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NEW SPECIES OF *AGAUE* AND *THALASSARACHNA* FROM THE ALEUTIANS (ACARI, HALACARIDAE)

By Irwin M. Newell[1]

While much work remains to be done on the Halacaridae collected by the writer during 1948, one important fact has already been established. In the saddles between the peaks of the partially submerged Aleutian mountain chain, and perhaps on other portions of the slopes of these peaks, is found a mite fauna strikingly different from the benthic fauna of the Bering Sea and even markedly different from the intertidal fauna of the islands themselves. While the writer has no material from the deep waters south of the Aleutians, close study of this area would probably show equally great differences here. It is the writer's belief that the subtidal fauna of the Aleutian saddles is a unique and restricted one owing its unusual characteristics to the effects of the strong currents that sweep over the bouldery bottom into the Bering Sea. Here the benthic fauna is characterized by relatively dense growths of sponges, corals, Hydrozoa, and Bryozoa, quite unlike anything found in the waters to the north.

Three more species of this interesting subtidal fauna are described in the present paper—*Agaue longiseta*, new species, *Thalassarachna aleutica*, new species, and *T. agauiformis*, new species. The foregoing species have not yet appeared in intertidal collections, but all three have been found in Kagamil Pass, Islands of the Four Mountains, and also in Oglala Pass, Rat Islands, 12°, or about 500 miles, westward. In addition, *Thalassarachna schefferi*, new species, is described from St. Paul Island in the Pribilof group, and this species is also very

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common in intertidal and shallow-dredging collections throughout the Aleutians. It was not, however, found with the three previous species.

The figures were drawn by the author with the aid of a camera lucida. Scales are available for most figures, and these can be used to obtain measurements not given in the text. Each subdivision of the scale equals 10 μ, so that a scale with one division represents 10 μ, one with three divisions represents 30 μ, etc. In the scales that are 10 divisions long, a slightly longer mark has been made at the 50-μ point.

The standard abbreviations used in the monograph on the Halacaridae of eastern North America are used here for the following frequently recurring terms:

AD, anterodorsal plate
AE, anterior epimeral plate
GA, genito-anal plate
OC, ocular plate
P-3, palpal segment three
PD, posterodorsal plate
PE, posterior epimeral plate
I-6, segment six of leg I (or tarsus I)
III-3, segment three of leg III (or femur III)

The holotypes and some of the paratypes are deposited in the collection of the American Museum of Natural History.

Thalassarachna schefferi, new species

The following description is based on specimens from St. Paul Island, Pribilof Islands, Alaska, the type locality.

MALE: Body 687–745 μ long, 460–511 μ wide, length/width = 1.36–1.52; average 724.1 by 494.1 μ, length/width = 1.47 (eight specimens). Second, third, and fourth pairs of dorsal setae borne on small oval to subcircular sclerites which are four or five times the diameter of the setal alveolus. A fourth pair of sclerites, bearing no setae, lies behind the fourth pair of dorsal setae (fig. 9). Corneae very indistinct, especially the posterior ones. PD with broad, smooth costae, and two narrower lateral carinae. All dorsal plates marked with depressed circular panels (fig. 7). Membranous area marked with coarse striae showing frequent anastamoses, and becoming rugose anterior, medial, and posterior to OC (fig. 8).

AE (fig. 2) minutely punctate and with only a few circular

panels near the posterior to lateral margins; PE with similar cuticular details. GA also minutely punctate and with moderately prominent circular panels becoming less distinct near the anterior and median portion of the plate. Genital opening (fig. 10) surrounded by a horseshoe-shaped elevation bearing 55 to 68 setae (five specimens). Anterior two pairs of setae of genital sclerites long, flexible, long enough to reach to or nearly to the posterior group of setae; posterior group consisting of three pairs of shorter, stout, spiniform setae. Penis reaching to or very nearly to anterior margin of GA. Palpi extending nearly to end of I-4 (fig. 9), rostrum extending to middle of P-3. Medial seta of P-3 very heavy and about 0.8 as long as P-3 (fig. 5). Rostral sulcus 0.69 to 0.72 times as long as rostrum; first pair of long maxillary setae 0.22 to 0.26 of the length of the sulcus from the posterior end of the sulcus (two males). Base of capitulum minutely punctate. Chelicerae as shown in figure 4.

Chaetatoaxy of legs variable, and not entirely reliable for critical diagnostic characters. The following table serves only as a rough guide:

CHAETOTAXY OF LEGS

	I				II				III				IV			
	d.	v.	l.	m.	d.	v.	l.	m.	d.	v.	l.	m.	d.	v.	l.	m.
1	—	—	—	1	—	—	—	1	1	1	—	—	—	—	—	—
2	1	1	—	—	1	1	1	—	1	1	—	—	1	1	—	—
3	4	1	—	—	3	1	1	—	3	1	—	—	3	1	—	—
4	3	1	—	1	2	1	—	—	2	1	1	—	2	1	—	—
5	5	6	2	1	4	5	—	—	3	2	1	1	3	3	—	—
6[a]	3	8	—	1	3	8	—	—	3	2	—	—	3	2	—	—

[a] Does not include the parambulacral setae or the bacillum. See text.

One dorsal seta of I-4 very delicate. I-5 highly variable in both number and form of ventral setae. The two rows of paired setae contain two and one-half to four pairs of setae, of which the basal one, one and one-half, or two pairs may be rigid and spiniform, the remainder slender and flexible. Of 24 tibiae examined, five had two and one-half pairs of setae, six had three pairs, and five had four pairs. Distidorsal setae of I-6 variably pectinate. Prebacillum absent, bacillum lateral. The medial seta noted in the table is ventromedial in position, as in the other species of this genus. Beyond this are four pairs of bacilliform setae, and in addition the divaricate parambulacral

setae. II-5 with four or five ventral setae, none of which is spiniform. II-6 with bacillum on medial membrane of claw fossa; ventromedial seta absent; four pairs of bacilliform setae plus the divaricate parambulacral setae as on I-6. III-5 with distimedial seta ensiform, faintly pectinate. III-6 and IV-6 each with three dorsal and either one or two ventral setae, the latter very small. The paired parambulacral setae of III-6 and IV-6 single, bacilliform, and very slender. All tarsi with prominent claw fossa and lateral membranes, all claws distinctly pectinate (100 ×) and with an apparent accessory tooth, median claws bidentate. Segment 3 of all legs with coarse, concave depressions.

FEMALE: Like the male in most respects except size and characters of GA. Body 661–804 μ long, 460–616 μ wide, length/width = 1.30–1.57; average 769.8, by 554.7 μ, length/width = 1.38 (eight specimens). Second, third, and fourth pairs of dorsal setae borne on small sclerites as in the male. GA (fig. 1) with three pairs of setae, the first or second of which occasionally show duplication on one side or the other, or more rarely on both sides. Genital sclerites (fig. 11) with two pairs of setae. Adanal setae dorsal to the anal papilla. Ovipositor reaching somewhat beyond anterior margin of GA.

REMARKS: Observations thus far indicate that the presence of a lateral seta on II-2 provides a useful character for segregating certain species of *Thalassarachna* Packard, 1871. It is interesting to note that in the three North Pacific species seen by the writer (one still undescribed), II-2 has three setae, whereas in *Thalassarachna longipes* (Trouessart), 1888, *T. basteri basteri* (Johnston), 1836, *T. balticus* (Lohmann), 1889, *T. subterraneus* (Schulz), 1933, and *T. capuzinus* (Lohmann), 1893, all from the North Atlantic, only the dorsal and ventral setae are found. Other cases of this type, in which a morphological character within a cosmopolitan genus appears to have a non-random geographical distribution, have been noticed by the writer, but the proof of this is generally more difficult than the observation, especially since nearly all of these are characters that have been overlooked in the earlier literature. *Thalassacarus commatops* Newell, 1949, also has three setae on II-2, as do *Halacarus ctenopus* Gosse, 1855, *H. actenos* Trouessart, 1889, *H. frontiporus* Newell, 1947, *H. rismondoi* Viets, 1940, and *H. subtilis* Viets, 1940. The situation in the Rhombognathinae Viets,

1927, is not yet clear, but in *Rhombognathus* Trouessart, 1888, specific differences in this character do occur and may be of value in differentiating the highly uniform species of that genus. Unfortunately there appears to be no variation of this kind in the largest genus, *Copidognathus* Trouessart, 1888, all species of that group so far seen by the writer (about 25) being uniformly provided with two setae, dorsal and ventral in position. On the other hand there are three setae on II-2 in *Arhodeoporus arenarius* (Newell), 1947, and *A. submarinus* (Newell), 1947. *Arhodeoporus* Newell, 1947, was erected as a subgenus of *Copidognathus*, but the author now believes that it should constitute a distinct genus in view of the several and consistent differences between the members of this group and those of *Copidognathus*.

The high degree of variability in the chaetotaxy of I-5 throws considerable doubt on the value of this as either a diagnostic or key character. Surely other characters should be used wherever possible. The possibility of sibling species being involved here was examined closely, but no evidence is available to show the existence of more than one. The chaetotaxy of the leg segments other than the tibia and femur in *Thalassarachna* is probably less variable and of greater systematic value. It appears probable that there are reliable differences between species, at least so far as the trochanter, basifemur, and patella are concerned, and certain differences in the chaetotaxy of the tarsus are also of value as key characters.

The prebacillum on I-6 is a variable structure in *Thalassarachna*, being present, although very imperfectly formed, in *T. capuzinus* and *T. subterraneus*, and absent in *T. balticus*, *T. longipes*, and the two new species described in this paper.

The species described here is named for Victor B. Scheffer, United States Fish and Wildlife Service, who has spent several years on St. Paul and has provided the writer with good collections of Halarachnidae as well as Halacaridae from that island.

DISTRIBUTION: Bering Sea: St. Paul Island, female holotype (latitude 57° 05′ N., longitude 170° 25′ W). Rocks, etc., low-tide zone. Victor B. Scheffer.

Also collected by the writer from several localities on Attu and Adak; both intertidal and subtidal.

Thalassarachna aleutica, new species

The following description is based entirely on specimens from

Kagamil Pass, Islands of the Four Mountains, Alaska. The species is one with a rather soft exoskeleton, and few good specimens are available for drawing or measuring.

FEMALE: Body (fig. 15) 505–564 μ long, 330–382 μ wide, length/width = 1.44–1.61 (three specimens). Alveoli of second, third, and fourth dorsal setae lying in the membranous area, not surrounded by sclerites as in *T. schefferi*, new species. Corneae very faint or absent. PD with costae, and a carina down each margin; a row of pores lateral to the costae, and patches of similar pores on AD and OC. Plates quite distinctly paneled and minutely punctate. Membranous areas with parallel striae showing only occasional anastamoses, becoming rugose anterior and medial to OC, but not between OC and the fourth dorsal seta (in *T. schefferi*, new species, there is a patch of rugose cuticle here).

AE (fig. 17) concave posteriorly, or nearly straight, the third pair of setae near the margin of the plate. PE with one dorsal and three ventral setae. GA not reaching beyond level of IV, bearing three pairs of setae in addition to the adanal setae which are dorsal in position. In one female a distinct concavity was seen at the level of the second pair of setae of GA, but this was not seen in the other specimens which were less mature and in which the plates were not so sharply defined. Genital opening reaching nearly to anterior margin of plate; ovipositor reaching to or beyond this point. Genital sclerites with two pairs of setae. Ventral plates only feebly paneled in places, and minutely punctate.

Rostrum (fig. 27) parallel sided, reaching to middle of P-3, base swollen behind level of third pair of maxillary setae (first long pair). First pair of maxillary setae at very tip of rostrum, directed ventrally, visible only under oil immersion; second pair longer and faintly visible in Hyrax even at a magnification of 200. Third pair well behind the middle of the rostrum, just a little anterior to end of P-1, and closer to fourth pair of setae than to tip of rostrum. Rostral sulcus reaching to level of third pair of maxillary setae. P-1 very short. Base of capitulum not paneled, but minutely punctate. Other appendages as described for male.

MALE: Body 454–467 μ long (three specimens). One specimen 467 by 311 μ, length/width = 1.50, others rotated and width therefore not measurable. PD extending far anteriorly,

to or beyond the level of the third pair of dorsal setae; space between AD and PD shorter than or very little longer than OC. In the female, PD does not reach to the level of the third pair of setae, and the distance between AD and PD is distinctly greater than the length of OC. PD also differing markedly from that of female in that it includes the fourth as well as the fifth pair of setae, whereas the fourth pair in the female lies in the membranous area. Plates somewhat more distinctly paneled than in female.

Ventral plates (fig. 20) also not so widely spaced as in female. Genital opening surrounded by 49 long, delicate setae (only one specimen satisfactory for counting). Genital sclerites very feebly sclerotized, anterior two pairs of setae long and flexible, three posterior pairs short, spine-like (fig. 24). Penis extending beyond anterior end of GA. Ventral plates appearing smooth, but densely and minutely punctate under high magnification. Striae of membranous area weakly developed; hirsute.

Palpi (fig. 23) reaching to middle or end of I-4. P-1 very short. Seta of P-3 not large, but spiniform and not flexible.

CHAETOTAXY OF LEGS

	I				II				III				IV			
	d.	v.	l.	m.	d.	v.	l.	m.	d.	v.	l.	m.	d.	v.	l.	m.
1	—	—	—	1	—	—	—	1	1	1	—	—	—	—	—	—
2	1	1	—	—	1	1	1	—	2	1	—	—	2	1	—	—
3	4	1	—	—	3	1	1	—	3	1	—	—	3	1	—	—
4	2	1	—	1	3	1	1	—	1	1	1	—	2	1	—	—
5	5	5	2	1	3	3	3	1	3	4	2	—	3	4	2	—
6	3	14[a]	—	1	3	3	—	—	3	1	—	—	3	1	—	—

[a] Variable. See text.

I-3 with four setae dorsally. I-5 possibly somewhat variable, but generally with 13 setae, two and one-half pairs of flexible setae ventrally, none spiniform. I-6 with 14 to 17 bacilliform setae ventrally in addition to the paired divaricate parambulacral setae (fig. 28). Bacillum lateral.

Medial seta of II-5 faintly pectinate, ensiform. II-6 with only three setae ventrally, in addition to the pair of divaricate parambulacral setae; bacillum medial. III-2 and IV-2 unusual in possessing two dorsal setae, one of these very small. Parambulacral setae of III-6 and IV-6 simple, not divaricate; also those of IV-6. Sculpturing of femora I-IV extremely feeble or

absent. Legs moderately hirsute. All tarsi with a small claw fossa and lamellae, lateral claws pectinate and with an apparent accessory tooth, median claws of normal form, bidentate.

REMARKS: Outstanding characteristics of this species are the differences in relative extent of PD in male and female, the soft cuticle, and the posterior displacement of the third and fourth pairs of rostral setae. Many differences between this and the preceding species as well as other species of *Thalassarachna* are apparent in the chaetotaxy of the legs, and indications are that highly useful key characters are available there for differentiating species of this genus. Unfortunately most species are not completely enough described to make extensive use of these characters. The absence of spiniform setae from I-5 and II-5, the large difference in numbers of ventral setae on I-6 as compared with II-6, and the presence of an additional small dorsal seta on III-2 and IV-2 are all significant characters.

DISTRIBUTION: Kagamil Pass, Islands of the Four Mountains, Aleutian Islands, Alaska (latitude 52° 56′ N., longitude 169° 44′ W.), female holotype at 245 feet depth. Boulder and gravel bottom covered with corals, sponges, and Hydrozoa. I. M. Newell.

Oglala Pass, Rat Islands, Aleutian Islands, Alaska (latitude 51° 42′ N., longitude 178° 26′ E.), at 180 feet depth. Bryozoa, Hydrozoa, sponges. I. M. Newell.

Thalassarachna agauiformis, new species

This species is very closely related to *Thalassarachna aleutica,* new species, and to a great extent will be described by comparing it with that species.

FEMALE: Body 570–590 μ long, 363–369 μ wide, length/width = 1.52–1.62 (two specimens). AD (fig. 30) with a posterior elevated crescentic area bearing the two very large, smooth setae, which are distinctly posterior to the middle of the plate. Paneling variably developed, prominent panels found only on a slightly raised anteromedian triangular area. Corneae of OC crenulate, or not visible; pores two in number, posterolateral in position. Second, third, and fourth dorsal setae in the membranous area as in *T. aleutica.* Membranous area moderately extensive, with a few faint, parallel striae, coarsely hirsute in the area between AD and PD, and also around the periphery of PD. The hairs are not of uniform diameter throughout their

length as is typical in the Halacaridae, but are broad at the base, tapering rapidly to a sharp point (fig. 34). Their erratic distribution suggests that they are variable in number and probably subject to loss with age.

Ventral plates (fig. 31) not sharply demarcated from the membranous area, paneling feebly developed, cuticle densely punctate. PE with three setae dorsally anterior to III. Membranous area extensive, striae parallel, feebly developed, granulate in appearance, stiff hairs abundant posterolaterally and between I and II. GA with three pairs of setae ventrally (one duplicated in specimen drawn) and a pair of very long setae dorsal to anus, widely separated, directed posteriorly at first, then curving dorsally and anteriorly (fig. 35, male).

Capitulum as shown in figure 33. P-III (fig. 29) with a very short seta dorsolateral in position. P-4 with only three long setae. Palpi extending about to end of I-4, rostrum reaching to end of P-2. Chelicerae (fig. 36) with a long shaft. Legs showing no essential differences in chaetotaxy from those of *T. aleutica* (see table). III-2 and IV-2 with two dorsal setae as in the preceding species.

MALE: The single male from Kagamil Pass measured 505 by 301 μ, length/width = 1.68. The dorsal plates were closer together than in the female, and were more distinctly paneled. Dorsal setae 1, 2, 3, and 4 hirsute. Ventral membranous area also more restricted than in female, hirsute. Genital opening in a pyriform area (fig. 20) bearing 24 to 27 slender setae on each side. Genital sclerites with five pairs of setae, the anterior two pairs long and flexible, the posterior three pairs spiniform and inflexible as in *T. aleutica* (fig. 24). Ventral plates not paneled, densely and minutely punctate. Penis extending beyond anterior margin of GA.

NYMPHS: Deutonymph with two dorsal setae on PE, protonymph with only one. Genital and anal plates separate. Genital plate of deutonymph as in *T. aleutica* (fig. 19), about as broad as long, bearing two pairs of setae. Dorsal setae very long as in the adult.

REMARKS: In two respects this is one of the most unusual of all species of the genus, namely, the extreme length of the dorsal setae and especially the presence of three setae dorsally on PE. The latter character is found in certain species of *Agaue*, including *A. longiseta*, new species, also taken at Kagamil Pass.

A. longiseta is likewise a unique member of its genus in the extreme length of the dorsal setae. The combination of these characters, otherwise unknown in the respective genera, in two species from the same region raises the question whether it is possible that these characters may have arisen in *T. agauiformis* by hybridization of *T. aleutica* with *A. longiseta*, or by a chance crossing between the predecessors of these. While this might appear to be a remote possibility, it is equally difficult to explain such a circumstance solely on the basis of coincidence. The relationship to *T. aleutica* is beyond question, for these species are nearly identical except in the two respects named above, and also the peculiar hairs and somewhat larger size of *T. agauiformis*.

DISTRIBUTION: Kagamil Pass, Islands of the Four Mountains, Aleutian Islands, Alaska (latitude 52° 56′ N., longitude 169° 44′ W.), at 245 feet depth. Boulder and gravel bottom covered with corals, sponges, and Hydrozoa. I. M. Newell.

Oglala Pass, Rat Islands, Aleutian Islands, Alaska (latitude 51° 42′ N., longitude 178° 26′ E.), at 180 feet depth, holotype male. Bryozoa, Hydrozoa, sponges. I. M. Newell.

Agaue longiseta, new species

The following description is based entirely on specimens from Kagamil Pass, Islands of the Four Mountains, Aleutian Islands, Alaska, the type locality.

MALE: Body 752–875 μ long, 415 by 531 μ wide, length/width = 1.64–1.81; average of four specimens 823 by 483 μ, length/width = 1.71. AD (fig. 39) with an anteromedian elevated area and two longitudinal ridges, at the ends of which are the small first pair of setae. Plate appearing faintly paneled, and uniformly covered with minute pores; in addition, the portions lateral to the carinae bear numerous coarser pores. Second, third, and fourth pair of setae exceptionally large and lying in the membranous area; fifth pair about the middle of PD, and medial to the costae. The latter are slightly swollen near the posterior end, the swelling bearing a pore. OC with two prominent corneae and a pore on a raised area, and rather uniformly marked with fine pores, but coarse pores restricted to four broad bands, one on either side of each costa. Each costa with a feebly and variably developed lamella which projects dorsomedially from the crest of the costa. Dorals membranous area

moderate in extent, with prominent parallel striae becoming rugose at the posterior, lateral, and medial angles of OC, not hirsute.

AE, PE, and GA densely and minutely punctate, not paneled. PE (figs. 38, 39) with three setae ventrally and three dorsolaterally (four on one side of the individual drawn). Genital opening (fig. 46) surrounded by 95 to 105 setae on a raised circular field. Genital sclerites (fig. 45) with five pairs of setae, the fourth pair uniformly tapering, the remaining pairs spindle shaped (four specimens). Adanal setae on the dorsal surface of the anal papilla, widely spaced, directed posteriorly.

Palpi reaching beyond the rostrum and nearly to the end of I-4 when naturally extended (fig. 39), with a dorsal seta on P-2 and P-3, and four setae on P-4 in addition to the three very closely applied to the tip of P-4. Despite its size and the clarity with which it is seen in lateral view (dissected material), the seta of P-3 is sometimes invisible in dorsal view, especially when there is any interference by leg I. Chelicerae as in female (figs. 36, 40).

CHAETOTAXY OF LEGS

	I				II				III				IV			
	d.	v.	l.	m.	d.	v.	l.	m.	d.	v.	l.	ml	d.	v.	l.	m.
1	—	—	—	1	—	—	—	1	1	—	1	—	—	—	—	—
2	1	1	—	—	1	1	—	—	1	1	—	—	1	1	—	—
3	4	1	—	—	4	1	1	—	2	1	—	—	2	1	—	—
4	1	1	1	1	1	1	1	1	1	1	1	1[a]	2	1	—	[b]
5	5	3	2	2	3	2	2	2	2	4	2	—	3	3	2	1
6	3	1	—	—	3	—	—	—	3	—	—	—	3	—	—	—

[a] Variable, sometimes only three on III-4.
[b] Variable?

I-5 to IV-5 (figs. 41, 42) larger distally, but with no special enlargement such as is found in *Agaue nationalis* (Lohmann), 1893, and other species. All femora distinctly paneled, and cuticle of all segments densely canaliculate. A dorsal lamella was found on all femora as well as on III-1 and IV-1, but this was so weakly developed that it may be absent occasionally. Chaetotaxy of segments 1, 2, and 6 as shown in table, but that of other segments showing indications of variability in some cases, especially segment 5. Bacillum on lateral membrane of I-6, that on II-6 medial. I-6 with 13 to 15 pairs of distiventral

bacilliform setae in addition to the divaricate parambulacral setae; II-6 with only three pairs here. III-6 and IV-6 with only one pair of simple parambulacral setae distiventrally. Claw fossa and lamellae prominent on all tarsi. Lateral claws only faintly pectinate, the pecten not continuous, but broken into two sections, one lying in the concavity of the claw, the other comprising the apparent accessory tooth. Median claw distinctly unidentate and relatively small.

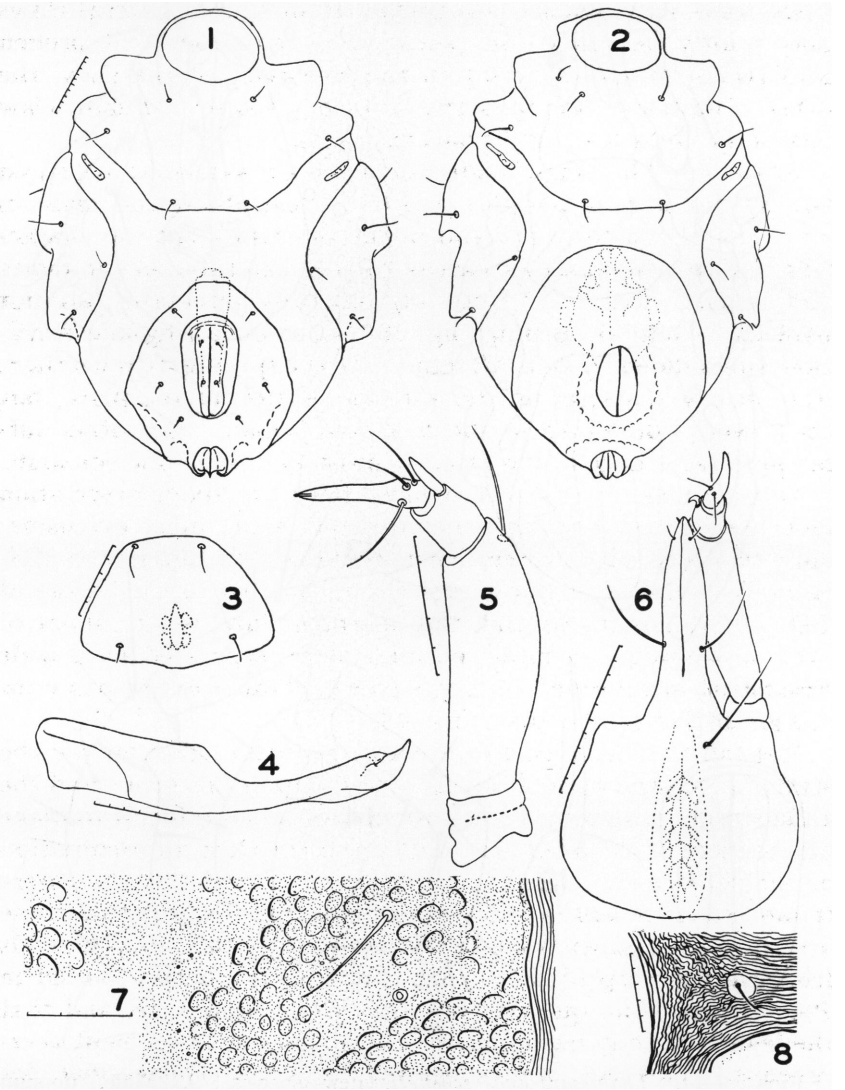
FEMALE: The single undissected female available measured 901 by 551 μ, length/width = 1.64. Resembling the male in all essentials noted above and in the figures except the characters of GA. Membranous areas equally extensive in the males and females seen. GA (fig. 43) minutely punctate, but not paneled. Genital opening (fig. 46) borne on a ring-like elevation, surrounded by 20 to 23 setae. In the specimen drawn there were also seven setae in the anterior portion of the plate, but these were not found in the dissected female. No other differences were noted, however, so possibly this is not constant.

DEUTONYMPH: Easily recognized from the above description and the figures, but with membranous areas more extensive; only two instead of three dorsal setae on PE anterior to III. Setae 2, 3, and 4 of dorsal series long, medial to the costae of PD. Of the setae of segments 1, 2, and 6, only the dorsal one of III-1 is missing. Genital and anal plates separated by a wide expanse of membrane. A single pair of setae near the posterior margin of the genital plate (fig. 48).

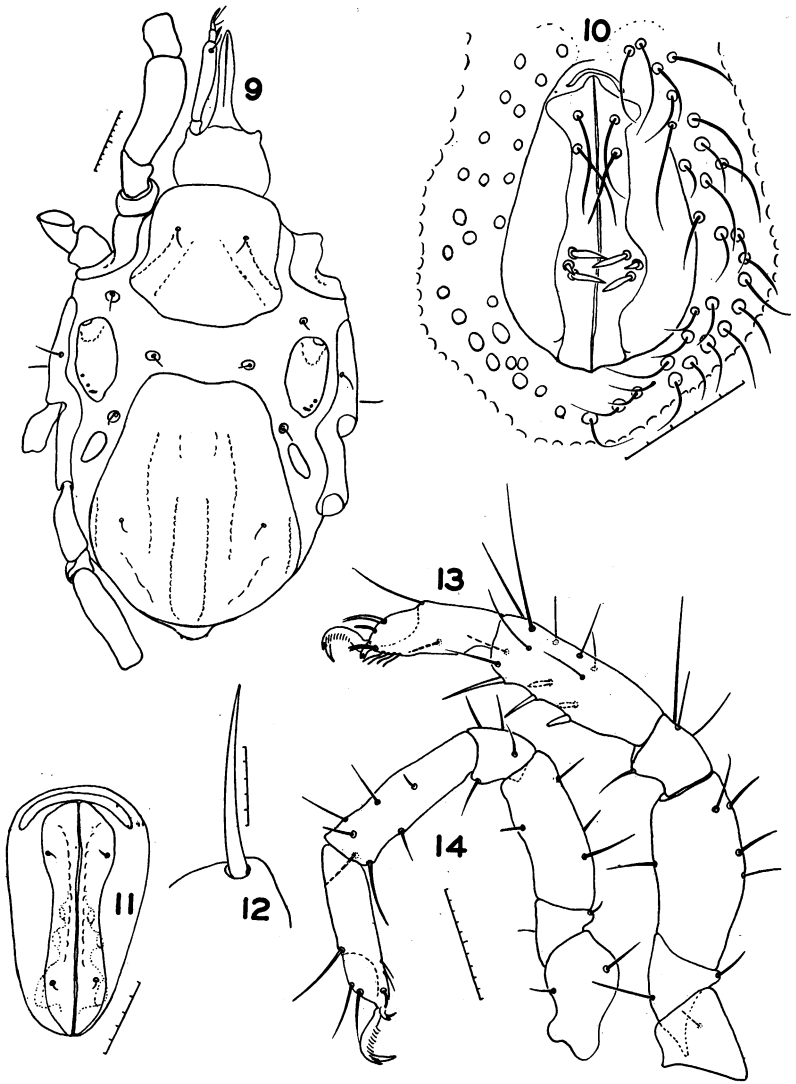
REMARKS: This species provides excellent material for the study of the structure of the tip of the palp in this genus and the Halacarinae in general. In most species this is difficult to make out because of the small size of P-4 and the close approximation of the setae here. In a dissected male, two of the setae were found broken at different levels (figs. 49, 50), showing that these are three in number, that the central one of the group extends from the very tip of the segment, and all are deeply buried in P-4. There is no question but that all are true setae and that the belief that any one of them is a vestigial fifth segment is erroneous. This has been suggested by Viets (Halacaridae der Nordsee). None shows optical activity.

DISTRIBUTION: Kagamil Pass, Islands of the Four Mountains, Alaska, latitude 52° 55′ 30″ N., longitude 169° 43′ 42″ W. Boulder and gravel bottom at 245 feet depth, male holotype.

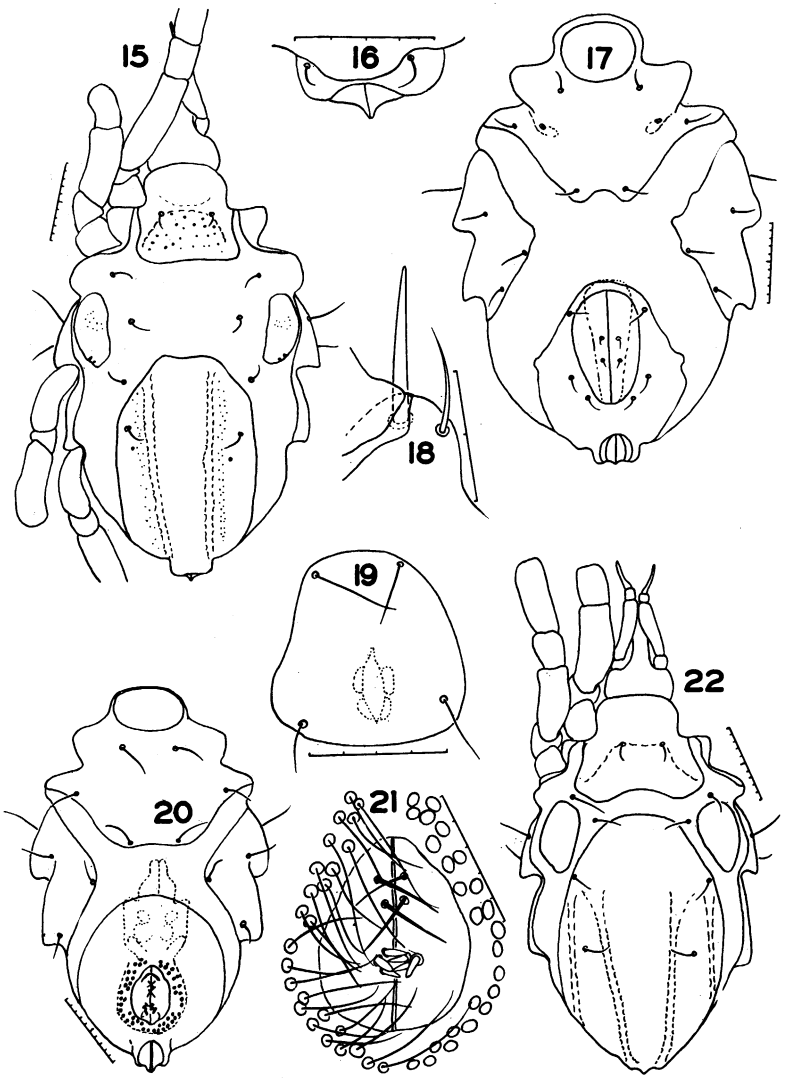
Oglala Pass, Rat Islands, Aleutian Islands, Alaska, latitude 51° 42′ N., longitude 178° 26′ E., at 180 feet depth. Bryozoa, Hydrozoa, sponges. I. M. Newell.



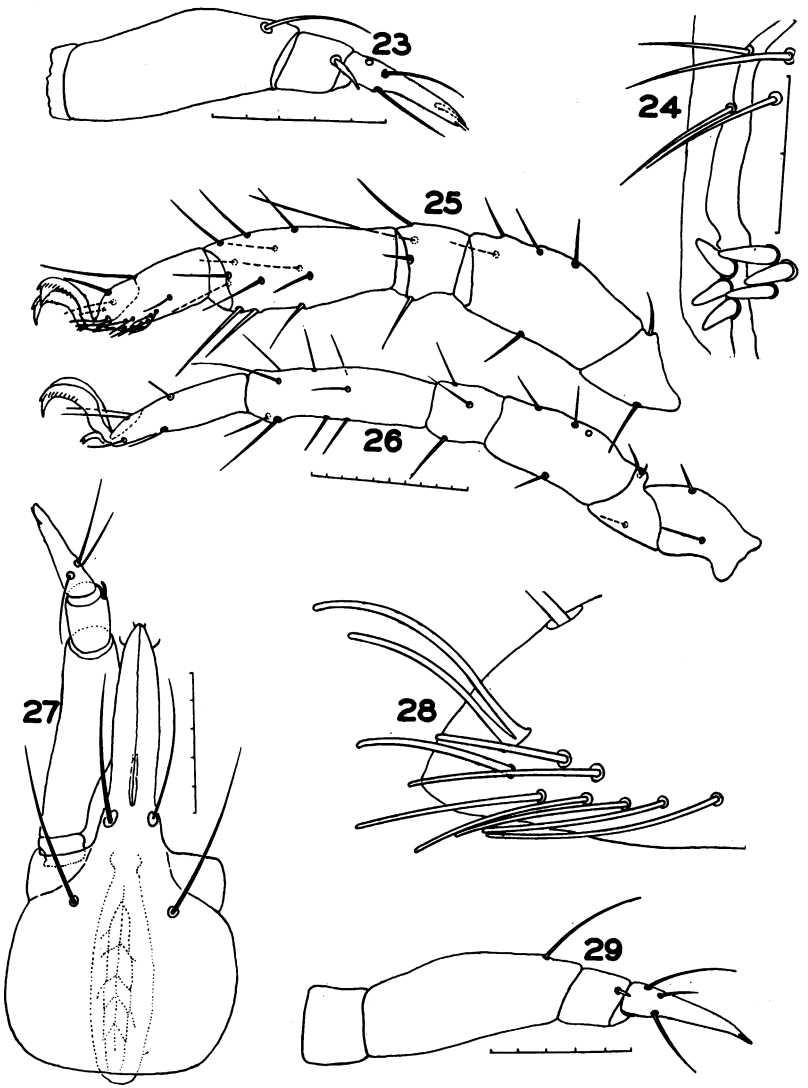
FIGS. 1–8. *Thalassarachna schefferi*, new species. 1. Female, venter. 2. Male, venter. 3. Deutonymph, genital plate. 4. Male, chelicera. 5. Male, palp, medial view. 6. Male, capitulum, ventral view. 7. Male, PD at level of fifth dorsal seta. 8. Male, membranous area around third dorsal seta.



FIGS. 9–14. *Thalassarachna schefferi*, new species. 9. Male, dorsum. 10. Male, genital area. 11. Female, genital opening. 12. Male, dorsal seta of IV-2. 13. Male, leg I, lateral view. 14. Male, leg III, lateral view.

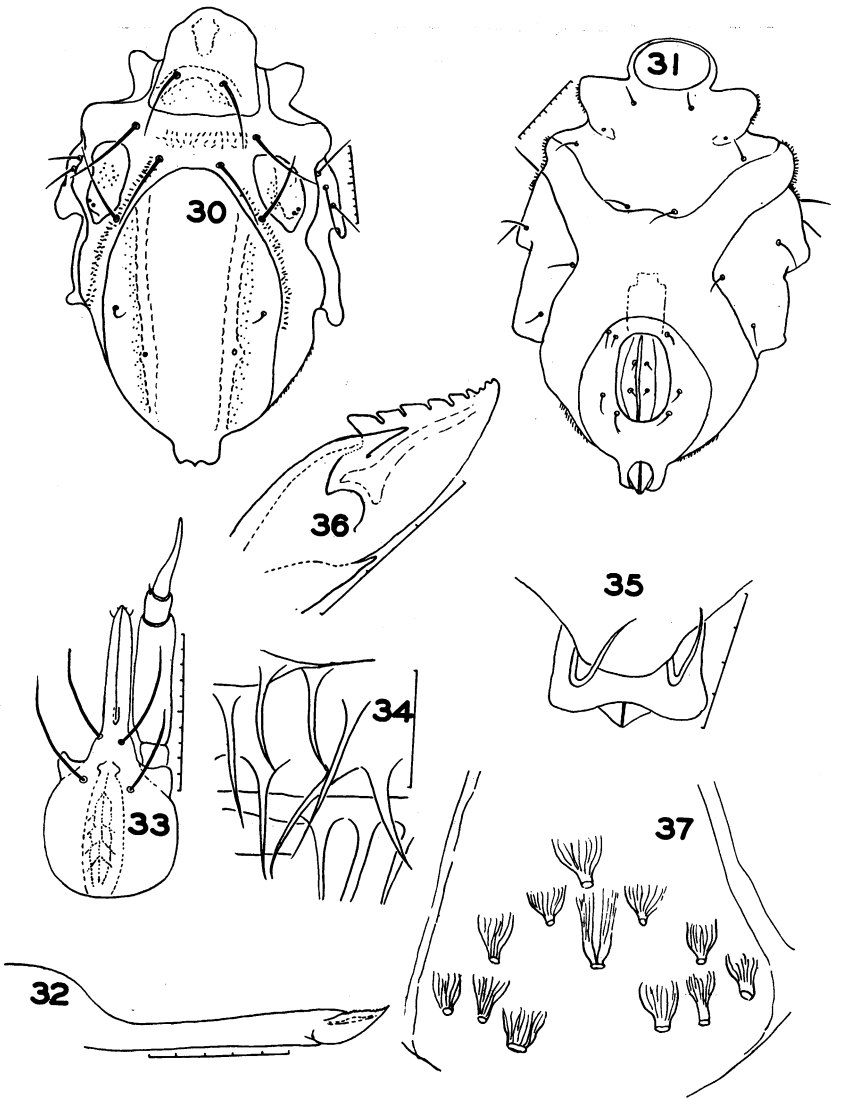


FIGS. 15–22. *Thalassarachna aleutica*, new species. 15. Female, dorsum. 16. Male, anal papilla, dorsal view. 17. Female, venter. 18. Male, dorsal setae of IV-2, lateral view. 19. Deutonymph, genital plate. 20. Male, venter. 21. Male, genital area. 22. Male, dorsum.



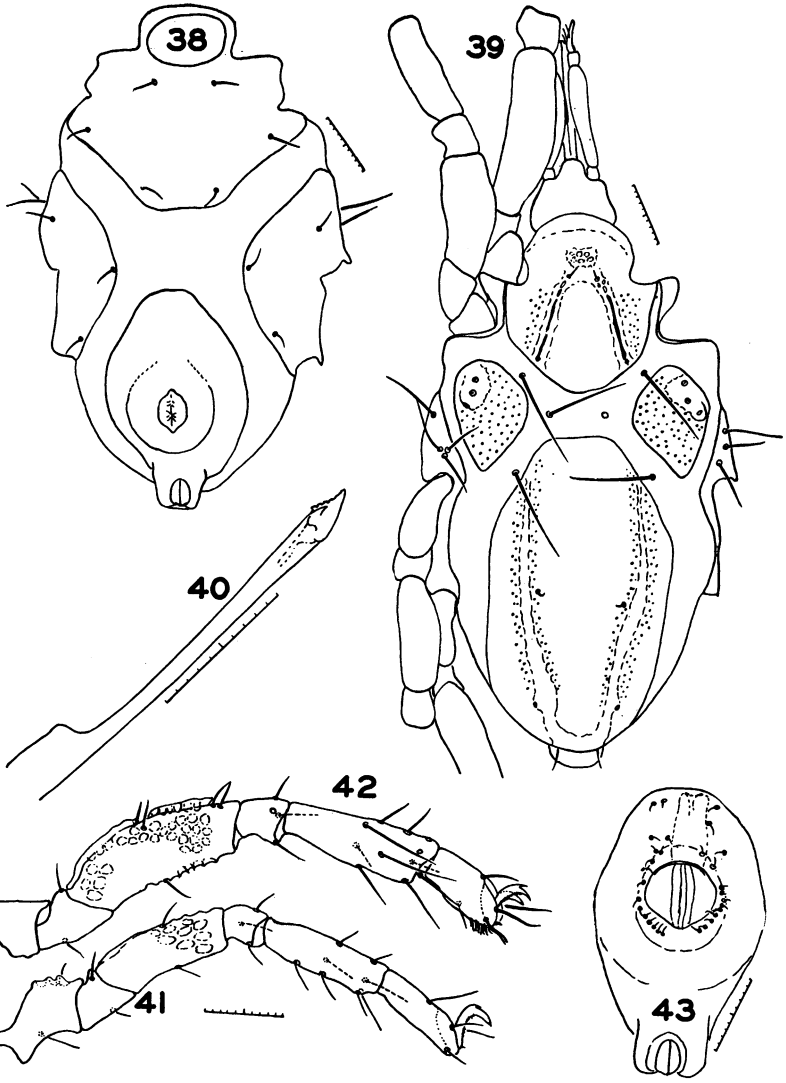
FIGS. 23–28. *Thalassarachna aleutica*, new species. 23. Male, palp, medial view, P-1 broken. 24. Male, genital setae, ventrolateral view. 25. Male, leg I, medial view. 26. Male, leg III, lateral view. 27. Female, capitulum. 28. Male, I-6, ventromedial view of tip of tarsus, showing only the setae of the medial side.

FIG. 29. *Thalassarachna agauiformis*, new species. Female, palp, medial view.

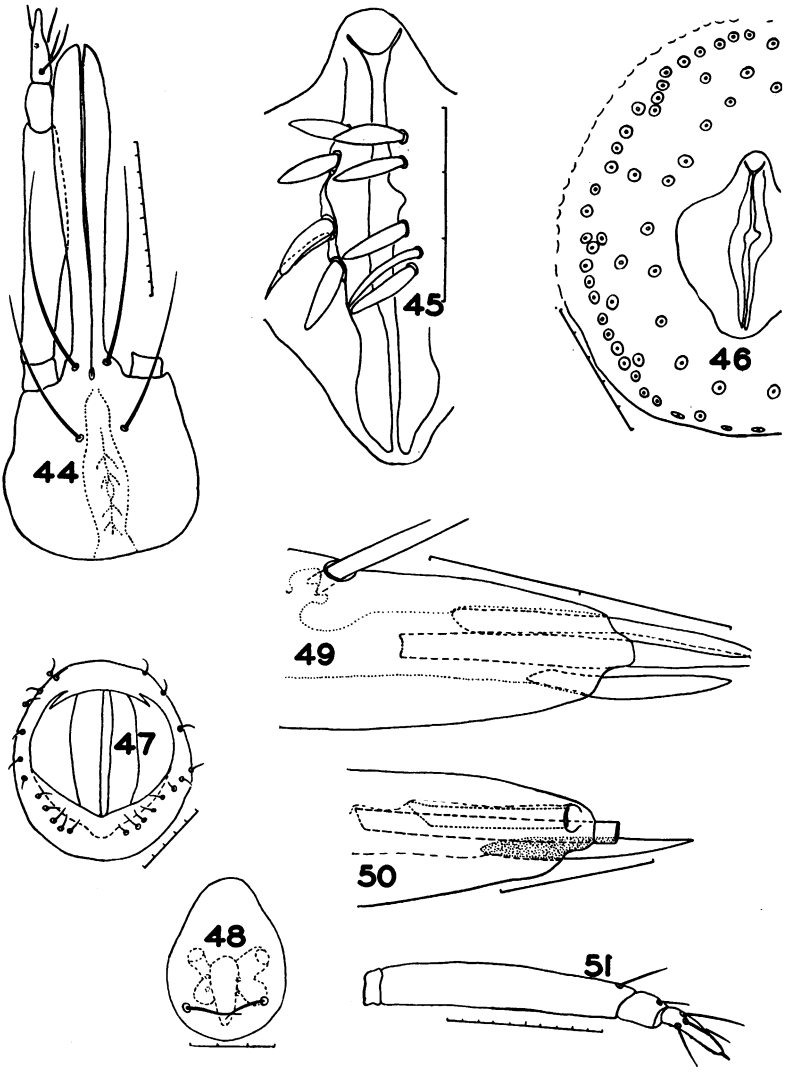


FIGS. 30–36. *Thalassarachna agauiformis*, new species. 30. Female, dorsum. 31. Female, venter. 32. Female, chelicera. 33. Female, capitulum, slightly rotated. 34. Female, hairs of dorsal membranous area. 35. Male, anal papilla, dorsal view. 36. Male, tarsus of chelicera.

FIG. 37. *Agaue longiseta*, new species. Male, AD, showing apodemes on internal surface.



FIGS. 38–43. *Agaue longiseta*, new species. 38. Male, venter. 39. Male, dorsum. 40. Female, chelicera. 41. Male, leg III, medial. 42. Male, leg I, lateral. 43. Female, GA.



FIGS. 44–51. *Agaue longiseta*, new species. 44. Male, capitulum. 45. Male, genital setae. 46. Male, genital area. 47. Female, genital area. 48. Deutonymph, genital plate. 49. Female, tip of P-4. 50. Male, tip of P-4. 51. Male, palp.