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THREE CHEYLETIDS FOUND WITH PINE BARK BEETLES
(ACARINA: CHEYLETIDAE)

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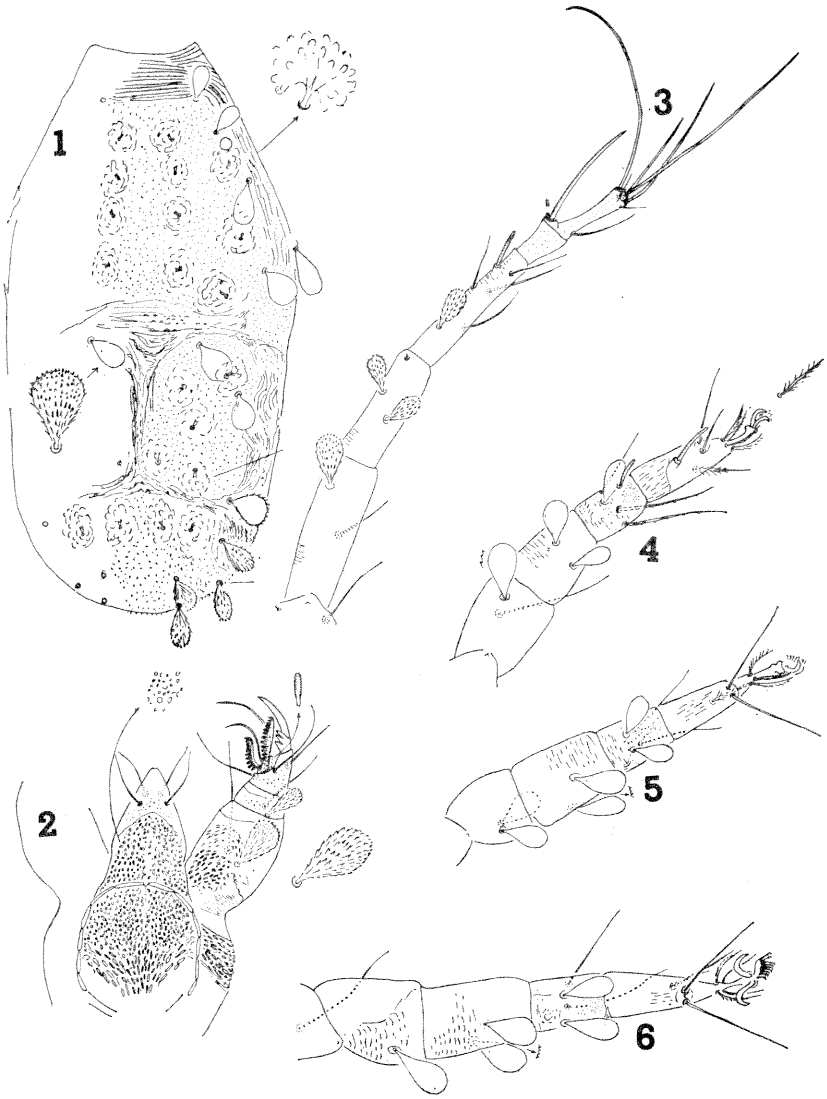
ABSTRACT—Two new species of cheyletid mites, *Acarocheyla* **impolita** and *Prosocheyla* **acanthus**, are described and illustrated. *Acarocheyla virginiensis* (Baker) is redescribed and illustrated. The mites were collected during a study of seasonal variations of *Dendroctonus frontalis* Zimmerman in *Pinus taeda* L. at Elizabeth, Louisiana.

A recent paper by Smiley and Moser (1968) described six species of Eleutherengona that were discovered in the course of research on the seasonal ecology of *Dendroctonus frontalis* Zimmerman in central Louisiana. Here we treat three additional species of predatory mites, all of the family Cheyletidae, that were encountered in the same area. Two of the species are new, and one is a known species redescribed.

Prosocheyla acanthus, n. sp.
(Figs. 1–6)

The fragmented setae and the 4 shields on the dorsum will separate this species from other known members of the genus.

Female. Palpal femur longer than wide, dorsal seta serrated and palmate, ventral seta simple; genu seta palmate-serrate dorsally and with a simple seta ventrally; tibial seta simple; 3 to 4 strong teeth on basal portion of tibial claw; outer comb large with about 18 teeth, about one-third longer than inner comb; inner comb with about 12 teeth. Stylophore with tubercles as figured. Peritreme simple, composed of 6 pairs of long segments. Propodosomal and hysterosomal shields lightly punctate. Propodosoma with 5 pairs of marginal palmate-serrate setae and 7 pairs of submedian fragmented setae; with a single pair of eyes. Humeral seta palmate and serrated. Hysterosoma with 3 dorsal shields; 2 anterior shields,



Figs. 1–6, *Prosocheyla acanthus*, n. sp., ♀: 1, dorsum; 2, gnathosoma; 3, left, leg I; 4, left, leg II; 5, left, leg III; 6, left, leg IV.

subequal in size, each shield with 2 pairs of palmate-serrate and 5 pairs of fragmented setae; terminal shield with 2 pairs of fragmented setae and 4 pairs of palmate-serrate setae. Legs I longest; legs II, III, and IV similar in size and length. Coxa I with 2 simple setae; trochanter with 1 simple seta; femur with 1

palmate-serrate and 1 simple seta; genu with 2 palmate-serrate setae and 1 peglike solenidion; tibia with 1 palmate-serrate seta, 3 simple setae, and 1 solenidion; tarsus with vestigial guard seta adjacent to solenidion; solenidion long, slightly bent and acuminate toward tip; a ventral simple seta one-third shorter than solenidion; terminally with 1 pair of minute simple setae and 2 pairs of whiplike simple setae, shortest pair about one-half to two-thirds the length of the longest pair and as figured. Coxa II with 1 simple seta; trochanter with 1 simple seta; femur with 1 palmate-serrate and 1 simple seta; genu with 2 palmate-serrate setae; tibia with 1 simple seta, 1 palmate-serrate seta, 1 solenidion and 2 finely serrate setae; tarsus with 1 solenidion, 2 simple setae, and 4 serrate setae. Coxa III with 2 simple setae; trochanter with 1 simple seta; femur with 2 palmate-serrate setae; genu with 2 palmate-serrate setae; tibia with 2 palmate-serrate and 2 simple setae; tarsus with 2 subequal simple setae and 4 serrate setae. Coxa IV with 1 simple seta; trochanter with 1 simple seta; femur with 1 palmate-serrate seta; genu with 2 palmate-serrate setae; tibia with 2 subequal simple setae and 2 palmate-serrate setae; tarsus with 2 subequal simple setae and 5 serrate setae. Genital and anal opening with 4 pairs of subequal simple setae. Length of body, excluding gnathosoma, 478 μ; width 287 μ.

Male. Not known.

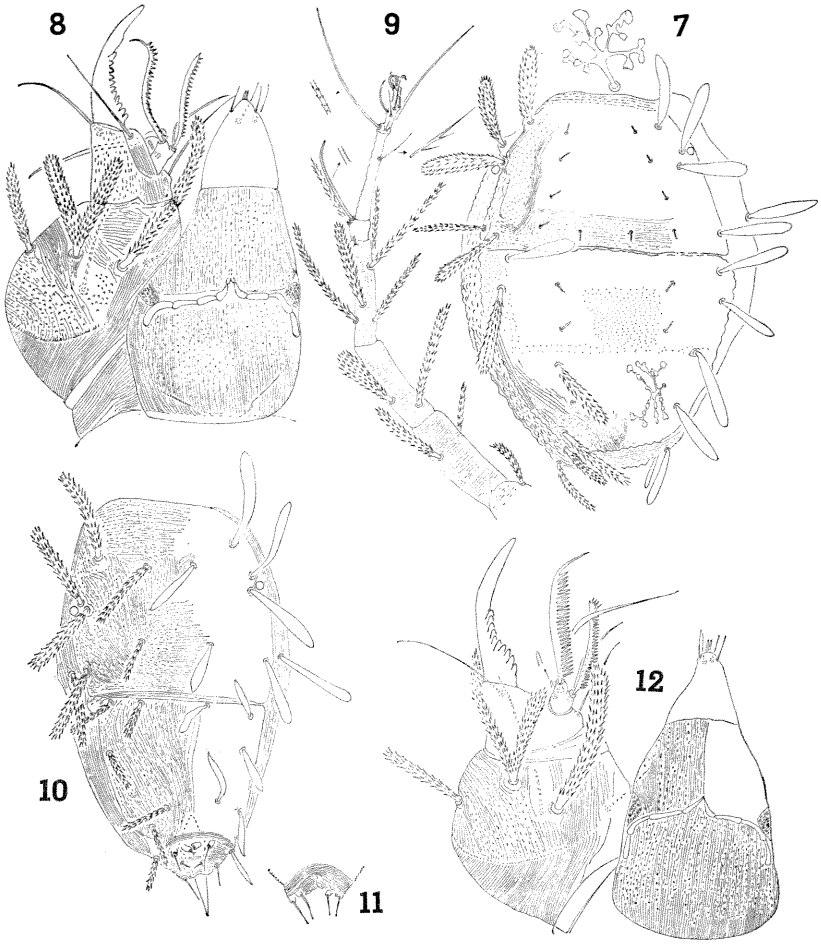
The female holotype, USNM No. 3281, was taken from outer bark, loblolly pine, 19 September 1963, Maurepas, Louisiana, by H. B. Boudreaux. Seven female paratypes were collected from outside bark of loblolly pine 15 December 1965 by John C. Moser at Elizabeth, Louisiana.

This orange-yellow mite apparently inhabits the outer bark niche, although single individuals have been seen once or twice under bark with bark-beetle larvae.

Acarocheyla impolita, n. sp.
(Figs. 7–14)

The crenulated tarsi of legs I will separate this species from other known members of the genus.

Female. Palpal femur longer than wide dorsally and with 1 long straplike-serrate seta, 1 forklike-serrate seta, and 1 straplike-serrate seta on the outer margin; with microtuberculate striae, ventrally with 2 subequal simple setae; genu without setae and fused with the tibia; tibia with 3 subequal simple setae; claw with 12–14 teeth; outer comb large with about 22 teeth, about one-third longer than inner comb; inner comb with about 22 teeth. Tegmen and protegmen of stylophore similarly ornamented with a pattern of small tubercles and a small sclerotized plate on each side as figured. Peritreme simple, composed of 4 segments. Propodosomal and hysterosomal shields lightly punctate and surrounded with microtuberculate striae marginally. Each shield with 4 pairs of straplike-serrate setae and 5 pairs of fragmented setae. Legs I longest; legs II, III, and IV similar in size and length. Coxa I with 2 simple setae; trochanter with 1 straplike-serrate seta; femur with 2 straplike-serrate setae; genu with 1 straplike-serrate seta and 1 palmate-serrate seta; tibia with 4 straplike-serrate setae and 1 peglike solenidion; tarsus with 1 serrate guard seta adjacent to solenidion;



Figs. 7–14, *Acarocheyla impolita*, n. sp.: 7, ♀ dorsum; 8, ♀ gnathosoma; 9, ♀, left, leg I; 10, ♂ dorsum; 11, ♂ venter, anal opening; 12, ♂ gnathosoma; 13, ♂, left, leg I; 14, ♂ empodium, leg I.

solenidion as figured; a ventral seta as figured; terminally with 2 pairs of simple setae and 1 pair of long, finely serrate setae. Coxa II with 1 simple seta; trochanter with 1 straplike-serrate seta; femur with 2 straplike-serrate setae; genu with 1 palmate-serrate seta and 1 straplike-serrate seta; tibia with 2 serrate setae ventrally and 2 straplike-serrate setae dorsally; tarsus ventrally with 1 finely serrate seta and 1 solenidion; dorsally with 2 subequal simple setae arising from a protuberance and terminally with 2 saberlike simple setae and 2 serrate setae. Coxa III with 1 straplike-serrate seta and 1 simple seta; trochanter with 1

straplike-serrate seta; femur with 2 straplike-serrate setae; genu with 1 straplike-serrate seta and 1 palmate-serrate seta; tibia ventrally with 1 serrate seta and 1 finely serrate seta and dorsally with 1 straplike-serrate seta and 1 simple serrate seta; tarsus ventrally with 1 finely serrate seta and dorsally with 2 subequal simple setae arising from a protuberance and 1 rodlike serrate seta, and terminally with 2 saberlike setae and 2 serrate setae. Coxa IV with 1 simple seta and 1 straplike-serrate seta; trochanter with 1 straplike-serrate seta, femur with 2 straplike-serrate setae; genu with 1 palmate-serrate seta and 1 straplike-serrate seta, tibia with 1 straplike-serrate seta and 1 serrate seta dorsally and 1 finely serrate seta and 1 serrate seta ventrally, tarsus with same setation as tarsus III. Length of body, including gnathosoma, 560 μ; width 320 μ.

Male. Similar to female but differing by the kind and number of setae on the dorsal shields. Propodosomal and hysterosomal shields without fragmented setae. Propodosomal shield with 6 pairs of straplike-serrate setae and hysterosomal shield with 5 smaller pairs as figured. Male resembles female in having a small sclerotized plate on each side of the stylophore and a crenulated tarsus on leg I. Length of body, including gnathosoma, 373 μ; width 200 μ.

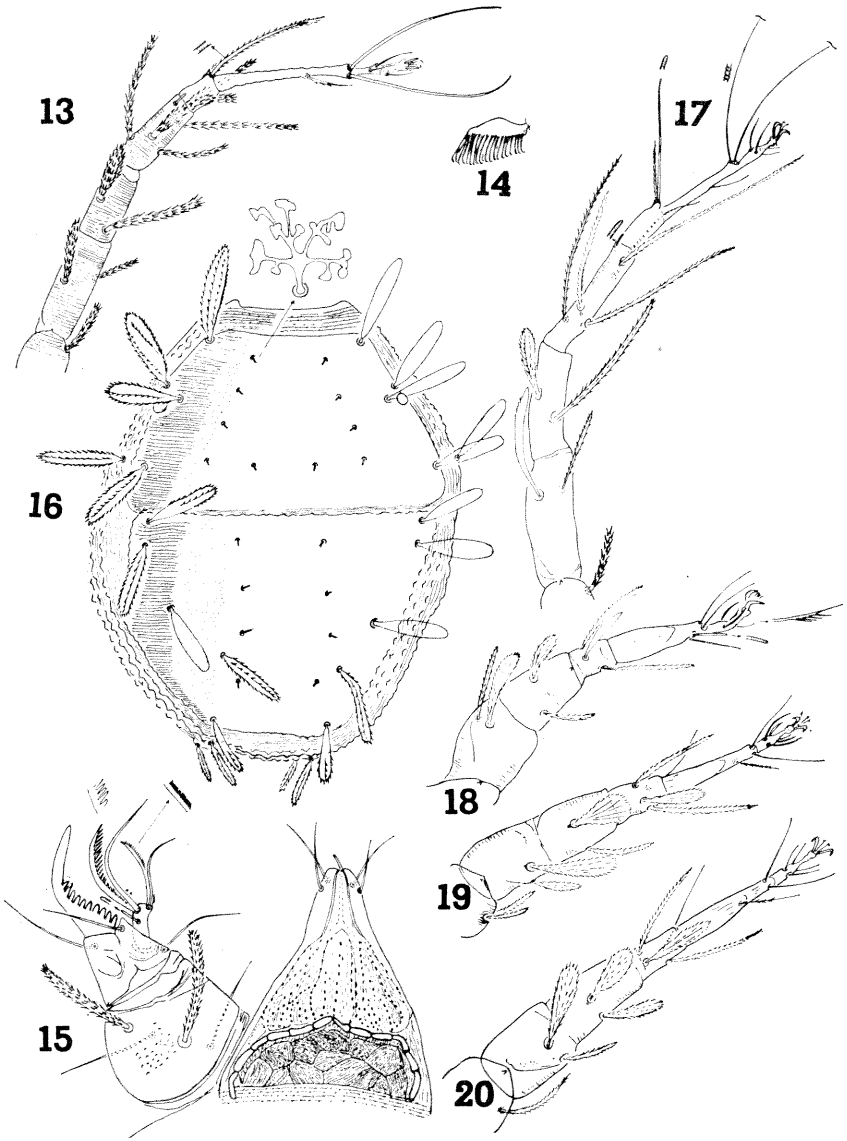
The female holotype, USNM 3337, and 32 female paratypes and 13 males were collected from boring dust of *D. frontalis* in loblolly pine 29 October 1965, Elizabeth, Louisiana, by John C. Moser.

A. impolita was found only once in the field in galleries of *D. terebrans* (Olivier). It was often seen in boring dust at bottoms of containers used to rear *D. frontalis* and *Ips* spp. after infested pine bolts had been held in rearing cans until the beetles emerged—i.e., for 1 to 3 months. This circumstance strongly suggests that the mite was often contaminant in the cans. It was rare 16 times, infrequent 12 times, common 9 times, and abundant once in the scolytid boring dust; it was rare 3 times in dissected inner bark of these bolts. Large breeding populations were found in both dry and damp boring dust, indicating a moderately wide tolerance to moisture conditions. Females were seen feeding on deutonymphs of Leiodinychus "IV," hypopi of *Histiogaster arborsignis* Woodring, females of *Heterotarsonemus lindquisti* Smiley, and nymphs of *Ereynetoides scutulis* Hunter. *A. impolita* was never found phoretic on beetles; because of this and its rarity in the field, the species may occupy the outside bark niche.

Acarocheyla virginiensis (Baker), n. comb.
(Figs. 15–20)

Cheyletia virginiensis Baker, 1949:299.
Mexecheles virginiensis: DeLeon, 1962:132.

Female. Palpal femur wider than long, with a few dorsal tubercles, with 2 straplike-serrate setae dorsally and 2 simple setae ventrally; genu without setae and fused with the tibia; tibia with 3 simple setae; claw with 10 teeth; outer comb with about 29 teeth; inner comb smaller than outer with at least twice as many teeth. Stylophore normal; protegmen with microtuberculate striae; tegmen



Figs. 15–20, *Acarocheyla virginiensis* (Baker), ♀: 15, gnathosoma; 16, dorsum; 17, left, leg I; 18, left, leg II; 19, left, leg III; 20, left, leg IV.

with reticulate pattern as figured; peritreme composed of 6 pairs of long slender segments. Propodosomal and hysterosomal shields lightly ornamented with small, fine, broken striae. Propodosoma with 4 pairs of marginal straplike-serrate setae and 5 pairs of submedian fragmented setae. Hysterosoma with 5 pairs of marginal straplike-serrate setae and 4 pairs of fragmented setae. Legs I longest, legs II, III, and IV similar in size and length. Coxa I with 2 simple setae; trochanter with 1 straplike-serrate seta; femur with 1 straplike-serrate seta dorsally and 1 rodlike-serrate seta ventrally; genu with 1 palmate-serrate seta and 1 long rodlike-serrate seta; tibia with 4 long rodlike-serrate setae and 1 simple seta, and a minute solenidion as figured; tarsus with 1 serrate seta adjacent to solenidion, 1 simple seta ventrally, 2 lightly barbed setae on a protuberance distally, and 2 small saberlike setae and 2 simple setae terminally. Coxa II with 1 simple seta; trochanter with 1 straplike-serrate seta; femur with 1 straplike-serrate seta and 1 rodlike-serrate seta; genu with 1 straplike-serrate seta and 1 palmate-serrate seta; tibia with 1 palmate-serrate seta and 2 straplike-serrate setae; tarsus ventrally with 1 strong solenidion and 1 simple seta, dorsally with 2 simple setae arising from a protuberance and distally with 2 saberlike setae and 2 serrate setae. Coxa III with 1 simple seta and 1 straplike-serrate seta; trochanter with 2 straplike-serrate setae; femur with 1 palmate-serrate seta and 1 straplike-serrate seta; genu with 1 palmate-serrate seta and 1 straplike-serrate seta; tibia with 1 simple seta, 2 rodlike-serrate setae and 1 palmate-serrate seta; tarsus distally with 2 simple setae arising from a protuberance, 2 saberlike setae, and 2 finely serrate setae. Coxa IV with 1 simple seta and 1 straplike-serrate seta; trochanter with 1 straplike-serrate seta; femur with 1 palmate-serrate seta and 1 straplike-serrate seta; genu with 1 straplike-serrate seta and 1 palmate-serrate seta; tibia with 1 simple seta ventrally, 2 rodlike-serrate setae and 1 palmate seta dorsally; tarsus with 1 simple seta ventrally and 2 subequal simple setae arising from a protuberance dorsally, and distally with 2 saberlike setae and 2 finely serrate setae. Genital and anal opening bearing 5 pairs of simple setae. Length of body, including gnathosoma, 652 μ; width 351 μ.

Male. Not known.

Twelve specimens were collected from boring dust of *Ips calligraphus* (Germar) in Tioga, Louisiana, 13 January 1963, by John C. Moser.

A. virginiensis was rare to infrequent in the outer bark of most scolytid-infested pines; it was never seen under bark with scolytid brood. Unlike *A. impolita*, it never built up large populations in boring dust at bottoms of rearing cans. Females were often phoretic on *D. frontalis, I. avulsus* Eichh., and *I. grandicollis* Eichh. emerging from the rearing cans. Thus, while the mite seemingly is not associated with a typical scolytid niche, it still may ride on bark beetles. Females were seen feeding on psocids. The mite probably feeds on prey that multiplies on the outer bark of beetle-killed trees. It has been collected from trees cut in February, May, June, July, September, and November, and we have seen specimens from Virginia, Alabama, Mississippi, Louisiana, Honduras, and Canada.

Type habitat. Associated with *Dendroctonus frontalis* Zimmerman.
Type locality. Gloucester County, Va.
Type. USNM no. 1770.

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