THE GENUS *NEOPHYLLOBIUS* IN MEXICO
(ACARINA: *NEOPHYLLOBOIIDAE*)

DONALD DE LEON
Coral Gables, Florida

So far as is known, members of the genus *Neophyllobius* prey on other mites and on scale insects, but unlike most predatory mites they are rather deliberate in their movements. I have observed them feeding only twice, once on a tydeid, the other on a *Brevipalpus*.

The genus includes seventeen species found in Australia, North America, and Europe. McGregor¹ in his paper on the North American species records one from Mexico; this paper describes 12 more from Mexico, bringing the number of named species to 29.

The mites described below are broadly oval when viewed from above and reddish brown in color with the gut contents usually appearing as a white longitudinal stripe down the middle of the hysterosoma; they have in the adult stage 15 pairs of bracteate dorsal body setae (six pairs of dorsocentrals, nine pairs of mediolaterals) and two pairs of lateral body setae. The dorsocentral setae are those setae along the mid-line and with the bases of the respective pairs touching or nearly touching each other; the mediolaterals are rather similar setae with their bases much more widely separated; the laterals are those setae situated on or near the sides of the body, one in front of coxa III, the other in front of coxa IV. A rod-like sensillum about 5 microns long is present near the anterior margin of coxal cavity I and a similar sensillum is on the pulpifer. Ventrad the mites bear four pairs of rather long (about 35-50 microns) setiform medioventral setae, one pair is situated beneath the capitulum, one pair postero-medial of coxae I, one pair about in line with coxae III, and one pair about in line with coxae IV; five pairs of narrow-linear to lanceolate usually spinose subcoxal setae, two of these pairs are situated near the bases of coxal cavities I, and one pair each near the bases of coxal cavities II-IV; in the female, two pairs of genital setae, one pair situated near the anterior end of the genital opening, the other near its caudal end and three pairs of closely set anal setae (four pairs in the male). Figure 6 typifies the arrangement of the body setae. The palpi of these mites are basically similar to the palpus of *N. lombardinii* described by Summers and Schlinger,² except that the palpatarsus of all these species bears four setae as shown in figure 10; in addition, some species bear a minute sensillum on the posterior margin of the palpatarsus near its base. The species with two exceptions (*N. quadrisetosus* and *N. trisetosus*) bear the following number of leg setae:

Coxae I-IV 1 each.
Genua I-IV 1 each, a minute sensillum also on I and on II.

Tibia I 9, II 8, III 8, IV 7, and each tibia with a subterminal, slightly tapering nail-like sensillum (tibia I of the male bears two of these sensilla).
Tarsi I-II each, ventral and unpaired; 1 pair each, dorsal subterminal; 3 pairs each, terminal. Tarsi III and IV similar to I and II, but each with only 2 pairs of terminal setae. All tarsi with a pretarsus bearing a pair of large claws and an empodium with two rows of tenent hairs. In addition, the female bears a short (4-5 microns) subbasal rod-shaped sensillum on I and on II, the male bears a long (16-23 microns) curved, slightly tapering subbasal sensillum (Figure 12) on each of the four tarsi.

KEY TO SPECIES (FEMALES)

1. Dorsocentrales 2 to 5 not reaching to seta next behind........ mezicanus
   1. At least one of the dorsocentrales 2 to 5, but for most species all of these, reaching to or beyond the seta next behind.................. 2

2. Femur II with four setae ............................................. quadrisetosus
2. Femur II with three setae ........................................... 3

3. Femur III with three setae ........................................... trisetosus
3. Femur III with two setae ........................................... 4

4. Seta of genu IV longer than or about as long as tibia IV .......... 5
4. Seta of genu IV distinctly shorter than tibia IV ..................... 8

5. Setae of genua III-IV reaching beyond ends of respective legs..... farriori
5. Setae of genua III-IV not reaching beyond ends of respective legs.. 6

6. Seta of genu III distinctly shorter than tibia III ................... inequalis
6. Seta of genu III longer than or about as long as tibia III .......... 7

7. Seta of genu II shorter than tibia II, seta of genu III about as long as tibia III ......................................................... equalis
7. Setae of genua II and III distinctly longer than respective tibia ....... consobrinus

8. Striae of dorsum consisting chiefly of broken striae; proximal posterior margins of all femora strongly serrulate.......................... lobatus
8. Striae of dorsum consisting chiefly of unbroken striae; proximal posterior margins of femora not strongly serrulate ......................... 9

9. Dorsocentral 3 more than half as long as width of body; seta of genu III about two-thirds as long as tibia III .......................... horridus
9. Dorsocentral 3 less than half as long as width of body; seta of genu III about one-half (or less) as long as tibia III .................. 10

10. Seta of genu II distinctly longer than genu II ....................... 11
10. Seta of genu II about as long as or shorter than genu II ............ 12

11. Seta of genu II nearly as long as seta of genu III and about half as long as seta of genu IV; genual setae weakly spinose..... marginatus
11. Seta of genu II about half as long as seta of genu III and about one-third as long as seta of genu IV; genual setae I-III strongly spinose ..... longulus
12. Genual setae coarse, actiform, distinctly spinose \textit{curtipilus}.
12'. Genual setae linear (seta of genu II is slightly obovate), very faintly spinose \textit{spatulatus}.

In the following descriptions all measurements are in microns and body lengths exclude the capitulum; the lengths of body setae are given from front to back.

\textit{Neophyllobius quadrisetosus}, \textit{n. sp.}

(Figure 1)

The presence of four setae on femur II and two setae on femur III distinguishes \textit{N. quadrisetosus} from all other species.

\textbf{Female}: Length of body setae: Dorsoentral 1 47, 6 34 (2 to 5 are obscured by gut contents); mediolaterals 64, 48, 35, \( ? \) (broken off?), 56, 45, 47, 40, 27; laterals 36, 16. Legs: Femora I-IV 186, 138, 158, 198 long respectively, feumur II with four setae; genual setae I-IV 226, 50, 43, 232 long respectively; tibiae I-IV 190, 141, 192, 226 long respectively. Length 340, width 245.

\textbf{Male}: Not Known.

\textit{Holotype}: Female, Guaymas, Son., intercepted at Nogales, November 7, 1956, (Nool) in soil from cactus; U. S. National Museum No. 2465.

\textit{Neophyllobius trisetosus}, \textit{n. sp.}

(Figure 2)

\textit{N. trisetosus} bears three setae on femur III as does \textit{N. lombardinii} Summers \& Schlinger, but differs from their drawings and description of that species in having among other characters the mediolaterals of about the same lengths as the dorsoenterals.

\textbf{Female}: Palpus slender, femur with two spinose setae, tarsus with four setae. Body with dorsal and ventral striae unbroken; setae of the following lengths: Dorsoentrals 73, 74, 83, 73, 65, 32-45; mediolaterals 64, 59, 51, 58, 73, 49, 49, 45, 31-42; laterals 32, 19; subcoxals 31, 45, 37, 38, 27. Leges: Femora I-IV 177, 141, 142, and 159 long respectively; genual setae I-IV 62, 54, 59, and 101 long respectively; tibia I-IV 189, 166, 196, and 211 long respectively. Length 326, width 313.

\textbf{Male}: Resembles female, but dorsal body setae proportionally somewhat smaller and the dorsoentrals on more pronounced raised bases, DC 6 is especially reduced in size: dorsals strongly bracteate. Length 225, width 208.

\textbf{Nymph}: Resembles adult, but no lateral in front of coxa IV and no seta on coxa IV; femora I-IV with 3, 2, 1, and 1 setae respectively; tibia I-IV with 0, 5, 5, and 3 setae respectively and each with a subterminal sensillum; tarsi I-IV each with one mid-ventral seta, two dorsal subterminal setae, and tarsi I and II each with three pairs of terminal setae, tarsus III with two pairs and tarsus IV with one pair of terminal setae. The legs are proportionally much shorter than those of the adult.

\textbf{Larva}: Dorsum with five pairs of dorsoentrals and nine pairs of mediolaterals; no lateral setae and coxae without setae; femora I-III with 2, 2, and 1 setae respectively; genu I-III each with one seta and I and II each with a minute sensillum; tibia I-III each with three setae and a nail-
like subterminal sensillum; tarsi I-III each with one mid-ventral and two dorsal subterminal setae, tarsi I and II each with two pairs of terminal setae and a small subbasal sensillum, tarsus III with one pair of terminal setae.

**Holotype:** Female, Oaxaca, Oax., February 1, 1957, (D. De Leon) from Quercus sp. **Paratypes:** One male and one female, same data as for holotype; one female and one nymph, Siete Cabrillas, Oax., other data as for holotype; one male one female, one nymph, Tamazulapan, Oax., February 1, from an unknown tree. Additional specimens were collected near Quiróga, Mich., Sta. María del Oro, Nay., and Ixtlan del Río, Nay.

*Neophyllobius farrieri*, n. sp.

(Figure 3)

*N. farrieri* resembles *N. laminani* McG., but differs from McGregor's drawing and description of it by having four short spinose setae on femur I in place of three long, minutely barbed lanceolate setae and in other characters.

**Female:** Palpus slender, the two femoral setae weakly spinose; tarsus with the usual four setae and a posteroproximal peg-like sensillum. Body with dorsal and ventral striae unbroken; setae of the following lengths: Dorsocentrals 65, 72, 66, 66, 49, 41; mediolaterals 65, 47, 38-49, 40-56, 56-69, 44-54, 45-53, 37, 27-36; laterals 26, 29; subcoxals 27, 60, 52, 50, 42. Legs: Femora I-IV 165, 134, 136, and 150 long respectively; genual setae I-IV longer than the combined lengths of their respective tibiae and tarsi; tibiae I-IV 184, 157, 183, and 199 long respectively. Length 326, width 299.

**Male:** Not known.

**Nymph and Larva:** These stages resemble those of *N. trisetosus* in chaetotaxy, except that femur I of the nymph bears five setae and the genual setae are all longer than the combined lengths of their respective tibiae and tarsi.

**Holotype:** Female, Puente de Nejapa, Oax., January 31, 1957, (D. De Leon) from Spanish moss. **Paratypes:** One female, one nymph, and one larva, same data as for holotype. This mite is named for Dr. M. H. Farrier of North Carolina State College.

*Neophyllobius inegalais*, n. sp.

(Figures 5 and 6)

*N. inegalais* resembles *N. farrieri*, but can be distinguished from that species by having the seta of genu III distinctly shorter than tibia III and by other characters.

**Female:** Palpus slender, the two femoral setae distinctly spinose; tarsus with four setae. Body with dorsal striae broken in area medial of mediolaterals 2 to 4 and ventral striae broken in the areas bordering apodemes I and II. Body setae of the following lengths: Dorsocentrals 38-50, 38-55, 43, 54, 51, 27; mediolaterals 52, 45, 42-56, 44, 56, 52-61, 43-57, 31, 29-33; laterals 26, 13; subcoxals 28, 56, 45, 34, 20. Legs: Femora I-IV 168, 126, 136 and 155 long respectively; genual setae I-IV 102, 96, 140, and 200 long respectively; tibiae I-IV 170, 130, 175, 192 long respectively. Length 233, width 216.
MALE: Not known.

NYMPH: Resembles female, but with typical nympha1 chaetotaxy.

Holotype: Female, Veracruz, Ver., December 31, 1956, (D. De Leon) from Erythrina sp. Paratypes: One female and one nympha1, same data as for holotype; one female, Veracruz, January 3, 1957, from Terminalia catappa.

*Neophyllobius equalis*, n. sp.

(Figure 4)

*N. equalis* resembles *N. farriiri* in having long genual setae, but differs from *farriiri* in having the setae of genu II shorter than tibia II.

FEMALE: Palpus with femoral setae spinose, tarsus with four setae. Body with dorsal striae broken in area medial of mediolaterals 2 to 4 and ventral striae broken in areas bordering apodemes I and II. Body setae of the following lengths: Dorso-centrals 61, 74, 67, 78, 67, 39; mediolaterals 61, 63, 62, 59, 74, 55, 62, 42, 34-46; laterals 27, 13; subcoxals 32, 58, 47, 39, 29. Legs: Femora I-IV 174, 137, 133, and 156 long respectively; genual setae I-IV 143, 140, 169-190, and 232 long respectively; tibia I-IV 180, 152, 173-193, and 198 long respectively. Length 308, width 266.

MALE: Not known.

Holotype: Female, Navarrete, Nay., March 29, 1957, (D. De Leon) from Guazuma sp. Paratype: Female, same data as for holotype, but from an unknown host. A specimen collected near Valles, S.L.P., December 20, 1956, may belong here; it is somewhat larger, but with shorter leg segments, genual setae and body setae.

*Neophyllobius consobrinus*, n. sp.

(Figure 7)

*N. consobrinus* appears to be most closely related to *N. equalis*. It is readily distinguished from that species by having the setae of genu II distinctly longer than tibia II.

FEMALE: Palpus with the two femoral setae spinose, tarsus with four setae. Body with dorsal striae broken in only a few places medial of mediolaterals 2 to 4, ventral striae broken in a wide area bordering apodeme I and in a wide area bordering apodeme II. Body setae of the following lengths: Dorso-centrals 52, 48, ? (obscured), 52, 56, 24; mediolaterals 47, 49, 43, 52, 43, 44, 36, 24; laterals 18, 31; subcoxals 29, 55, 49, 23, 20. Legs: Femora I-IV 181, 138, 139, and 162 long respectively; genual setae I-IV 155, 167, 195, and 240 long respectively; tibiae 169, 139, 168, and 187 long respectively. Length 280, width 230.

MALE: Not known.

Holotype: Female, Tuxtla Gutierrez, Chiapas, January 18, 1957, (D. De Leon) from Jaquinia pungens.

*Neophyllobius lobatus*, n. sp.

(Figure 8)

*N. lobatus* resembles *N. sierrue* McG. in general characters, but differs from McGregor's description and drawing of that species in having the seta...
of genu IV shorter than tibia IV, in having the proximal posterior margins of the femora strongly serrulate, and in other characters.

**FEMALE:** Palpus with the two femoral setae spinose, tarsus with the usual four setae and a rod-shaped sensillum. Body with most all the dorsal striae broken, ventral striae broken in areas bordering apodemes I and II. Body setae of the following lengths: Dorsocentrals 45, 45, 45, 42, 45, 30; mediolaterals 43, 45, 45, 47, 60, 41, 40, 29, 23; laterals 22, 16; subcoxals 26, 43, 33, 32, 18. **Legs:** Femora I-IV 136, 106, 125, and 130 long respectively; genual setae I-IV 54, 42, 45, 121 long respectively; tibiae I-IV 122, 101, 127, and 150 long respectively. Length 322, width 273.

**MALE:** Not known.

**Holotype:** Female, San Blas, Nay., April 11, 1957, (D. De Leon) from guasamolleta.

**Neophylllobius horridus**, n. sp.

(Figures 9 and 10)

*N. horridus* belongs in the *neorwicki-lobatus* group of mites, but is readily distinguished from the other mites in this group by having DC 3 more than half as long as the width of the body.

**FEMALE:** Palpus with the two femoral setae weakly spinose, tarsus with the usual four setae. Body striae dorsal in area medial of mediolaterals 2 to 4 very fine, close together and unbroken giving the area an almost smooth look, ventral striae in areas bordering apodemes I and II scarcely broken. Body setae of the following lengths: Dorsocentrals 86, 81, 155, 91, 92, 37; mediolaterals 56, 54, 54, 52, 80, 66, 62, 53, 40; laterals 31-38, 24; subcoxale 36, 48, 44, 37, 37. **Legs:** Femora I-IV 180, 146, 143, 156 long respectively; genual setae I-IV 94, 88, 130, 187 long respectively; tibiae I-IV 185, 164, 198, and 207 long respectively. Length 231, width 244.

**MALE:** Not known.

**Holotype:** Female, Route 36, 18 miles southeast of Guadalajara, Jal., March 22, 1957, (D. De Leon) from an unknown host.

**Neophylllobius marginatus**, n. sp.

(Figures 11 and 12)

*N. marginatus* resembles *N. horridus*, but DC 3 is somewhat less than half as long as the width of the body and the seta of genu III is much less than half as long as is tibia III.

**FEMALE:** Palptarsus with four setae and a rod-shaped sensillum. Body with dorsal striae coarse, unbroken; ventral striae unbroken. Body setae of the following lengths: Dorsocentrals 64, 70, 100, 72, 69, 27; mediolaterals 57, 58, 49, 52, 75, 46, 50, 40, 33; laterals 30, 18; subcoxals 26, 50, 35.

---

**Fig.** 1. *quadrisetosus*, legs II-IV  
**Fig.** 2. *trisetosus*, legs II-IV  
**Fig.** 3. *farrieri*, legs II-IV  
**Fig.** 4. *equalis*, legs II-IV  
**Fig.** 5. *inequalis*, legs I-IV  
**Fig.** 6. *inequalis*, dorsum (left half), venter (right half) of body  
**Fig.** 7. *consobrinus*, legs II-IV  
**Fig.** 8. *lobatus*, legs II-IV  
**Fig.** 9. *horridus*, legs II-IV  
**Fig.** 10. *horridus*, palptarsus  
**Fig.** 11. *marginatus*, legs II-IV  
**Fig.** 12. *marginatus*, tarsus II of male  
**Fig.** 13. *longulus*, legs II-IV  
**Fig.** 14. *curtipilus*, legs II-IV  
**Fig.** 15. *spatulus*, legs II-IV
42, 28. Legs: Femora I-IV 155, 125, 125, and 146 long respectively; genu II 33 long; genual setae I-IV 64, 47, 46-63, and 106 long respectively; tibia I-IV 168, 143, 178, 199 long respectively. Length 314, width 271.

MALE: Resembles female, but dorsal setae, especially DC 3 relatively shorter and DC 6 very short. Length 235, width 206.

NYMPH AND LARVA: Chaetotaxy similar to these stages of N. trisetosus.

Holotype: Female, Ixtlan del Rio, Nay., March 24, 1957, (D. De Leon) from a composite heavily infested with Brevipalpus. Paratypes: Two males, two females, two nymphs, one larva, same data as for holotype; one female, nine miles west of Tepic, Nay., March 25, 1957, from Quercus sp.

Neophylllobius longulus, n. sp.

(Figure 13)

N. longulus appears to be closely related to marginatus differing from it by having the seta of genu II about half as long as the seta of genu III, by having genual setae I-III strongly spinose, and by other characters.

FEMALE: Palpus with the two femoral setae strongly spinose, tarsus with four setae. Body with dorsal striae unbroken, ventral striae broken in areas bordering apodemes I and II. Body setae of the following lengths: Dorsocentrals 50, 51, 82, 59, 64, 34; mediolaterals 63, 62, 40, 40, 65, 38, 34-42, 37, 35; laterals 27, 20-29; subcoxals 33, 42, 42, 36, 27. Legs: Femora I-IV 155, 127, 131, 152 long respectively; genu II 33 long; genual setae I-IV 76, 51, 90, 141 long respectively; tibiae 190, 161, 196, and 207 long respectively. Length 315, width 248.

MALE: Not known.

NYMPH: Chaetotaxy similar to this stage of N. trisetosus.

Holotype: Female, Matias Romero, Oax., January 30, 1957, (D. De Leon) from Calophyllum sp. Paratypes: One female, one nymph, same data as for holotype.

Neophylllobius curtipilus, n. sp.

(Figure 14)

N. curtipilus belongs in the sierrae-lobatus group of mites, but differs from the other members, except N. spatulus, by having the seta of genu II about as long as or shorter than genu II; the genual setae are distinctly spinose.

FEMALE: Palptarsus with four setae. Body with dorsal striae fine and unbroken in area medial of mediolaterals 2 to 4, ventral striae broken in areas bordering apodemes I and II. Body setae of the following lengths: Dorsocentrals 53, 56, 64-85, 64, 61, 31; mediolaterals 60, 57, 42, 41, 65, 38, 41-50, 36-46, 32; laterals 27-36, 19; subcoxals 31, 44, 34, 36, 34. Legs: Femora I-IV 174, 139, 141, 155 long respectively; genu II 33 long; genual setae I-IV 75, 32-46, 84, 140 long respectively, all setiform, distinctly spinose; tibiae I-IV 194, 167, 195, 224 long respectively. Length 308, width 250.

MALE: Resembles female, but DC 6 very short. Length 238, width 213.

NYMPH AND LARVA: Similar to these stages of N. trisetosus.

Holotype: Female, Tuxila Gutierrez, Chihayas, January 10, 1957, (D. De Leon) from Cordia dentata. Paratypes: One male, same data as for
holotype; one male, one female from *Guazuma tomentosa*, other data as for holotype; one female from an unknown host, Tuxtla Gutierrez, January 12. Additional specimens were taken from *Rhus schidcana*, *Lonchocarpus ruginosus*, *Quercus* sp., avocado and several other hosts in the same area during January. One of the specimens taken from oak was observed feeding on a *Brevipalpus* sp.

*Neophylobius spatulus*, n. sp.

(Figure 15)

*N. spatulus* resembles *N. curtipilis*, differing from that species chiefly in having the genual setae linear and faintly spinose.

**FEMALE:** Palptarsus with four setae. Body with dorsal striae unbroken in area medial of mediolaterals 2 to 4, ventral striae broken in areas bordering apodemes I and II. Body setae of the following lengths: Dorsoventrals 47-66, 50-75, 77, 69, 62, 35; mediolaterals 64, 62, 50, 47, 66, 46, 36; laterals 30, 19; subcoxals 38, 51, 38, 38, 18. Legs: Femora I-IV 176, 142, 143, and 154 long respectively; genu II 33 long; genual setae I-IV 53-70, 30, 65-99, and 108 long respectively, faintly spinose-bracteate, coarse, their sides nearly parallel, except II which is widest at about the distal third; tibiae I-IV 190, 145-208, 173-208, and 217 long respectively. Length 308, width 253.

**MALE:** Not known.

**Holotype:** Female, Route 15, nine miles west of Tepic, Nay., March 25, 1957, (D. De Leon) from a composite infested with *Brevipalpus* sp. **Paratypes:** Two females, same data as for holotype, but from a different species of composite; one female, km post 666, Route 190 north of Tehuantepec, Oax., January 31, 1957, from a malpighiaceous shrub.

Holotypes except as noted have been retained in the writer's collection; paratypes will be deposited in the University of Florida Collections, Gainesville.

*Neophylobius mexicanus* McGregor (1950)

I have not seen this species. It was intercepted at Brownsville, Texas on avocado budwood from "Mexico". Based on McGregor's description it can be distinguished from all the species described above by its short body setae. A specimen which fits the description of this species fairly well was collected by Mr. Frank Mead and the writer on Key Largo, Florida, June, 1956, from *Zanthoxylon*.

Acknowledgments are made to Mr. Miguel Palacios Rincón of the Instituto de Historia Natural de Chiapas for the identification of the host plants I collected while there and to Dr. E. W. Baker, Agricultural Research Administration, U.S.D.A., for the loan of material from the National Museum.

The Genus Neophylobius in Mexico

New species of *Neophylobius*. The legs are arranged in the same order for each species—the anteriormost to the left. All legs are drawn to approximately the same scale and are of females, except as noted.