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NOTES ON THE HYADESIIDAE HALBERT,
1915 AND ALGOPHAGIDAE FAIN, 1974,
NOV. TAX. (ACARI, ASTIGMATA),
WITH A REDESCRIPTION
OF *HYADESIA CURASSAVIENSIS* VIETS,
1936 AND *H. SELLAI* VIETS, 1937

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NOTES ON THE HYADESIIDAE HALBERT, 1915
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WITH A REDESCRIPTION OF *HYADESIA CURASSAVIENSIS* VIETS, 1936
AND *H. SELLAI* VIETS, 1937

BY A. FAIN *

HISTORICAL ACCOUNT
FAMILIE,
SUBFAMILIES REDEFINED
KEYS
SPECIES REDESCRIBED
BIOGEOGRAPHY

ABSTRACT : *Hyadesia curassaviensis* Viets, 1936 and *H. sellai* Viets, 1937 are redescrined and refigured from the typical material. The family Hyadesiidae Halbert, 1915 is redefined and the subfamily Algophaginae Fain, 1974 is elevated to the family rank. A key to the species is given.

HISTORIQUE
FAMILLE,
SOUS-FAMILLES REDÉFINIES
CLÉS
ESPÈCES REDÉCRITES
BIOGÉOGRAPHIE

RÉSUMÉ : *Hyadesia curassaviensis* Viets, 1936 et *H. sellai* Viets, 1937 sont redécrits et refigurés d'après les types. Une nouvelle définition est donnée de la famille Hyadesiidae et la sous-famille Algophaginae Fain, 1974 est élevée au rang de famille. Une clé des espèces connues dans ces familles est donnée.

INTRODUCTION

Mites of the families Hyadesiidae Halbert, 1915 and Algophagidae Fain, 1974, n. tax. are known from various parts of the world. These mites are distinguished from all the other Astigmata by their curious biology. The hyadesiids are marine mites; they live in the higher levels of the intertidal zone and are covered by sea water for a great part of the time. They feed mainly on algae. The algophagids live in brackish to fresh water or in fresh water where they probably also feed on algae; some species, however, (e. g. those from Kerguelen Is.) were found on moss, phanerogams or litter of either wet or dry soil.

Until now 20 species, belonging to 5 genera, have been described in these families. Most of the earlier species have been unadequately described and new descriptions have become necessary in order to establish their exact status.

The purpose of this paper is to make a review of the literature on these mites, to redescribe *Hyadesia curassaviensis* Viets, 1936 and *H. sellai* Viets, 1937, and to propose a key to families Hyadesiidae and Algophagidae.

REVIEW OF THE LITERATURE

The genus *Hyadesia*, and the type species *H. uncinifer*, were described by MEGNIN (1891) from

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several nymphs living in salt or (?) brackish water among *Conferva* algae, from Tierra del Fuego, in South America.

MICHAEL (1893) described *Lentungula* g. n. (*lentus*, flexible : *ungula*, a little claw) and *L. algivorans* sp. n. (type species) from green algae, *Cladophora fracta*, at Land's End, Cornwall coast of England. This new genus was placed in the Tyroglyphidae.

LOHMANN (1894) described *Lentungula fusca* sp. n. from the shore of Helgoland Island (North Sea : West of Denmark) and of Rügen and Kiel (Baltic Sea : East of Denmark). The mites were found in the intertidal zone among *Chlorophyceae*.

BERLESE (1897) created for the genus *Lentungula* the subfamily Lentungulinae (= Lentungulina) in the Tyroglyphidae.

LOHMANN (1907 and 1908) synonymized *Lentungula* with *Hyadesia* and described *H. kerguelensis* sp. n. from intertidal algae in Kerguelen Island.

HALBERT (1915) erected the family Hyadesidae for the genus *Hyadesia* (= Lentungulina Berlese, 1897, = Lentungulinae Michael, 1903).

OUDEMANS (1927) recorded the presence of *Hyadesia fusca* in Scheveningen, Holland.

ANDRÉ (1931) described *Hyadesia chelopus* sp. n., from a single male specimen in poor condition, of the Trouessart Collection. This specimen was found among algae fixed to a *Chiton*, from Indian Ocean.

VIETS (1936) described *Hyadesia curassaviensis* sp. n. from female specimens collected at Rifwal, near Willemstad, Curaçao (Antillas Is.). The mites were found in slightly hypersalted (by evaporation) sea water, at a temperature of 31°C. In 1937, VIETS described another new species *Hyadesia sellai*, from Rovigno, Istria, Italy and Split, Dalmatia, Yugoslavia, both on the Eastern coast of Adriatic Sea. The mites (female and males) were found on stones in the intertidal zone, among algae.

WOMERSLEY (1961) described *Hyadesia vietsi* sp. n. from Biak Island, Netherlands New Guinea. The mites (2 females) were found on *Cladophora socialis* and red algae in the intertidal zone.

BENARD (1961) described two new species, *Hyadesia tumida* and *H. furcillipes* from the intertidal zone of North-West of France (Regions of Brittany and Normandy). The mites were found on barnacles and other Cirripedes where they fed on algae, bacteria etc...

MANSON (1963) described *Hyadesia glynni* sp. n., from Pacific Grove, on the Californian coast, U.S.A. The mites (females and males) were fixed on the intertidal barnacle *Balanus glandula*.

HUGHES (1955) described *Algophagus antarcticus* g. n. and sp. n. from Heard Island, situated in the Subantarctic zone (see GRESSITT, 1970 and FAIN, 1974). The mites (females and males) were not collected from salt water as the *Hyadesia* species but from a freshwater pool.

HUGHES and GOODMAN (1969) described another new genus and species *Neohyadesia signyi*, from females and males, collected in small pools of fresh to brackish water at Signy Island, South Orkney Islands, in the Subantarctic Region. Blue-green and green filamentous algae were also found in these pools.

GANNING (1970) observed that in Scandinavia *Hyadesia fusca* is restricted to the green alga *Enteromorpha* ssp. ; this species is very tolerant to variations of salinity and serves as food for fishes living in the system.

FAIN (1974) redescribed *Hyadesia kerguelensis* Lohmann, 1907 and erected for this species a new subgenus *Hyadesiella*. He described two new species of *Hyadesia*, *M. halophila* and *H. subantarctica*, a new species of *Algophagus* (*A. semicollaris*), and two new subspecies, *Algophagus antarcticus laticollaris* and *Neohyadesia signyi punctulata*, all from Kerguelen Island. He also created a new subfamily, Algophaginae, for the genera *Algophagus* Hughes, 1955 and *Neohyadesia* Hughes and Goodman, 1969. The three hyadesiid mites were found on marine algae of the intertidal zone, while the algophagin species were collected either on fresh water algae or on moss or phanerogams of wet or dry soil.

FAIN and JOHNSTON (1975) described *Algophopsis pneumatica* g. n. and sp. n., from sub-

merged rocks of the Kings River, California, U.S.A.

FAIN (1975) described *Hyadesia travei* sp. n. from females and males collected in St Paul Island and New-Amsterdam Island and *H. paulensis* sp. n. from females found in St Paul. The mites were collected from marine algae.

FAIN and GANNING (1978) described *Hyadesia nearctica* sp. n. from the Atlantic coast of Canada and U.S.A. The mites (females and males) were collected in tide pools and on upper intertidal rocks in and among green algae mainly *Enteromorpha* spp. all year around.

FAIN and GANNING (1979) described a new genus

Amhyadesia (type species : *Hyadesia glynni* Manson) and a new species *A. californica*, from Leo Carillo, on the Southern Californian coast. The mites (females and males) were found on rocks among green algae, in tide pools just below high tide level.

FAIN (1979) redescribed *Hyadesia vietsi* Womersley, 1961 from the typical material, he described a new subspecies *Hyadesia fusca tenuipilis* from Finland and recorded a new locality for *H. fusca* (Ostende in Belgium). These specimens from Belgium were found on stones among green algae in the intertidal zone.

DIVISION OF THE HYADESIIDAE

FAIN (1974) divided the family Hyadesiidae in two subfamilies : Hyadesiinae and Algophaginae. The recent discovery of new genera and species in both groups leads us to reevaluate the characters on which these taxa were based and to give them the family rank, with the following definitions :

1. Family Hyadesiidae Halbert, 1915 (= *Lentungulina* Berlese, 1897).

Definition : Body of medium size (length : 360 to 570 μ in the female) generally shortly ovoidal. Cuticle mostly bare except the propodosoma which bears a punctate shield; in the genus *Amhyadesia* the hysteronotum bears in addition a large punctate shield. In all the species the hysteronotum presents a system of narrow grooves connected with a main canal originating from the orifices of the oil glands. Sejugal furrow present. Genital suckers absent. Male without adanal suckers but with a large apicoventral sucker on legs I, III, IV. Vulva in an inverted V, rarely in an inverted Y with a very short longitudinal branch. Epigynium absent. Claparede organ absent in the larva. Grandjean's organ simple, cylindro-conical. Legs relatively short. Tarsi I-II ending in a strong spine and in a narrow and rather long flexible pretarsus bearing a claw. Tarsi III-IV ending in a shorter and thicker pretarsus bearing a claw.

Tibiae I-II with 2 setae of which the ventral one is a spine; tibiae III-IV with a ventral seta either simple or spinous.

Chaetotaxy : setae *s cx* variable, either absent, short or long (until 100 μ long). Setae *ve* either vestigial and situated in the middle of lateral margin of propodonal shield, or absent. Are present setae *vi, sci, sce, d1 to d5* (the *d5* may be absent), *l1 to l5, h, sh, cx I, cx III*. Some of these setae (generally the *vi, sce, h, d4, l5* and *a3*) may have a hook-like recurved apex. Genital and anal setae from 1 to 3 pairs.

Type genus : *Hyadesia* Megnin, 1891.

Biology : These mites live in the intertidal zone, feeding mainly on marine algae. They are cosmopolitan.

2. Family Algophagidae Fain, 1974 nov. tax. (= Algophaginae Fain, 1974).

Definition : Body as in Hyadesiidae, but slightly larger (525 to 800 μ in length in the female). Presence between the legs I and II of a sclerotized finely punctate and surelevated band resembling an air-chamber. Dorsum without a sejugal furrow; propodotum bearing a shield; hysteronotum with or without a punctate shield and always devoid of a

system of oil grooves. Genital suckers present or absent. An epigynium is present in the female. Vulva in an inverted V or Y. Eyes present or not. Male without adanal or tarsal suckers. Legs long and relatively narrow. Tarsi I-IV without a strong apical spine but bearing an apical short and thick not flexible pretarsus ending in a claw. Idiosomal setae without an apical hook (except in *Neohyadesia* whose *l 5* have an hook-like apex).

Type genus : *Algophagus* Hugues, 1955.

Biology : These mites live in fresh to brackish water or on litter, moss and phanerogams either wet or dry. They are cosmopolitan.

These two families form together the superfamily Hyadesioidea nov. superfam.

KEY TO THE HYADESIOIDEA

- 1. Tarsi I-II with a strong apical spine and bearing a long and narrow flexible pretarsus ending in a claw. Absence of a sclerotized band between legs I and II (? air-chambers). Sejugal furrow present. Hysteronotum with a system of oil-grooves originating on the orifices of the oil-glands. Male with an apicoventral sucker on tarsi I-III-IV. Female without epigynium.
Hyadesiidae Halbert, 1915
- Tarsi I-II without a large apical spine and with a short, thick and not flexible pretarsus ending in a claw. Presence of " air-chambers " between legs I and II. Dorsum lacking a sejugal furrow and a system of oil-glands. Male without tarsal suckers. Female with an epigynium.
Algophagidae Fain, 1974

KEY TO THE HYADESIIDAE

- (N.B. 1. Length of claws = measured in straight line and including the base inserted in the pretarsus.
- 2. Length of tarsus = not including the pretarsus and the apical spines.

- 3. We have not seen the types of *H. algivorans* (Michael) and of *H. uncinifer* Megnin and these species are not mentioned in this key.
- 4. We have seen the type of *H. chelopus* (Trouessart). This specimen is crushed and incomplete and is not identifiable.
- 5. The males of *H. kerguelenensis* (Lohmann), *H. paulensis* Fain, *H. subantarctic* Fain, *H. vietsi* Womersley and *H. curassaviensis* Viets are unknown).

■ Females.

- 1. Hysteronotum and the posterolateral parts of opisthogaster covered by a sclerotized punctate and pitted shield.
Genus *Amhyadesia* Fain & Ganning, 1979 (2)
Hysteronotum and opisthogaster soft, without sclerotized shields.
Genus *Hyadesia* Megnin, 1891 (syn. : *Lentungula*, Michael, 1893) (3)
- 2. Hysteronotal shield covering nearly completely the hysteronotum and bearing large pits. Setae *d 1* to *d 4* forming thick and shorth spines (20 to 32 μ long).
A. californica Fain & Ganning, 1979
Hysteronotal shield absent in front of setae *d 1* and *d 2*, and bearing small pits. Setae *d 1*, *d 2*, *d 3* and *d 4* thick and 50 μ , 87 μ , 108 μ and 63 μ long respectively.
A. glynni (Manson, 1963)
- 3. Claws III-IV with a ventral tooth at their base. With 3 pairs of genital and 3 pairs of anal setae. Seta *s cx* short (30 μ). Propodonotal shield slightly wider than long. Ventral seta of tibiae III-IV thin and flexible.
Subgenus *Hyadesiella* Fain, 1974 (One : species : *H. kerguelenensis* (Lohmann, 1907))
Claws III-IV not toothed. Other characters variable. Subgenus *Hyadesia* Megnin, 1891 (4)
- 4. Propodonotal shield distinctly longer than wide. 5
Propodonotal shield distinctly wider than long. 7

5. With 3 pairs of genital and 1 pair of anal setae. Idiosoma 360 μ long, 190 μ wide. Propodotal shield 85 μ long, 50 μ wide. Tarsi III-IV slightly longer (25-26 μ) than tarsi I-II (21 μ). Claws I-IV very short (7-7-18 and 20 μ respectively). Seta *s cx* 18 μ . Setae *sc i*, *d 1* to *d 5* and *l 1* to *l 4* 10 to 55 μ long. Ventral setae of tibiae III-IV are short and very thin spines.
H. paulensis Fain, 1975
 With 2 pairs of genital and 1 or 2 pairs of anal setae. Idiosoma 405-570 μ long. Tarsi III-IV distinctly longer than tarsi I-II. Claws I-IV longer (claws I-II at least 12 μ , claws III-IV 33 to 60 μ long). Other characters variable. 6
6. Large species (idiosoma 570 \times 420 μ). Tarsi III-IV twice or more than twice as long (63-70 μ) as tarsi I-II (30 μ). Claws III-IV 4 to 5 times longer (60 μ) than claws I-II (12-15 μ). With one pair of anal setae (225 μ). Setae *d 4* 45 μ , spinous. Ventral setae of tibiae III-IV thin and flexible. *H. travei* Fain, 1975
 Smaller species (idiosoma 405 to 460 μ long). Tarsi III-IV slightly longer (39-42 μ) than tarsi I-II (30 μ). Claws III-IV about 2 1/2 times longer (33 μ) than claws I-II (13 μ). With 2 pairs of anal setae. Setae *d 4* 170 μ , with a hook-like apex. Ventral setae of tibiae III-IV forming short spines.
H. subantarctica Fain, 1974
7. Setae *sc i* thin, 9-18 μ long. Idiosoma about 360 μ long. Claws III-IV 10-18 μ long. With 2 pairs of genital and 1 pair of short anal setae (9 μ). Ventral seta of tibiae III-IV finely spinous. Seta *d 5* absent or vestigial. 8
 Setae *sc i* 50-100 μ long. Idiosoma at least 500 μ long. Claws III-IV 24 to 39 μ long. With 1 to 3 pairs of genital setae and 2 or 3 pairs of anal setae. Setae *d 5* 30 to 60 μ long. Setae of tibiae III-IV variable. 9
8. Tarsi III-IV longer (35 and 33 μ) than tarsi I-II (27 and 25 μ). Claws III-IV twice as long (18 μ) as claws I-II (9 μ). Setae *s cx* 70-80 μ long *H. curassaviensis* Viets, 1936
 Tarsi III-IV shorter (12 μ) than tarsi I-II (16 μ). Claws III-IV slightly longer (10 μ) than claws I-II (7 μ). Setae *s cx* 12-25 μ long.
H. tumida Benard, 1961
9. Claws I-II 21 to 26 μ long ; claws III-IV 38-39 μ long. Ventral seta of tibiae III-IV thin and flexible. 10
 Claws I-II 9 to 12 μ long ; claws III-IV 24 to 27 μ long. Ventral seta of tibiae III-IV thick and stiff. 11
10. With 3 pairs of genital setae. Seta *s cx* 15 μ long. Seta *d 2*, *d 3* and *d 4* 150 μ long ; setae *d 5* 35 μ ; *l 3* 60 μ *H. halophila* Fain, 1974
 With 2 pairs of genital setae. Seta *s cx* 75 μ long. Setae *d 2* and *d 3* 70-75 μ long ; *d 4* 135 μ ; *d 5* 60 μ ; *l 3* 36 μ
H. fusca (Lohmann, 1894) (= *H. furcillipes* Benard, 1961)
11. With one pair of genital and 2 pairs of anal setae. Setae *sc i* 100 μ ; *d 2* and *d 3* 135 μ ; *l 2* 76 μ ; *l 5* 190 μ . Ventral spine of tibia II 30 μ long and 9 μ thick at its base.
H. sellai Viets, 1937
 With 2 pairs of genital and 3 pairs of anal setae. Setae *sc i* 72-80 μ ; *d 2* and *d 3* 72-108 μ ; *l 2* 30-45 μ ; *l 5* 135 μ 12
12. Seta *s cx* 90-100 μ long and barbed. Setae *sc e*, *sc i*, *d 2* and *d 3* cylindroconical and stiff. Seta *a 3* 30 μ ; *d 1* 13 μ ; *d 2* and *d 3* 90-110 μ ; *d 4* 205 μ ; *l 4* 48 μ . Long dorsal seta of tarsi I-IV distinctly shorter than the tarsus and tibia together and without apical hook. Solenidion *phi* of tibiae I-III as long as tarsus, tibia and genu together. Solenidion *phi* of leg IV is much longer than this tibia.
H. vietsi Womersley, 1961
 Seta *s cx* absent. Setae *sc e*, *sc i*, *d 2* and *d 3* piliform, flexible. Seta *a 3* 135 μ ; *d 1* 42 μ ; *d 2* and *d 3* 72 μ ; *d 4* 135 μ ; *l 4* 72 μ . Long dorsal seta of tarsi I-IV distinctly longer than tarsus and tibia together and with an apical hook. Solenidion *phi* of tibiae I-III much shorter ; the *phi* of tibia IV is much shorter than this tibia. *H. nearctica* Fain & Ganning, 1978

■ Males.

1. Hysteronotum and a part of opisthogaster covered by a sclerotized punctate and pitted shield.
Genus *Amhyadesia* Fain & Ganning, 1979 (2)
Hysteronotum and opisthogaster soft without sclerotized shields.
Genus *Hyadesia* Megnin, 1891 (3)
2. Hysteronotal shield covering nearly completely the hysteronotum and bearing large pits. Setae *d 1* to *d 4* forming thick and short spines (29 to 36 μ long). Tarsi I-IV 32 to 33 μ long. Claws I-II 18 μ ; claws III-IV 39 μ long.
A. californica Fain & Ganning, 1979
Hysteronotal shield covering only a part of hysteronotum and with small pits. Setae *d 1* to *d 4* thick and 30 μ -60 μ -69 μ and 51 μ long respectively. Tarsi I-II 21 μ , tarsi III-IV 18 μ long. Claws I-II 9 μ ; claws III-IV 18 μ long.
A. glynni (Manson, 1963)
3. Tarsi I-IV very short, the tarsi III-IV shorter (9 μ) than tarsi I-II (12-15 μ). Claws III-IV 9 μ long. *H. tumida* Benard, 1961
Minimum length of tarsi I 18 μ ; of tarsi II 29 μ ; of tarsi III-IV 27 μ . Claws III-IV 27 to 60 μ long. 4
4. Setae *sc i*, *d 1-d 5* and *l 1-l 4* are spines 21 to 30 μ long. Claws III-IV 60 μ long, claws I-II 15 μ long. Ventral setae of tibiae III-IV thin and flexible, 30 to 45 μ long.
H. travei Fain, 1975
Sc i, *d 1-d 5* and *l 1-l 4* either short and thin or some are long and thick but always flexible. Setae *d 4* 125-200 μ long. Claws III-IV 27-36 μ long. Ventral setae of tibiae III-IV variable. 5
5. With 3 pairs of genital and 2 pairs of anal setae. Tarsi I-IV equal in length (30 μ). Claws III-IV only slightly longer (36 μ) than claws I-II (31 μ) (ratio 1,16 : 1). Setae *d 2*, *d 3*, *d 4* 150 μ long. Setae of tibiae III-IV thin, flexible, 30 μ long. Setae *s cx* 15 μ
H. halophila Fain, 1974

- With either 1 or 2 pairs of genital setae and 2 pairs of anal setae. Tarsi III-IV either distinctly longer or shorter than tarsi I-II. Claws III-IV much longer than claws I-II (ratio 1,6 : 1 to 3 : 1). Setae *d 2-d 4* unequal. Other characters variable. 6
6. Tarsi III-IV shorter (27 μ) than tarsi I-II (33-39 μ). Claws III-IV longer (36-39 μ) than claws I and II (22-24 μ) (ratio 1,6 : 1). With 2 pairs of genital setae. Ventral setae of tibiae III-IV thick basally and finely attenuated apically and flexible, 30-45 μ long. Setae *a 3* 120 μ ; *d 5* 40-50 μ ; *s cx* 75-90 μ
H. fusca (Lohmann, 1894)
Tarsi III-IV longer (48-53 μ) than tarsi I-II (18-32 μ). Claws III-IV from 2 to 3 times longer (27-30 μ) than claws I-II (9 to 15 μ). With 1 or 2 pairs of genital setae. Ventral setae of tibiae III-IV are short spines; *s cx* 12-30 μ 7
 7. With one pair of genital setae. Tarsi I-II 24 and 29 μ , tarsi III-IV 50 and 53 μ . Claws I-II 9 and 10 μ , claws III-IV 27 μ . Setae *a 2* 20 μ ; *a 3* 50 μ . Setae *s cx* thick barbed, 30 μ long. Setae *d 1*, *d 2*, *d 3* and *d 4* 20 μ , 130 μ , 135 μ and 200 μ long respectively. Ventral spine of tibia II 8-9 μ thick at base. Solenidia *phi* of tibiae III and IV 90 μ and 48 μ long respectively. *H. sellai* Viets, 1937
With 2 pairs of genital setae. Tarsi I and II 18 and 32 μ ; tarsi III-IV 48 and 52 μ . Claws I-II 13 and 15 μ ; claws III-IV 30 μ . Setae *a 2* 50 μ ; *a 3* 140 μ . Setae *s cx* barbed, 12 μ long. Setae *d 1*, *d 2*, *d 3* and *d 4* 42 μ , 66-72 μ , 66-72 μ and 135 μ long respectively. Ventral spine of tibia II 6 μ thick at base. Solenidia of tibiae III and IV 48 μ and 26 μ long. *H. nearctica* Fain & Ganning, 1978

KEY TO THE ALGOPHAGIDAE

(N.B. The male of *Algophagopsis pneumatica* is unknown).

■ Males and females.

1. Presence on the dorsum of the female of a large sclerotized and sculptured shield and of a pair of lens-like eyes. Genus *Algophagopsis* Fain & Johnston, 1975 (One : species : *A. pneumatica* Fain & Johnston, 1975)
In both sexes the dorsum is devoid of a shield and of lens-like eyes. 2

2. Genital suckers and setae *cx II* present. In the male the epimerae II are fused with the sternum. . . . Genus *Algophagus* Hughes, 1955 (3)
Genital suckers and setae *cx II* absent. In the male the epimerae II are free. Genus *Neohyadesia* Hughes & Goodman, 1969 (One species : *N. signyi* Hughes & Goodman, 1969)
3. Chitinous bands (? air chambers) between the legs I-II extending to the ventral surface of body. Dorsum without sclerotized platelets. *A. antarcticus* Hugues, 1955
Chitinous bands between legs I-II short, only visible dorsally. Dorsum with 15 small punctate platelets. *A. semicollaris* Fain, 1974

REMARKS ABOUT SOME INSUFFICIENTLY KNOWN SPECIES

Through the courtesy of Dr. G. RACK we could examine the typical material of the two species described by VIETS (*Hyadesia curassaviensis* and *H. sellai*) and whose types are conserved in the Zoologische Museum, Universität Hamburg.

1. *Hyadesia curassaviensis* Viets, 1936

The typical slide contains 3 females among which one is in a good condition. As VIETS did not mention a holotype we designate here this specimen as the Lectotype.

Lectotype female (fig. 1-6) : Length of idiosoma 360 μ , maximum width 220 μ . *Dorsum* : Propodotal shield 21 μ long and 50 μ wide. A system of oil-grooves are present on the hysteronotum. *Venter* : There are 2 pairs of genital setae and only one pair of short (9 μ) anal setae. *Legs* : Tarsi I-IV 27 μ , 25 μ , 35 μ and 33 μ long respectively (apical spine and pretarsus with terminal claw not included). Claws I-II and 9 μ long ; claws III-IV 18 μ long. Gnathosoma 69 μ long, 54 μ wide (palps included).

Chaetotaxy : Setae *sc i* 18 μ (in a paratype) ; *d 1* 10 μ ; *d 2* 69 μ ; *d 3* 60 μ ; *d 4* 60 μ ; *d 5* vestigial (3 μ) ; *l 1* to *l 4* 9 to 15 μ ; *l 5* 125 μ . The setae *d 2* to *d 4* are thicker than the *l 1* to *l 4*. The *l 5* ends in a hook. The ventral setae of tibiae III-IV are short and stiff. Supracoxal seta 70-80 μ long finely barbed in its apical half. Grandjean's organ 45 μ long.

Locality

The mites were collected at Rifwal, near Willemstad, Curaçao, 1 August 1932, from a collection of sea water communicating intermittently with the sea. The typical slide is labelled as follows : " *Hyadesia curassaviensis* Viets, Type, Nied. Guayana, Curaçao, Rifwall, 1.VIII.1932, n° 4804. Coll. K. VIETS. Eing. nr. A2, 1960 ". This slide contains the lectotype female and 2 paralectotypes females.

The mites were mounted in gelatin-glycerine. We have remount them in Hoyer.

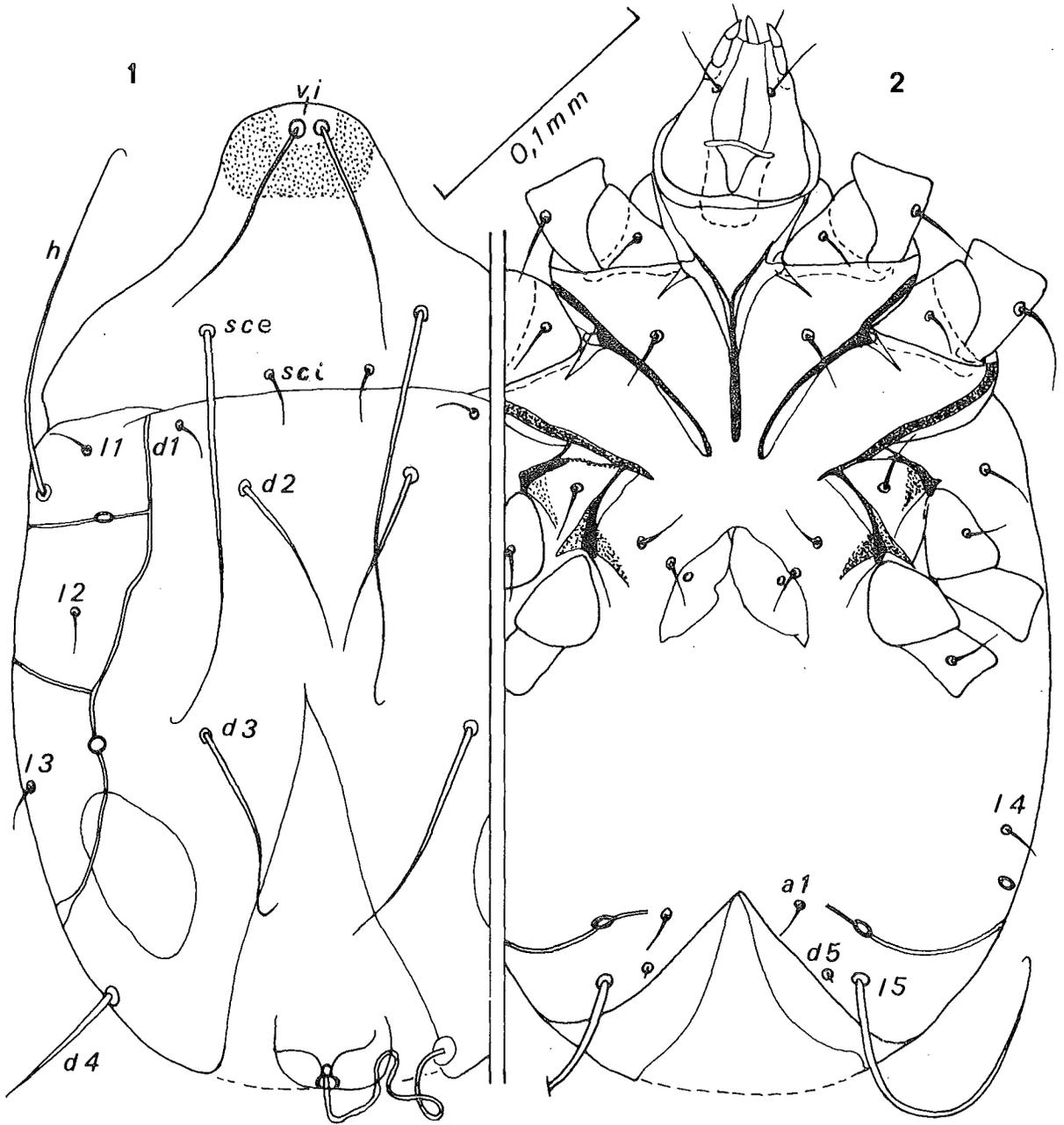


FIG. 1-2 : *Hyadesia curassaviensis* Viets. Female. — 1) Dorsally ; 2) Ventrally (after lectotype and paralectotypes).

2. *Hyadesia sellai* Viets, 1937

As VIETS did not describe a holotype we designate a Lectotype female in his material. The mites were mounted in gelatin-glycerin. We have remounted them in Hoyer.

Lectotype female (fig. 7-12) : Idiosoma 503 μ long, 320 μ wide. *Dorsum* : Propodonal shield 45 μ long and 100 μ wide. Hysteronotum with the usual system of oil-grooves. *Venter* : There are 1 pair of genital setae and 2 pairs of anal setae, the *a* 1 24 μ , the *a* 3 50 μ . *Legs* : Tarsi I-IV 37 μ , 30 μ , 52 μ , 56 μ long respectively (apical spines or pre-

tarsi not included). Claws I-II $9\ \mu$ long ; claws III-IV $27\ \mu$ long. Gnathosoma $110\ \mu$ long and $82\ \mu$ maximum width (palpi included).

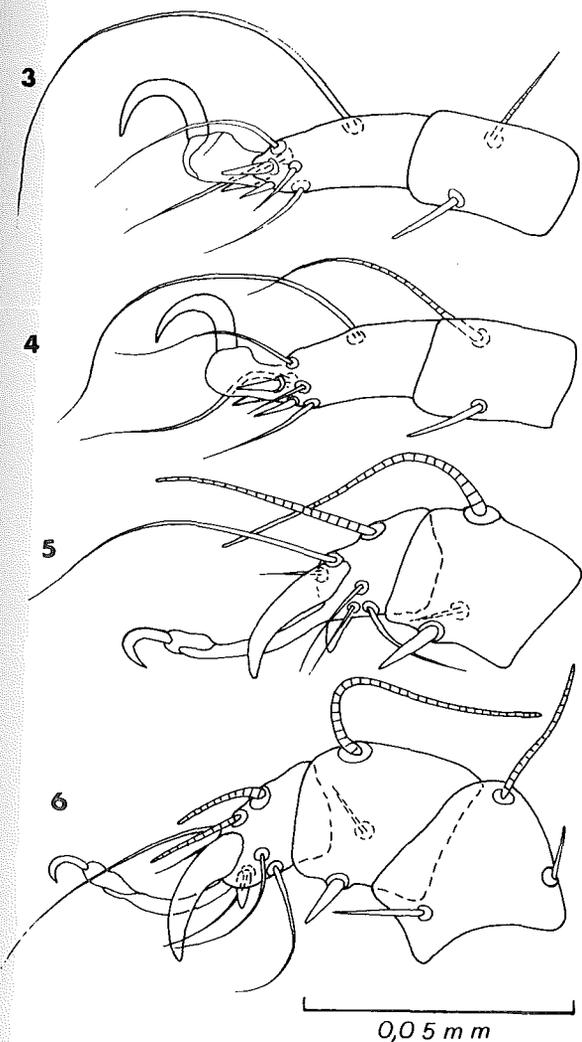


FIG. 3-6 : *Hyadesia curassaviensis* Viets. Female. — 6) Tarsus, tibia and genu of leg I dorsolaterally ; 5, 4, 3) Tarsus and tibia of legs II-III-IV in lateral view (after lectotype and paralectotypes).

Chaetotaxy : Seta *sc i* $100\ \mu$ (flexible) ; *d 1* $18\ \mu$; *d 2* and *d 3* $135\ \mu$; *d 4* $195\ \mu$; *d 5* $40\ \mu$; *l 1* to *l 4* thin 66 to $80\ \mu$; *l 5* $190\ \mu$. The setae *h*, *d 4* and *d 5* have hook-line apices. Ventral setae of tibiae I-II are very thick spines, especially that of tibia II which is $30\ \mu$ long and $9\ \mu$ thick near its base ; setae of tibiae III-IV are short spines $12\ \mu$ long, that of tibia III is slightly thicker than that of tibia IV ;

supracoxal seta (*s cx*) short ($25\ \mu$), thick and barbed. Grandjean's organ $18\ \mu$ long.

Male (fig. 13-18) : Idiosoma $426\ \mu$ long and $273\ \mu$ wide. *Dorsum* : Propodonal shield $40\ \mu$ long and $90\ \mu$ wide. Hysteronotum as in the female. *Venter* : There are 1 pair of genital setae and 2 pairs of anal setae ($20\ \mu$ and $50\ \mu$). *Legs* : Tarsi I-IV $24\ \mu$, $29\ \mu$, $50\ \mu$, $53\ \mu$ long. Claws I-IV $9\ \mu$, $10\ \mu$, $27\ \mu$, $27\ \mu$. Gnathosoma $102\ \mu$ long, $66\ \mu$ wide.

Chaetotaxy : Seta *sc i* $90\ \mu$; *d 1* $20\ \mu$; *d 2* and *d 3* $130\ \mu$; *d 4* $200\ \mu$; *d 5* $40\ \mu$; *l 1* to *l 4*, 39 to $55\ \mu$; *l 5* $195\ \mu$. Seta *s cx* thick, barbed $30\ \mu$ long. Ventral setae of tibiae I-II are thick spines (that of tibia II is $8\ \mu$ thick), those of tibiae III-IV are short ($12\ \mu$) and much thinner spines.

Host and locality

The mites were found in Rovigno, Istria, Italia and in Split, Dalmatia, Yougoslavia, both localities situated along the Eastern coast of the Adriatic Sea. The mites were collected from stones in the intertidal zone, among algae (Lectotype and 2 female paralectotypes, 2 male paralectotypes, 2 nymphs).

3. *Hyadesia algivorans* (Michael, 1893)

Lentungula algivorans Michael, 1893 : 262

We have not seen specimens of that species. The types are not in the British Museum and they are probably lost.

According to the original description it is a small species. The idiosoma of the female is about twice as long ($380\ \mu$) as wide ($200\ \mu$). There is a very large semicircular epigynum in front of the vulva. The dorsal setae are rather thick and stiff. The *sc i* and *d 1* setae are subequal. In the male the genital organ is very anterior and close to the epimerae II, the epimerae II are fused with the sternum and the tarsi III and IV are distinctly longer than the anterior tarsi. This combination of characters does not correspond to any other described species.

The types of that species were found : " in a patch of green alga (*Cladophora fracta*), growing where the fresh water of a small stream trickled

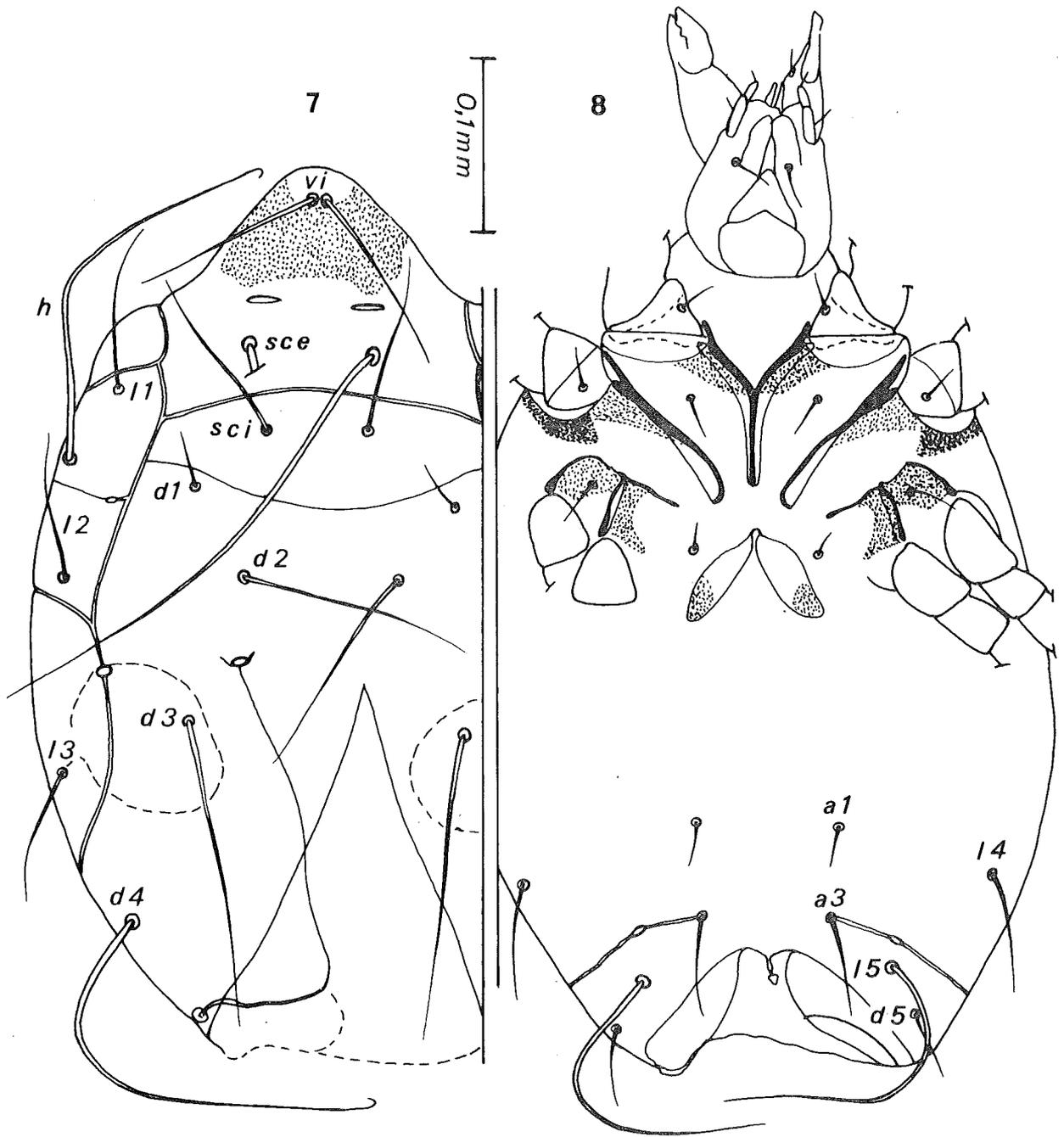


FIG. 7-8 : *Hyadesia sellai* Viets. Female. — 7) Dorsally ; 8) Ventrally (after lectotype and paralectotypes).

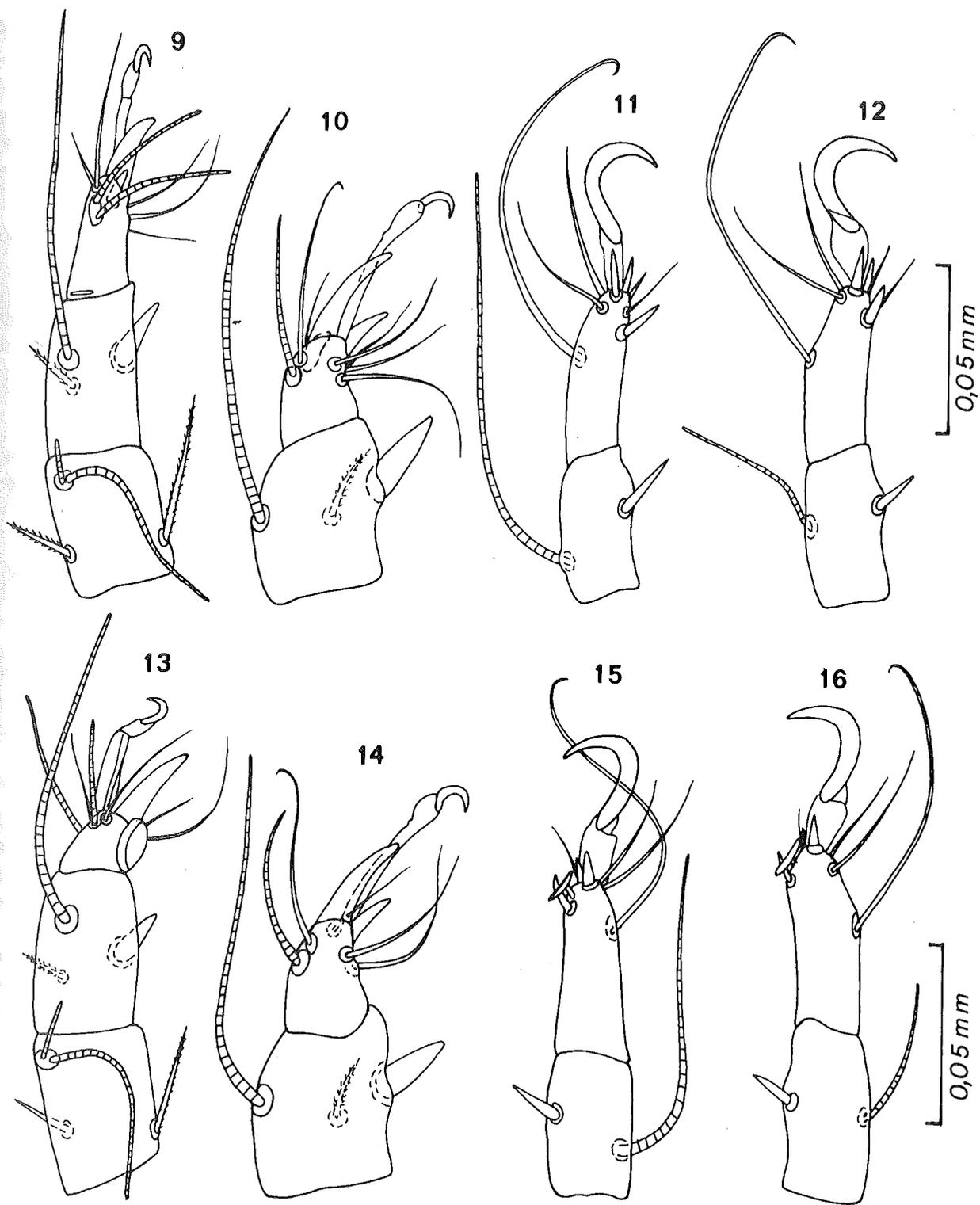


FIG. 9-16 : *Hyadesia sellai* Viets. — 9-12 Female : 9) Tarsus, tibia and genu of leg I ; 10-12) Tarsus and tibia of legs II-III-IV. — Fig. 13-16 Male : 13) Tarsus, tibia and genu of leg I ; 14-16) Tarsus and tibia of legs II-III-IV (after lectotype and paralectotypes).

over the face of the granite cliffs within reach of the spray of the sea, near the Land's End, Cornwall.

I have not found it elsewhere." (MICHAEL, 1901, p. 200).

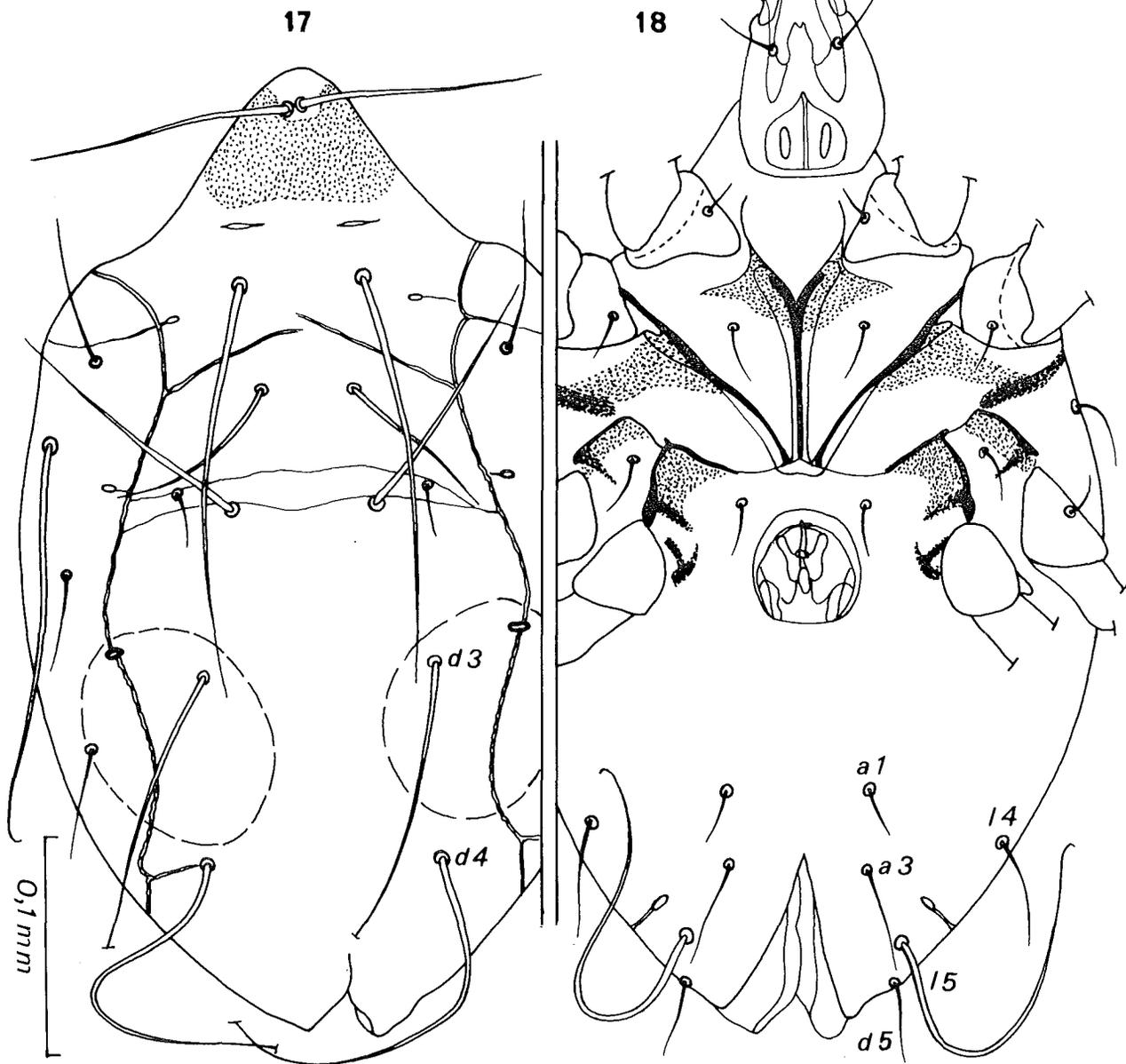


FIG. 17-18 : *Hyadesia sellai* Viets. Male. — 17) Dorsally; 18) Ventrally (after paralectotypes).

4. *Hyadesia fusca* (Lohmann, 1894)

Lentungula fusca Lohmann, 1894 : 85

Hyadesia furcillipes Benard, 1961 : 81 **syn. nov.**

The types of that species are not in the following Institutions where we asked for : Zoologisches

Museum of Universität Hamburg ; Zoologisches Museum of Universität Kiel ; Zoologisches Museum der Humboldt Universität Berlin ; Collections of Dr. VIETS, Wilhelmshaven. These types are probably lost. We have compared specimens of both sexes of *H. fusca* collected by VIETS in Helgoland,

the typical locality, with typical specimens, male and female, of *Hyadesia furcillipes*, kindly sent to us by Dr. BENARD. We could not find any significant difference between these two species and we may conclude that they are synonymous.

We give here the main characters of that species :

Female : Propodosomal shield about twice as wide as long. Hysteronotum without shield but bearing a system of oil-grooves. Tarsi I-II 34 to 39 μ long, tarsus III 54 to 60 μ ; tarsus IV 64 to 70 μ . Claws I-II 21 to 24 μ ; claws III-IV 34-39 μ . There are 2 pairs of genital and 3 pairs of anal setae, the latter are 30 μ , 30 μ and 120-150 μ long. Supracoxal seta 70-80 μ long, thin and barbed in its apical half. Seta *sc i* 50-60 μ ; *d 1* 25-30 μ ; *d 2* and *d 3* 60-75 μ ; *d 4* 120-140 μ ; *d 5* 50 μ ; *l 1* to *l 4* 30 to 40 μ ; *l 5* 210-240 μ . The ventral setae of tibiae III-IV are thin and flexible.

Male : dorsum as in the female. Tarsus I 33 μ ; tarsus II 35-39 μ ; tarsi III-IV 27 μ . Claws I-II 22 to 24 μ ; claws III-IV 36 to 39 μ . Seta *s cx* 75 μ . There are 2 pairs of genital setae and 2 pairs of anal setae (the latter are 25 and 120 μ long). Ventral setae of tibiae III-IV thick and progressively attenuated apically.

Geographical distribution

Hyadesia fusca has been recorded from various localities in Europe. From Germany : Helgoland Is. (North Sea), Rügen and Kiel (Baltic Sea) LOHMANN, 1894). From Normandy-Cotentin (Channel) France, under the name *Hyadesia furcillipes* (BENARD, 1961). From Scheveningen, Holland (OUDEMANS, 1927). From the Swedish east and west coast (GANNING, 1970). From Oostende, Belgium, North Sea and from Finland (FAIN, 1979).

5. *Hyadesia tumida* Benard, 1961

This species has been described from the coast of Brittany (Roscoff, Bloscon) and Normandy-Cotentin (France).

We have found numerous specimens of that species from algae at Morgat (Brittany, Finistère), 10 July 1978. At this place we could not find any specimen of *H. fusca*. Our specimens correspond perfectly with the types of *H. tumida* kindly sent to us by Dr. BENARD.

LIST OF THE SPECIES OF HYADESIOIDEA WITH THEIR LOCALITIES

FAMILY HYASESIIDAE Halbert, 1915

Genus *Hyadesia* Megnin, 1891

Subgenus *Hyadesia* Megnin, 1891

1. *H. uncinifer* Megnin, 1891 : Tierra del Fuego, South America.
2. *H. algivorans* (Michael, 1893) : Land's End, Cornwall, England.
3. *H. fusca* (Lohmann, 1894) (syn. *H. furcillipes* Benard, 1961 : North Sea (Heligoland Is., Germany ; Sweden ; Holland ; Belgium) ; Baltic Sea (Germany and Sweden) ; Channel (France).
H. fusca tenuipilis Fain, 1979 : Baltic Sea (Finland).
4. *H. chelopus* (Trouessart) André, 1931 : Indian Ocean.
5. *H. curassaviensis* Viets, 1936 : Curaçao.
6. *H. sellai* Viets, 1937 : Eastern coast of Adriatic Sea, at Rovigno (Italy) and Split (Yugoslavia).
7. *H. vietsi* Womersley, 1961 : Biak Is., Netherlands New Guinea.
8. *H. tumida* Benard, 1961 : Channel (Coast of Brittany and Normandy : France).
9. *H. subantarctica* Fain, 1974 : Kerguelen Is.
10. *H. halophila* Fain, 1974 : Kerguelen Is.
11. *H. travei* Fain, 1975 : St Paul Is. and New-Amsterdam Is.
12. *H. paulensis* Fain, 1975 : St Paul Is.
13. *H. nearctica* Fain & Ganning, 1978 : Atlantic coast of Canada and U.S.A.

Subgenus *Hyadesiella* Fain, 1974

14. *H. kerguelenensis* (Lohmann, 1907) : Kerguelen Is.

Genus *Amhyadesia* Fain & Ganning, 1979

1. *A. glynni* (Manson, 1963) : Pacific coast of U.S.A. (Pacific Grove).
2. *A. californica* Fain & Ganning, 1979 : Pacific coast of U.S.A. (South California).

FAMILY ALGOPHAGIDAE Fain, 1974

Genus *Algophagus* Hughes, 1955

1. *A. antarcticus* Hughes, 1955 : Heard Is. and Kerguelen Is.
- A. antarcticus laticollaris* Fain, 1974 : Kerguelen Is.
2. *A. semicollaris* Fain, 1974 : Kerguelen Is.

Genus *Neohyadesia* Hughes & Goodman, 1969

1. *N. signyi* Hugues & Goodman, 1969 : Signy Is., South Orkney.
- N. signyi punctulata* Fain, 1974 : Kerguelen Is.

Genus *Algophagopsis* Fain & Johnston, 1975

1. *A. pneumatica* Fain & Johnston, 1975 : On submerged rocks of the Kings River, California, U.S.A.

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ERRATA

In the drawings n° 34 and 35 of the paper of Fain, 1974 (see bibliography) the seta *a* 3 should become *l* 4 (fig. 34) and the seta *l* 4 should become *d* 4.

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