

A REDESCRIPTION OF *ACRONOTHRUS NUKUHIVAE* JACOT, 1935 (Acarina : Cryptostigmata) FROM THE MARQUESAS ISLANDS

By G. W. Ramsay

ENTOMOLOGY DIVISION, DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH,
NELSON, NEW ZEALAND

Abstract : The holotype of *Acronothrus nukuhivae* is redescribed, and the subspecies *A. n. hivaoae* is synonymized. The species is recombined with the generic name *Crotonia* Thorell, 1876.

Through the courtesy of Dr Nixon Wilson, Bishop Museum, Hawaii, I have been able to redescribe the holotype of *Acronothrus nukuhivae* Jacot. The synonymy of this genus with *Crotonia* Thorell 1876 has been established by Ramsay & Luxton (1967).

The specimen had been cleaned and mounted in Canada Balsam but, unfortunately, before this had set drifting occurred so that the mite was obscured by ringing compound and optical distortion at the edge of the cover slip. It has now been dissolved out with chloroform, rehydrated, and partly cleared by treatment with a mixture of lactic acid, acetic acid and water (1 : 1 : 2). For this study it was examined in glycerine.

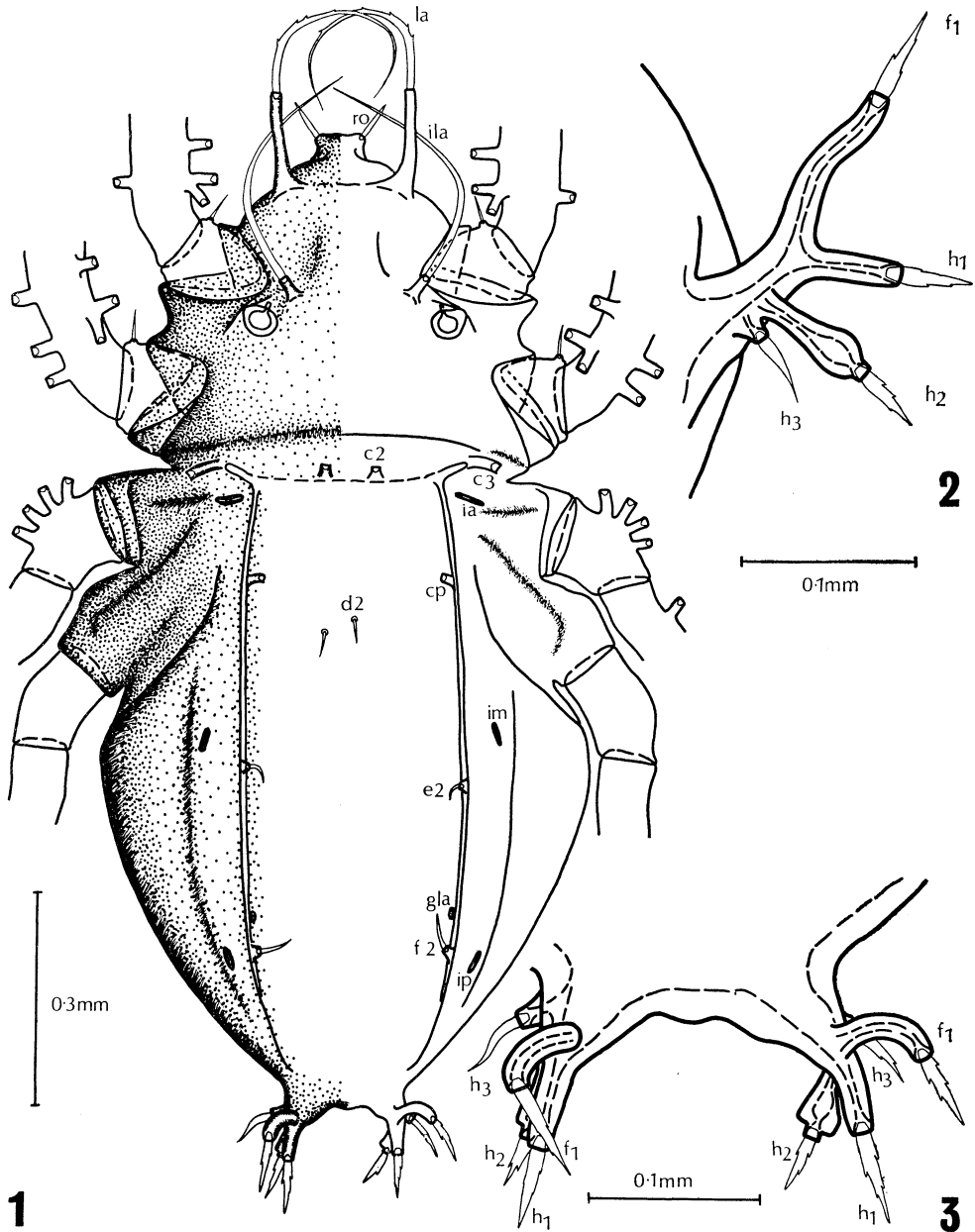
During preparation Jacot removed the thick hump of cerotegument and detritus from the dorsum and the similar layer which covers most of the rest of the body surface, including the legs. Part of the tritonymph cuticle remained attached to the caudal apophyses. The *c* setae of the dorsal surface were detached and lost as were also the 2nd and 3rd legs of the left side. Some of the surface features are obscured by opaque internal substances and food boli.

***Crotonia nukuhivae* (Jacot), new comb.**

Acronothrus nukuhivae Jacot, 1935, *Bull. B. P. Bishop Mus.* **114**: 218-20, fig. 1, e-g.

Acronothrus nukuhivae hivaoae Jacot, *loc. cit.* : 220. **New Synonymy.**

♀ (Holotype). 1.375 mm long and 0.7 mm wide; distance between setae C2 is 0.075 mm, C3 0.35 mm, Cp 0.3 mm, d2 0.04 mm, e2 0.3 mm and F2 0.275 mm. Color pale brown, dorsal plate considerably paler. The specimen was possibly recently molted, older specimens would probably be darker. *Prodorsum* forming approximately 1/3 (0.29) of total body length, entire surface finely porose, posterior and lateral regions nontuberculate; 1 median and 2 lateral patches of internal areolation are present posteriorly, each lateral patch with a row of internal thickenings. *Rostrum* truncate with setal tubercles at angles, sides of prodorsum bulging strongly in front of lamellar apophyses, and weakly so behind, where a ridge passes down and backward to camerostome margin; interlamellar curvature weak. *Rostral setae* short, smooth and tapered; lamellar setae moderately long, strongly curved medially, sparsely and irregularly barbed along



Holotype specimen of *Crotonia nukuhivae* (Jacot, 1935). Fig. 1, Dorsal view. ro - rostral setae; la - lamellar setae; ila - interlamellar setae; other dorsal setae and pseudofissurae labeled as in text; gla - orifice of latero-abdominal gland. Fig. 2, Caudal apophyses, lateral view. Fig. 3, Caudal apophyses, dorsal view.

outer border, and arising from long more or less straight tubular apophyses which extend beyond the rostrum; *interlamellar setae* long, smooth, arising from relatively short apophyses directed slightly outwards, and curving medially over the rostrum. *Sensillus* globular, neck short, slender and anteromedial, completely enclosed within a spherical bothridium which forms a blunt anterolateral cone without connection with exterior and showing no evidence of cellular pattern of lining membrane. Tectum of 1st acetabulum not clear but almost certainly well developed; similarly with tectum of 2nd acetabulum. Posterior transverse fold smooth and laterally continuous with sejugal ridge. *Hysterosoma* laterally rounded and broadly tapered toward posterior, upper surface smooth, only sides porose, *dorsal plate* distinct, relatively quite narrow, straight-sided and pale, bordered by a transparent plicature line; surface smooth, only lateral zone porose, ridges and folds not developed; submarginal areas not concave but margin slightly upturned; central area flat, not elevated. Setae *C2*, *C3* and *Cp* missing; apophyses of *C2* moderately short and much closer to each other than to those of *C3*; apophyses of *C3* very well developed, long and tubular; apophyses of *cp* relatively very large, situated on margin of dorsal plate; setae *d2* small, directed posteriorly and arising from tiny tubercles obliquely placed and moderately close together; *e2* short, curved posteriorly and arising from distinct tubercles lateral to plicate line; *f2* slightly larger and thicker than *e2*, directed anteriorly or medially and arising from distinct tubercles in the plicature line. *Caudal extension* not developed but broad tapered caudal peduncles occur, extending backward and upward; apophysis of *f1* very long, curving upward then backward and basally fused with shorter (half the length) backward directed apophysis of *h* to form a short broad pedicel; apophysis *h2* arising from peduncle, directed backwards, swollen distally and sharply truncated to form a collar at point of insertion of seta; apophysis *h3* short, arising on lower outer surface of peduncle; all apophyses traversed by a central canal and setae moderately short, thick, tapered and irregularly serrate. Ventrally setae *ps1*, *ps2* and *ps3* short, thick and arising from short tubercles on lateral pseudoanal fold, which also shows muscle attachment scars; *ps1* serrate. Pseudofissura *ia* large, lying transversely near *C3* at anterior lateral corner of notogaster in hollow behind sejugal ridge; pseudofissura *im* well developed, longitudinal, placed anterolaterally to seta *e2*; pseudofissura *ip* longitudinal-oblique, lateral to seta *f2*. Orifice of latero-abdominal gland on margin of dorsal plate anterior to seta *f2*; pseudofissura *ih* not observed. Sejugal ridge, ridges extending up sides above 3rd and 4th acetabula, and sides of hysterosoma mostly smooth or irregular, no indications of tuberculation. Muscle attachment scars occur along upper lateral ridge of hysterosoma but not on dorsal plate. Lateral plicature well developed, extending forward up sides from region between aggenital and adanal plates. *Genito-anal region*: *anal plates* smooth, slender, elongate, tapering posteriorly and carrying 3 pairs of short submarginal anal setae; pseudofissura *ian* not observed; adanal plates similar, smooth, and with 3 pairs of submarginal adanal setae, *ad1* subterminal much larger than other 2 and directed medially; pseudofissura *iad* prominent and well developed, elliptical, lying immediately anterior to adanal plates; region lateral to adanal plates with a well developed plicature plate containing the large pseudofissura *ips* at its anterolateral corner; pre-anal plate triangular, slender; *aggenital plates* smooth, subquadrangular, incompletely separated from tuberculate lateral genital field, seta *ag2* present on its medial margin, and *ag*, on medial border of lateral genitalia field; *genital aperture* round anteriorly, truncate posteriorly, each plate smooth and with 9 submarginal setae near its medial border. *Coxisternal region* slightly swollen in front of genital aperture, finely porose, coxal grooves II, III and sejugal groove well developed, nontuberculate, transverse sejugal furrow weak and indistinct; coxal fields slightly swollen, internal areolation not apparent; apodemes inconspicuous as they follow coxal and sejugal grooves; a weak sternal furrow present anteriorly. Sternal setae short and smooth, formula is 3-1-4-2; seta *ib* and probably *3b*, judging by the size of its insertion aperture, larger than others; *3a* and *3b* quite close together, *3b* and *3c* 7× this distance apart; *4a* and *4b* more than 2× distance between *4a* and *3a*; *1c* arises from a small tubercle and *3d* from a small but well formed apophysis which does not extend beyond outline.

Mouth parts not studied in detail. Setae *h* on menton of infracapitulum further apart than in *C. unguifera*; thickened lips occur at base of cheliceral jaws, organ of Tragårdh well developed, fimbriate scale present on inner surface of chelicera.

Legs: Very similar to those of *C. unguifera* which have recently been studied by me. Numerous large setal apophyses present on femoral, genual and tibial segments while on the tarsi mainly tubercles occur; the short smooth seta of trochanters I and II is conspicuous on anterior border of segment and arises from a small tubercle; on trochanter III a lateral crest of 4 apophyses with large curved serrate setae occurs; apophyses of 2 upper proximal setae of femora I and II divergent but basally fused; tarsus I has a broad distal protuberance, with setae missing in type specimen but which probably supported 2 large setae and 2 solenidia as it does in other species of *Crotonia*. The numbers of setae on various segments fall within the range of *C. unguifera*; in fact, there are no good characters other than possibly the prominent position of the seta on the trochanters of the 1st 2 legs, to distinguish between the limbs of the 2 species.

Type Specimen: Holotype ♀ preserved in glycerine at the Bishop Museum, Honolulu and has the following data: "A. P. Jacot Coll. 33M20 Nukuhiva, Teovii, (2 mi NE of Teuanui), 2,800 ft October 26/29 on *Metrosideros collina*. M. and A." A second label bears the following data: "A. P. Jacot det *Acronothrus nukuhivae* n. sp. 33M20 B. P. Bishop Museum 680."

DISCUSSION

Considerable variation of a number of characters occurs in species of *Crotonia*, but it is not possible to give any indication of this for *C. nukuhivae* from the study of only 1 specimen, although Jacot did have further specimens available, as he makes the following statement (page 219) when discussing "the pile of foreign matter that is found on many individuals." Study of fresh material may reveal more characters such as the cellular pattern of the lining of the bothridium and the isthmus connecting the adanal and aggenital plates on each side. With these points in mind the following list of specific characters is drawn up:

1. The narrow straight-sided dorsal plate lacking longitudinal ridges or grooves.
2. The relatively very large setae *C_p* (inferred).
3. The arrangement of the caudal apophyses.
4. The closeness of the ventral setae *3a* and *3b*, also *3a* and *4a*.
5. The basal fusion of the 2 upper proximal apophyses of femora I and II.
6. The prominent position of the seta on trochanters I and II.
7. Pseudofissura *ip* almost lateral to seta *f2*.

Jacot described the dorsum of the hysterosoma as being "sculptured by two or three longitudinal wrinkles midway between median plane and lateral edge." These undoubtedly correspond with the plicature line and upturned rim of the dorsal plate and may have been accentuated by cover slip pressure. The paleness of the dorsal plate, possibly due to recent ecdysis, makes it difficult to recognize the plicature line, although this is clear in the type specimen of the subspecies discussed below. The lateral plicature of the hysterosoma corresponds with the "more densely sclerotised band which passes ventrad to slip under the anal plate at anterior end of anal opening" of Jacot.

Relationship: The distinct narrow dorsal plate is 1 of the main characters of the *unguifera*-group of species which has so far been recorded only from New Zealand and

South America, but which will probably prove to be much more widely distributed in the Southern Hemisphere.

***Acronothus nukuhivae hivaoae* Jacot, 1935. New Synonymy.**

The slide of the type specimen has the following data: "A. P. Jacot preparation 33M19, Hivaoa, Mt Temetiu, 3,650 ft, May 27/29 from dead fern stipes. M. AND A." "A. P. Jacot det. *Acronothus nukuhivae hivaoae* sp. n. Holotype 33M19 B. P. Bishop Museum, 681."

The type specimen of this subspecies also is mounted in Canada Balsam but has been dissected so that the legs, prodorsum, and posterior 1/2 of the hysterosoma are separate. The caudal apophyses have been broken off. Jacot characterizes the subspecies by the presence of only 1 dorsal longitudinal fold on the hysterosoma, weak tuberculation on the marginal areas of the dorsal plate, and tarsi without apophyses. Other leg setal differences mentioned are of no significance as they simply indicate that certain setae were lost from the specimen of *nukuhivae* during preparation, but remained on the type specimen of the subspecies. The tarsi of the latter specimen retain their covering of cerotegument and detritus so that apophyses do not project up from the surface. However, with careful observation they can be seen and are present to the same extent as in the type specimen of *C. nukuhivae*. The dorsal longitudinal fold is the plicature line and upturned margin of the dorsal plate—exactly the same as in *C. nukuhivae*. A good point of distinction is the presence of weak tuberculation on the sides of the dorsal plate and on the upper lateral ridge of the hysterosoma of the subspecies and its absence in the nominate subspecies, also the transverse arrangement of setae *d2* and presence of 4 anal setae on the right side in the subspecies. Differences such as these are within the range of variation of *C. unguifera* and other species, and there is no reason to suppose that the same is not true for *C. nukuhivae* also. There is no good reason to separate the subspecies *C. nukuhivae hivaoae* from the typical form of the species and the 2 should be regarded as synonymous.

REFERENCES

- Jacot, A. P. 1935. Some Tyroglyphina (Sarcoptiformes) of the Marquesas Islands. *Bull. B. P. Bishop Mus.* **114**: 211-38.
- Ramsay, G. W. & M. Luxton 1967. A redescription of the type specimen of *Crotonia* (= *Acronothus*) *obtecta* (O. Pickard—Cambridge 1875), (Acari, Cryptostigmata) and a discussion of its taxonomic relationships. *J. Nat. Hist.* **1**: 473-80.