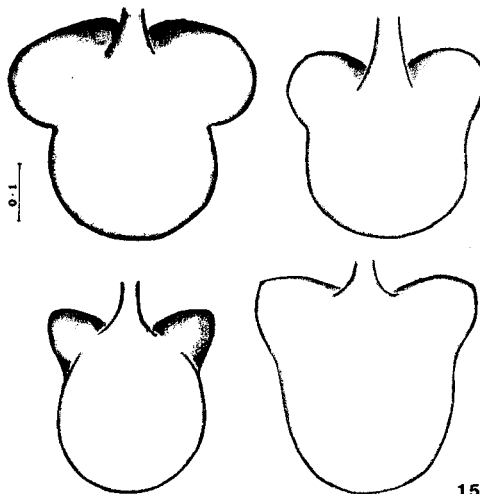
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Figs. 13-16: *Zoropsis lutea*, female. 13 Epigynum, ventral view; 14 Epigynum, posterior view; 15 Epigynal scape, variations; 16 Spermathecae, dorsal (inner) view.

Diagnosis

There is considerable resemblance in the shape of the external epigynal plate with its stalked scape among the females of *Z. lutea*, *Z. media* Simon and *Z. rufipes* (Lucas) (Figs. 13, 17, 20); marked variation should be taken into consideration. Although all three species are about the same size, the epigynum of *Z. lutea* is appreciably smaller than that of the others (cf. scale lines of drawings!). All three differ distinctly from each other in the shape of the spermathecae (Figs. 16, 18, 21). The male of *Z. lutea* is easily distinguished from *Z. media* by the relative length of the palpal segments, the form of the embolar division and the shape and number of the membranous tegular processes (Figs. 10, 19). By the latter character as well as by the shape of the translucent lamina at the apex of the embolus and the form of the tibial apophysis, *Z. lutea* is also clearly distinguishable from *Z. rufipes* (Fig. 22).

Distribution

Yugoslavia, Bulgaria, Greece, Crete, Cyprus, USSR (Crimea), Turkey, Syria, Lebanon, Israel.

Records

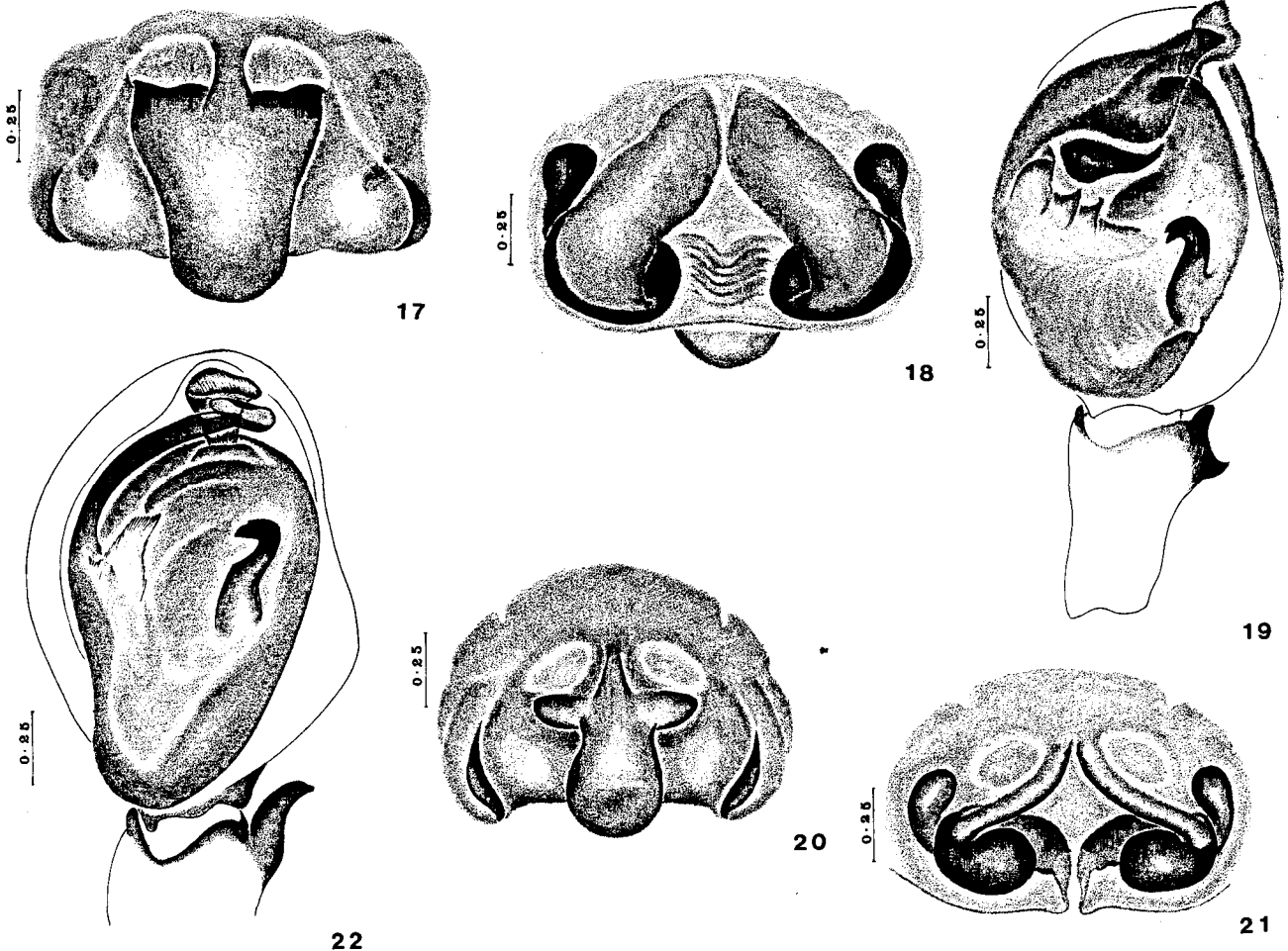
Israel: Dan, Hanita, Ginnosar, Mt Carmel, Deganya, Ginnegar, Zikhron Ya'aqov, Ramat Gan,

Holon, Neta'im, Ben Shemen, Jerusalem, Rehovot, Gan Yavne, Dorot, Lahav, Arad, En Avedat.

Comments

Zoropsis lutea is found sometimes in quite humid surroundings inside white, woollen webs placed under stones, under bark of trees and inside crevices in walls. The somewhat heavy-bodied, stout females are generally found inside their retreats during the winter and early summer, October to May. Adult males were encountered only while wandering about during the autumn and onset of winter, September to December. Females with an egg sac fastened to the bottom of their retreat were collected from January to March. An emergence of about one hundred young was recorded once at the end of March.

The occurrence of *Z. lutea* in Israel was first reported by Strand (1913: 147; 1915: 135). It is found in mountainous areas, along the Sea of Galilee and the Mediterranean coastal plain as well as in the north and central parts of the semi-arid Negev. Protected inside its woolly web, *Z. lutea* seemingly withstands a variety of environmental conditions. The distribution of *Z. lutea* from the Balkans southwards to Israel is not a common pattern among spiders found in Israel. Perhaps *Z. lutea* is a Central Asiatic element, but records from that



Figs. 17-19: *Zoropsis media*. 17 Epigynum, ventral view (Morocco); 18 Spermathecae, dorsal (inner) view (Morocco); 19 Left male palpus, ventral view (France).

Figs. 20-22: *Zoropsis rufipes*, Canary Is. 20 Epigynum, ventral view; 21 Spermathecae, dorsal (inner) view; 22 Left male palpus, ventral view.

region are wanting. Its distributional pattern in Israel offers no clues as to its possible origin.

Of the above-mentioned closely related *Zoropsis* species, *Z. media* is distributed in south-western Europe and north Africa while the Canary Islands are inhabited by *Z. rufipes*. Judging by the male palpal features *Z. lutea* and *Z. rufipes* seem closer to each other than to *Z. media*. However, on examining the shape of the female's spermathecae, *Z. media* and *Z. rufipes* prove to be the close ones while *Z. lutea* distinctly stands apart.

A separate subspecies of *Z. lutea*, namely *asiatica*, was described from the Middle East by Kulczyński (1911). It was based on subtle differences in the outlines of the female's scape. But examination of Thorell's syntypes of *Z. lutea* from the Crimea, USSR as well as material from Beirut, Lebanon and from Israel showed all to be identical. Considerable variation in the contours of the scape is encountered in any sample of *Z. lutea* (Fig. 15), likewise in *Z. rufipes*. None of the variations can be linked with any given locality. There is thus no justification for Kulczyński's distinction of a separate subspecies.

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