

DESCRIPTION OF A NEW SPECIES  
OF MARINE MITE, *AGAUOPSIS FILIROSTRIS*  
(ACARI : HALACAROIDEA)  
FROM SOUTHERN CALIFORNIA

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SYSTEMATIC HALACAROID SOUTHERN CALIFORNIA	ABSTRACT : A new species of marine mite, <i>Agauopsis filirostris</i> (Superfamily Halacaroidea) is described from the coast of southern California, U.S.A., and its taxonomic relationship to other members of the genus <i>Agauopsis</i> is determined. A new record of <i>A. curvata</i> KRANTZ, 1973 from the same area is established.
SYSTÉMATIQUE HALACAROIDE CALIFORNIE DU SUD	RÉSUMÉ : Nous présentons la description d'une espèce nouvelle d'acarien marin, <i>Agauopsis filirostris</i> (Superfamille Halacaroidea) récoltée sur la côte de la Californie du sud, aux États-Unis, ainsi que sa relation taxinomique avec les autres espèces. Nous relevons en outre la présence d' <i>A. curvata</i> KRANTZ, 1973 dans le même endroit.

#### INTRODUCTION

The marine mites of southern California (south of Point Conception, latitude 35° North) are poorly known; only four species have been described, three by HALL (1912) and one by NEWELL (1949). In a preliminary study of the Halacaroidea associated with intertidal algae, two species (one new) of *Agauopsis* were collected from La Jolla, near San Diego. *Agauopsis curvata* was collected from beds of *Mytilus californianus* with *Pollicipes polymerus*, and a variety of turf algae. It was described previously from beds of *Mytilus californianus*, *Laminaria* sp. holdfast and eelgrass in Oregon (KRANTZ, 1973). The new species to

be described in this paper was commonly found in the intertidal zone between mid — to high — tide level, associated with a turf of coralline and other red algae such as *Corallina pinnatifolia*, *Pterocladia capillacea* and *Ceramium eatonianum*.

#### METHOD

Terminology and system of decimal notation follows NEWELL (1947 and 1971). Measurements in decimal notation are taken from one specimen only. Measurements of the idiosoma are of the median length, and the width at the level of the ocular plates. Chaetotaxy of the legs was examined in at least two specimens. The arrange-

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ment of the spiniform setae of leg I was examined in the whole type series. Drawings were made with the aid of a *camera lucida*.

Description of *Agauopsis filirostris* sp. nov.

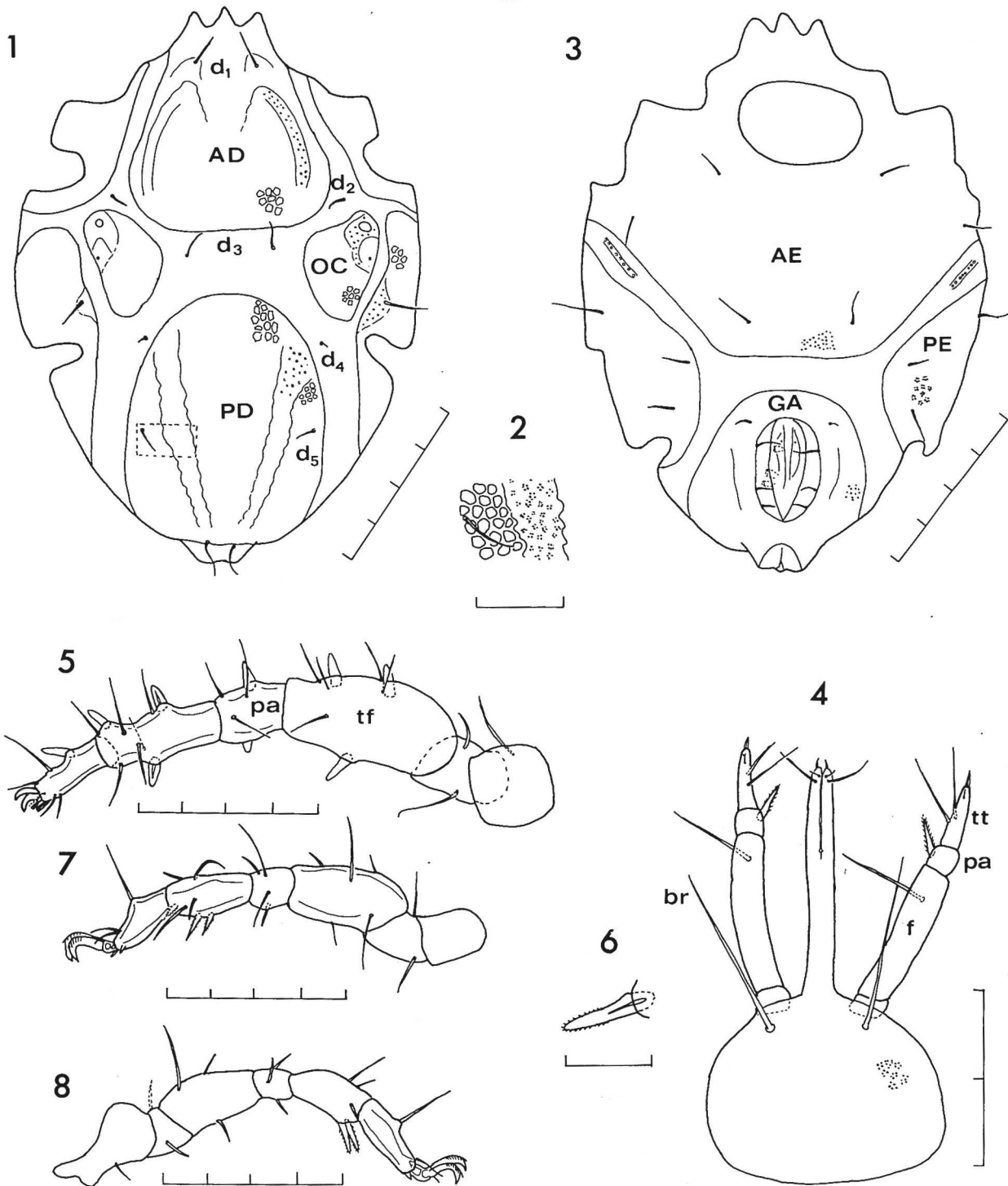
■ FEMALE. (Seven specimens examined) : Idiosoma mean length 665  $\mu\text{m}$ , (range 633-708) ; mean width 466  $\mu\text{m}$  (437-489). The frontal margin of the anterior dorsal plate is clearly tridentate (Fig. 1). Dorsal setae 1 are on the tip an inverted 'V'-shaped ridge and are anterior to the raised lateral areolae which bear rosette pores. The anterior edge of these areolae develop medially into ridges. The cuticle is panelled between the areolae. Dorsal setae 2 are in the membranous cuticle anteromedial to the ocular plates. Dorsal setae 3 lie between the ocular plates. The ocular plates each bear two corneae and one pore on a raised anterolateral area : the rest of each plate is panelled. The anterior dorsal plate is separated from the posterior plate dorsal by a narrow band of membranous cuticle which is 0.11 in width relative to the length of the idiosoma. Dorsal setae 4 are anterolateral to the posterior dorsal plate at the level of the insertion of leg III. Dorsal setae 5, inserted on the posterior dorsal plate, are at 0.55 relative to the median length of the plate. Two costae are marked with scattered rosette pores and arise at the anterolateral margins of the posterior dorsal plate and converge to its posterior margin. The cuticle is panelled on both sides of the costae (Figs. 1 & 2). The adanal setae are situated at the posterior margin of the posterior dorsal plate. The anterior epimeral plate bears three pairs of setae (Fig. 3) is evenly covered with small pores, and is separated from the genitoanal plate by a narrow band of membranous cuticle which is 0.06 in width relative to the length of the anterior epimeral plate. The posterior epimeral plate bears one pair of dorsal setae on small triangular areolae and three pairs of ventral setae ; the plate is covered with small pores and faint panelling.

Genitoanal plate bears the genital opening which is 0.62 in length relative to the length of

the plate. One pair of setae is situated anterolateral to the genital opening ; lateral ridges extend posteriorly from these setae. The genitoanal plate is marked with small pores. There are three pairs of perigenital setae ; the first pair are situated at 0.31, the second pair at 0.69 and the third pair at 0.86 relative to the length of the genital opening. Three pairs of internal genital acetabula are just visible.

The gnathosoma bears palpi which are 1.14 times as long as the maximum width of the base of the gnathosoma and extend just beyond the end of the rostrum (Fig. 4). The palpal femur has a dorsal seta which is situated at 0.18 relative to the length of the femur. The anterior seta of the patella is long, spiniform and pectinate. Tibiotarsus has one dorsal and one anteroventral seta basally, and has two short proeupathidia and one small ventral seta distally. The rostrum is filiform and is 0.14 in width relative to its length ; the posterior end of the rostral sulcus is at 0.4. Each distal lobe of the rostrum has short curved spines ; the protorostral setae are not visible, the deutorostral setae and longer tritorostral setae are situated ventrally. The long ventral basirostral setae are found on the base of the gnathosoma and are 0.76 in length relative to the length of the rostrum. The base of the gnathosoma bears groups of small pores.

The chaetotaxy of the legs is shown in table 1. Leg I with the following number of large spiniform setae : telofemur : two anterior, one ventral ; patella : one anterior, one ventral ; tibia : two anterior, one ventral ; tarsus : one anterior (Fig. 5). All spiniform setae are covered by minute denticles on their distal half (Fig. 6). Tibia II has one anterior and two ventral bipectinate setae (Fig. 7). Tibiae III and IV have two ventral bipectinate setae (Fig. 8 and 9). Tarsus I has in addition to the setae listed in Table 1, four parambulacral setae (two doublet eupathidia, one set is anterior and one posterior), one anterior solenidion, and one canalicular famulus. The lateral claws of tarsus I are smooth and the median claw is present. The parambulacral setae of tarsus I are clearly seen in a male of the type series (Fig. 10). Tarsus II has in addition to the



FIGS. 1-8. — 1) Idiosoma, dorsal view (AD = anterior dorsal plate ; OC = ocular plate ; PD = posterior dorsal plate ; d<sub>i</sub> = dorsal setae 1 etc.) ; 2) Panels and rosette pores on PD ; 3) Idiosoma, ventral view (AE = anterior epimeral plate ; PE = posterior epimeral plate ; GA = genitoanal plate) ; 4) Gnathosoma, ventral view (tt = tibiotarsus ; pa = patella ; f = femur ; br = basirostral seta) ; 5) Leg I, posterior view (tf = telofemur) ; 6) Spiniform seta, from leg I ventral telofemur ; 7) Leg II, posterior view ; 8) Leg III, anterior view.

	PROTONYMPH				DEUTONYMPH				ADULT			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Trochanter	1	0	1	0	1	0	1	0	1	0	1	0
Basifemur	1	2	1	x	2	2	2	1	2	2	2	2
Telofemur	3 + 2'	3	3	2	4 + 2'/3'	5	3	3	5/4 + 3'/4'	5	3	3
Patella	2 + 2'	3	3	3	3 + 2'	4	3	3	3 + 2'	4	3	3
Tibia	3 + 2' 3 + 2*	2 + 2*	2 + 2*	2 + 2*	6 + 3'	4 + 3' 3 + 2*	3 + 2*	3 + 2*	6 + 3'	4 + 3* 3 + 2*	3 + 2*	3 + 2*
Tarsus	5 + 1'	3	3	3	5 + 1'	3	3	3	5 + 1'	3	3	3

TABLE 1. Chaetotaxy of legs. Tarsal counts do not include parambulacral setae.

' = spiniform setae ; \* = bipectinate setae.

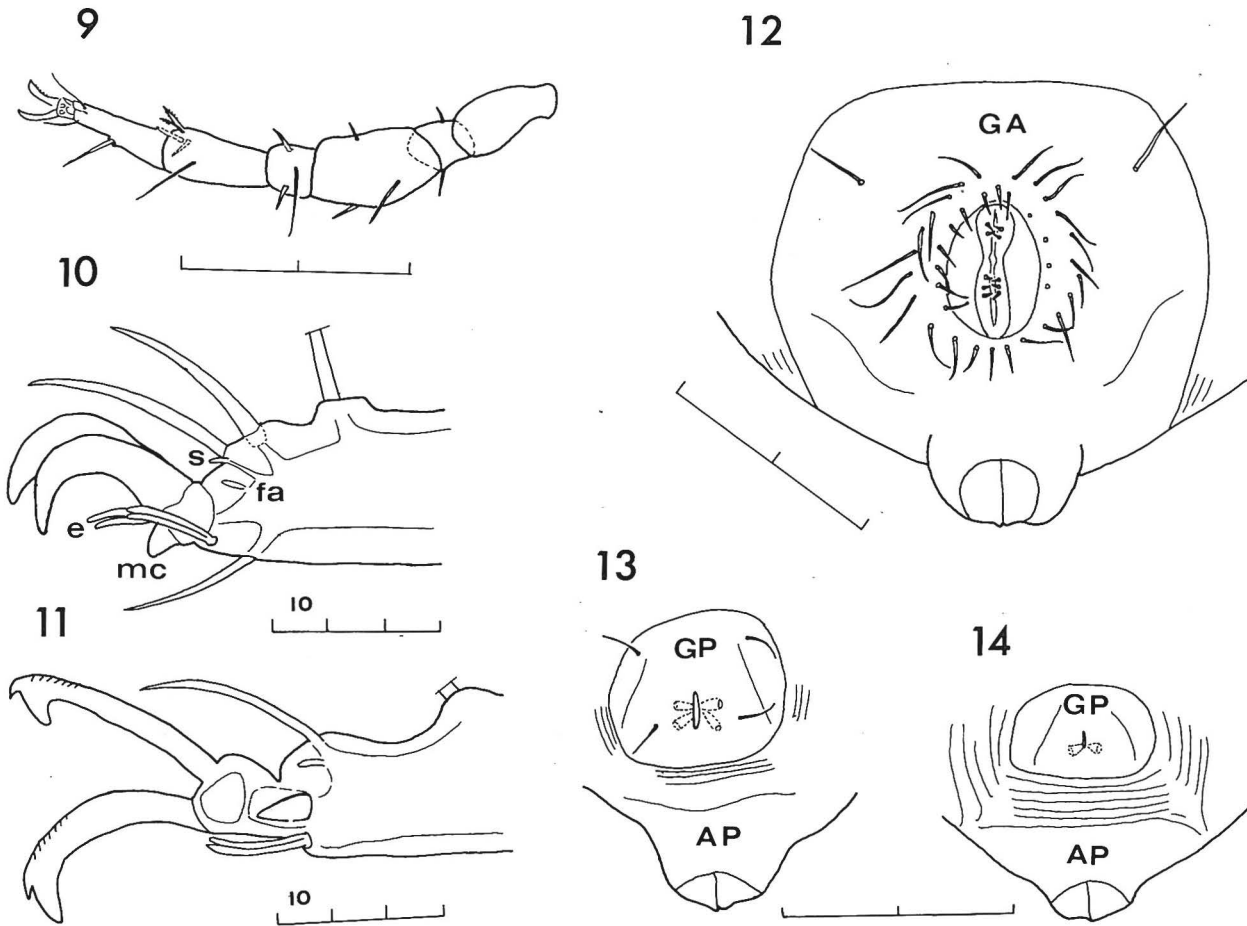
setae listed in Table 1, three parambulacral setae (one posterior doublet eupathidium, one anterior spiniform eupathidium) and one anterior solenidium. The lateral claws of tarsus II each bear an accessory tooth and comb with approximately seven teeth. Median claws are absent. The parambulacral setae of tarsus II also are clearly seen in a male of the type series (Fig. 11). Tarsi III and IV have in addition to the setae listed in table 1, one parambulacral seta, which is an anterior spiniform proeupathidium. Lateral claws are the same as those on tarsus II.

■ MALE. (Ten specimens examined) : Idiosoma mean length 600  $\mu$ m, (577-618) ; mean width 414  $\mu$ m (369-437). Similar to female in all respects except for the morphology of the genitoanal plate, and its smaller size.

The genitoanal plate bears two circles of perigenital setae. In the eight specimens examined, the outer circle consists of a mean number of 24 setae (22-27) and the inner circle, which is incomplete posteriorly, consists of a mean number of 15 setae (13-17). Five pairs of subgenital setae are arranged in a group of two anterior pairs of setae and a group of three posterior pairs of setae on the genital sclerites (Fig. 12).

■ DEUTONYMPH. (Six specimens examined) : Idiosoma mean length 541  $\mu$ m (467-587) ; mean width 375  $\mu$ m (339-521). Deutonymph is similar to adult except for its smaller size and the following features : The plates of the idiosoma are separated by relatively large areas of membranous cuticle, anterior dorsal plate separated from posterior dorsal plate by band of membranous cuticle which is 0.26 in width relative to the length of the idiosoma, anterior epimeral plate separated from the genital plate by a band of membranous cuticle which is 0.14 in width relative to the length of the idiosoma. The genital plate has a small genital groove two pairs of acetabula, and two pairs of setae, and is separated from the anal plate by a narrow band of cuticle (Fig. 13). Telofemur I has no proximal anterior spiniform seta ; other setal deficiencies are shown in Table 1.

■ PROTONYMPH. (Three specimens examined) : Idiosoma mean length 391  $\mu$ m (377-420) ; mean width 284  $\mu$ m (271-301). Protonymph is similar to adult except for its smaller size and the following features : The plates of the idiosoma are widely separated, the anterior dorsal plate separated from the posterior dorsal plate by a band of membranous cuticle which is 0.41 in width relative to the length of the idiosoma, and the anterior



FIGS. 9-14. — 9) Leg IV, anterior view ; 10) Leg I tarsus, posterior view (male), scale 10  $\mu$ m intervals (s = solenidium ; fa = famulus ; mc = median claw ; e = eupathidium) ; 11) Leg II tarsus, anterior ventral view (male), scale 10  $\mu$ m intervals ; 12) Male genitoanal plate ; 13) Deutonymph genital plate (GP = genital plate ; AP = anal plate) ; 14) Protonymph genital plate.

epimeral plate separated from the genital plate by a band of membranous cuticle which is 0.21 in width relative to the length of the idiosoma. The posterior epimeral plate has only the anterior pair of the ventral setae. The genital plate has one pair of acetabula and setae are absent (Fig. 14). Leg I has no proximal anterior spiniform setae on the telofemur or the tibia. Other setal deficiencies are shown in table 1.

■ LARVA. Unknown.

■ TYPE LOCALITY. North Scripps Reserve, La Jolla, California, 32°50' North, 117°16' West, on coralline and red algal turf growing on intertidal rocks. Collected by Miranda MACQUITTY on 14th May, 16th September and 9th October 1980. Holotype female and the following paratypes : six females, fifteen males, eight deutonymphs and three protonymphs — deposited in the Newell Collection, National Museum of Natural History, Smithsonian Institution.

■ REMARKS. Variability in the number of the spiniform setae on telofemur I occurred in both

the adults and deutonymphs (Table 1). In two female specimens out of 22 adults examined, the proximal anterodorsal seta of the telofemur of the right leg had developed into a spiniform seta, giving a total of four spiniform setae. Two out of nine deutonymphs examined had an additional proximal anterior spiniform seta on the telofemur I as in the adult. One specimen had this condition on both the right and left telofemur I, while the other had it only on the right side. The presence of one anterior spiniform seta is probably the normal condition for the deutonymph. It is unlikely that the proximal anterior spiniform seta develops during the deutonymphal stage, as it was not found even in the largest and presumably the oldest specimens.

■ OTHER DATA. This species also was collected by the late Dr. Irwin M. NEWELL from I. Coronado del Sur, Baja California, and from Laguna Beach, California. NEWELL assigned the name *A. filirostris* to the specimens, but did not describe them. I have used the same specific name to avoid confusion. None of NEWELL's specimens (21 adults and five deutonymphs from I. Coronado del Sur and one adult from Laguna Beach) showed any variability in the number of spiniform setae on telofemur I.

#### LIST OF FIGURES

Figures all of female holotype, with scale in 50  $\mu$ m intervals, unless otherwise mentioned.

#### DISCUSSION

*A. filirostris* belongs to a natural group defined by BARTSCH (1979 a) containing *A. brevipalpus*, *A. borealis*, *A. tricuspis* and *A. newelli*. It may be distinguished from these species by the tridentate frontal margin of the anterior dorsal plate and by the filiform rostrum (for which the species was named). The variability in numbers of the spiniform setae of telofemur I within this species

and between the members of the group (*A. newelli* has three, *A. brevipalpus* and *A. borealis* have four, and *A. tricuspis* has five) limits its use as a taxonomic character. The spiniform setae of the other segments of leg I appear to be more constant. Those of tibia I separate this group from the *A. microrhyncha* group (BARTSCH, 1979 b) which have three anterior spiniform setae, with the proximal two close together, and one ventral spiniform seta.

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