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A REVISION OF THE SPECIES OF THE GENUS NEUMANIA SENSU STRICTO IN NORTH AMERICA, WITH DESCRIPTIONS OF SEVEN NEW SPECIES (THIRD PART)¹

by John C. CONROY ²

Neumania media, new species
(Fig. 59, 64, 70, 76, 80)

MALE: length between anterior end of CP-I and posterior end of CP-IV 438 (410-473); body soft; epidermis very fragile (thin) and covered by a stubble of very small bumps; coxae in four groups; tubercles at end of body of small size; dorsum with a pair of very small dorsalia; tips of coxae narrowed but not pointed; posterior projections of CP-IV somewhat hook-like; posterior apodemes of anterior CP-I/CP-II coxal group extending to middle of CP-IV; surface of coxae appearing weakly reticulate; genital field terminal (fig. 70); width of genital field 224 (195-336); width of gonopore 39 (21-63); few (18-24) genital acetabula/plate; four to five short setae on the anterior margin on the anterior margin of each acetabular plate; dorsal lengths of the palpal segments (fig. 59): P-I, 30 (28-33); P-II, 88 (75-96); P-III, 44 (34-55); P-IV, 86 (68-96); P-V, 30 (27-36); total palpal length 280 (229-308); capitulum, including anchoral process, 130 (116-179) in length, 84 (63-110) in width; dorsal lengths of segments of first leg: I-Leg-1, 52 (42-63); I-Leg-2, 118 (95-132); I-Leg-3, 135 (116-147); I-Leg-4, 200 (168-200); I-Leg-5, 254 (210-273); I-Leg-6, 240 (221-273); dorsal lengths of the distal segments of the fourth leg (fig. 80): IV-Leg-4, 213 (195-242); IV-Leg-5, 232 (210-252); IV-Leg-6, 228 (200-252); distal end of IV-Leg-3 with 4 (3-6) swimming hairs; distal end of IV-Leg-4 with 7 (3-9) swimming hairs; distal end of IV-Leg-5 with 8 (5-10) swimming hairs; four short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and seven short pectinate spines on the postero-ventral aspect of IV-Leg-5.

FEMALE: length between anterior end of CP-I and posterior end of CP-IV 508 (472-546); dorsum and the venter, except for the genital field, as described for the male; genital field terminal (fig. 76); width of genital field 283 (234-336); width of gonopore 99 (63-147); very few (17-26) genital acetabula/plate; pregenital sclerite well-removed from acetabular plates and with 3 free setae on each side between these sclerites; dorsal lengths of the palpal segments (fig. 64): P-I, 34 (28-42); P-II, 106 (96-122); P-III, 54 (47-60); P-IV, 106 (91-122); P-V, 39 (34-44); total palpal length 341 (311-385); capitulum, including anchoral process, 164 (126-200) in length, 101 (84-117) in width; dorsal lengths of segments of first leg: I-Leg-1, 69 (53-84); I-Leg-2, (120-147); I-Leg-3, 157 (126-183); I-Leg-4, 200 (168-200); I-Leg-5, 254 (210-273); I-Leg-6, 240 (221-273).

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FIGS. 59-63: Neumania spp., males, palps, IV-leg


Leg-4, 228 (189-263); I-Leg-5, 254 (193-294); I-Leg-6, 224 (189-258); dorsal lengths of the distal segments of the fourth leg: IV-Leg-4, 244 (200-273); IV-Leg-5, 275 (221-305); IV-Leg-6, 245 (210-263); distal end of IV-Leg-3 with 3 (1-4) swimming hairs; distal end of IV-Leg-4 with 5 (3-7) swimming hairs; distal end IV-Leg-5 with 5 (2-8) swimming hairs; four short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and five short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-5.

**TYPE MATERIAL:** holotype male, mount SCR-75-19, from Sturgeon Creek, at Saskatchewan Avenue, Winnipeg, Manitoba, on 1975.07.23 (J.C. CONROY, deposited in CNC); allotype female, mount SCR-75-38, same location as holotype, on 1975.08.05 (J.C. CONROY, deposited in the CNC); paratypes, four males and ten females, various locations, dates, and collectors, deposited in the CNC; two males, fourteen females, various dates, locations, and collectors, deposited in the ROM; and two males and four females, various dates, locations, and collectors, deposited in the FMNH.

**Material examined:** 42 males and 66 females; NEW BRUNSWICK: 1 male, a pool in a stream, beside Highway 117, 17 km north of Highway 11, Kouchibouguac National Park, Kent Co., 1977.07.15 (I. M. SMITH, CNC, M77-0073); NOVA SCOTIA: 1 male, a pond in a meadow, Cheticamp Campground, La Prairie, Highlands National Park, Cap Breton, 1984.07.09 (I. M. SMITH, CNC, M84-0050); 4 females, Lake O’Law, by the Cabot Trail, north of Finlayson, Inverness Co., 1984.09.18 (I. M. and S.C. SMITH, CNC, M84-0076); 1 male, Lake Ramsay, Lunenburg Co., 1984.09.25 (I. M. and S.C. SMITH, CNC, M84-0104); 1 female, Cameron Lake, South Brookfield, Queen’s Co., 1984.09.26 (I.M. and S.C. SMITH, CNC, M84-0109); QUEBEC: 7 females, Lac Phillippe, Gatineau Park, 1976.08.17 (I. M. SMITH, D. SPANER, and P. PEHTLA, CNC, M76-0302); ONTARIO: 21 females, Chaffey’s Locks, Lake Opinion, Leeds Co. (1 from Station VI
on 1975.05.09; 2 from Station IV on 1975.05.11; 3, Station XII, 1975.05.12; 1, Station XII, 1975.05.13; 1, Station I, 1975.05.14; 1, Station IV, 1975.05.26; 1, Station I, 1975.06.04; 2, Station VI, 1975.06.06; 2, Station XII, 1975.06.08; 1, Station Vs, 1975.06.18; 1, Station XII, 1975.06.21; 1, Station IIId and 1, Station XII, 1975.07.15; 1 Station Vd and 1 Station XII, 1975.07.27; 1, Station IIId, 1975.08.08 — all by N. L. Gerrish ROM; MANITOBA: 27 males, 11 females from Sturgeon Creek, at Saskatchewan Ave., Winnipeg (19 males, 4 females 1975.07.23; 8 males, 6 females, 1975.08.05; 1 female, 1975.08.07 — all by J. C. Conroy); 1 female, Clear Lake, by the Golf Course, Riding Mountain National Park, 1967.09.03 (J. C. Conroy, reported by Conroy, 1976, as N. kickmani); 1 female, Clear Lake, Riding Mountain National Park, 1973.08.01 (R. L. Saunders); 10 males, 5 females, the Ponds, Fort Whyte Nature Reserve, Winnipeg, on various dates in 1976 and 1977 (9 males and 2 females from Pond 1 and 1 male and 3 females Pond 2 — all by J. C. Conroy); SASKATCHEWAN: 6 females, Lone Pine Creek, at the Beaver Dam, Cypress Hills Provincial Park, 1965.06.07 (J. C. Conroy); ALBERTA: 6 females, a pond, near Paine Lake Dam, Waterton, 1965.06.15 (J. C. Conroy); 2 females, a small stream on the east side of Highway 6, 14.3 km south of Pincher Creek (J. C. Conroy); WISCONSIN: 1 female, Nelson Lake, by Tanning Point Road, near Hayward, Sawyer Co., 1983.07.21 (J. C. Conroy); and 2 males, Tigers Cat Flowage, West, Washburn Co., 1983.07.25 (J. C. Conroy).

Discussion: This is the smallest species of Neumania s. str. recorded from North America.

Neumania nova-scotiae, new species
(Fig. 65, 66, 71, 72, 81)

Male: length between anterior end of CP-I and posterior end of CP-IV 431 (410-452); body soft; epidermis covered by very small bumps (not spines); coxae fused into one group by secondary sclerotization; tubercles at end of body prominent but of small size; dorsum with a pair of very small dorsalia; tips of coxae narrowed but not pointed; posterior projections of CP-IV somewhat hook-like; posterior apodemes of anterior CP-I/CP-II coxal group extending to middle of CP-IV; surface of coxae appearing punctate and lightly reticulate; genital field terminal (fig. 71); width of genital field 231; width of gonopore 42; 20 genital acetabula/plate; four short setae on the anterior margin of each acetabular plate; acetabular plates fused to the posterior margin of CP-IV; some secondary sclerotization noted; posterior papillae incorporated into acetabular plate; anus fused to posterior margin of acetabular plates; dorsal lengths of the palpal segments (fig. 65): P-I, 23; P-II, 70 (68-73); P-III, 43 (42-44); P-IV, 73 (70-75); P-V, 31 (29-33); total palpal length 240 (234-248); long, fine setae arising from dorsal area of both P-III and P-IV; capitulum, including anchoral process, 113 (105-120) in length, 77 (69-84) in width; dorsal lengths of segments of first leg: I-Leg-1, 55 (53-59); I-Leg-2, 97 (95-100); I-Leg-3, 109 (105-116); I-Leg-4, 147; I-Leg-5, 173 (168-179); I-Leg-6, 194 (183-200); dorsal lengths of the distal segments of the fourth leg (fig. 81): IV-Leg-4, 161 (158-163); IV-Leg-5, 187 (179-194); IV-Leg-6, 177 (168-185); distal end of IV-Leg-3 with 2 swimming hairs; distal end of IV-Leg-4 with 6 (5-6) swimming hairs; distal end of IV-Leg-5 with 4 (3-4) swimming hairs; four small and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and five small pectinate spines on the postero-ventral aspect of IV-Leg-5.

Female: length between anterior end of CP-I and posterior end of CP-IV 501 (479-515); dorsum and the venter, except for the genital field, as described for the male; genital field terminal (fig. 72); width of genital field 261 (242-273); width of gonopore 95 (63-126); 20-30 genital acetabula/plate; pregenital sclerite well-removed from aceta­bular plates and with one free seta on each side between these sclerites; dorsal lengths of the palpal segments (fig. 66): P-I, 29 (26-29); P-II, 97 (94-99); P-III, 51 (47-53); P-IV, 91 (86-96); P-V, 35 (32-36); total palpal length 302 (288-310); capitulum, including anchoral process, 151 (137-168) in length, 98 (95-105) in width; dorsal lengths of segments of first leg: I-Leg-1, 63 (63-65); I-Leg-2, 114 (105-116); I-Leg-3, 135 (126-137); I-Leg-4, 193 (179-200); I-Leg-5, 195 (183-200); I-Leg-6, 197
FIGS. 64-69: Neumania spp., palps


(189-200); dorsal lengths of the distal segment of the fourth leg: IV-Leg-4, 207 (200-210); IV-Leg-5, 236 (221-242); IV-Leg-6, 220 (210-231); distal end of IV-Leg-3 with 2 (2-3) swimming hairs; distal end of IV-Leg-4 with 5 (4-6) swimming hairs; distal end of IV-Leg-5 with 3 (3-4) swimming hairs; four small and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and six small and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-5.

**Type material**: holotype male, mount M82-0108-08, from La Haye River, crossing Highway 10, between Northfield and Pinehurst, Lunenburg Co., Nova Scotia, on 1984.09.26 (I. M. and S. C. Smith, CNC, M84-0108), deposited in the CNC. Allotype female, mount M84-0108-04, same locality and data as holotype, deposited in the CNC. Paratypes, one male and one female paratype (same locality and data as the types) deposited in the FMNH and one female paratype deposited in the ROM. The remaining paratypes are either in the CNC or are retained in the author's collection.


**Discussion**: The secondary sclerotization, fusion
of the coxal plates to form a single unit, the fusion of both CP and anus to the genital plates, and the setation of the palp, are all characteristic of this species.

*Neumania ovata* Marshall, 1922

(Fig. 60, 67, 73, 77, 82)

**MALE:** length between anterior end of CP-I and posterior end of CP-IV 639 (588-704); body soft; epidermis smooth with very small patches (of chitin?) embedded in it; coxae in four groups; tubercles at end of body of small size; dorsum with a pair of very small dorsalia; tips of coxae narrowed but not pointed; posterior projections of CP-IV somewhat hook-like; posterior apodemes of anterior CP-I/CPII coxal group extending to middle of CP-IV; surface of coxae appearing strongly reticulate; genital field (fig. 73) terminal; width of genital field 316 (284-410); width of gonopore 54 (35-84); numerous (50-60) genital acetabula/plate; five to six short setae on the anterior border of each acetabular plate; dorsal lengths of the palpal segments (fig. 60) P-I, 39 (36-44); P-II, 125 (107-135); P-III, 74 (65-87); P-IV, 131 (117-148); P-V, 47 (42-52); total palpal length 416 (390-450); note the 5-7 long, fine setae on the dorsal aspect of P-IV; capitulum, including anchoral process, 174 (157-201) in length, 120 (116-135) in width; dorsal lengths of segments of first leg: I-Leg-1, 80 (74-89); I-Leg-2, 143 (116-164); I-Leg-3, 180 (158-210); I-Leg-4, 255 (231-305); I-Leg-5, 272 (213-315); I-Leg-6, 237 (185-300); dorsal lengths of the distal segments of the fourth leg: IV-Leg-4, 275 (221-331); IV-Leg-5, 305 (242-349); IV-Leg-6, 286 (218-336); distal end of IV-Leg-3 with 3 (1-5) swimming hairs; distal end of IV-Leg-4 with 5 (3-6) swimming hairs; distal end of IV-Leg-5 with 5 (3-6) swimming hairs; five short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and six pectinate spines on the postero-ventral aspect of IV-Leg-5.

**FEMALE:** length between anterior end of CP-I and posterior end of CP-IV 597 (546-630); dorsum and the venter, except for the genital field, as described for the male; genital field terminal (fig. 77); width of genital field 365 (294-431); width of gonopore 129 (74-189); 22-26 genital acetabula/plate; pregential sclerite well-removed from acetabular plates and with 2 free setae on each side between these sclerites; dorsal lengths of the palpal segments (fig. 67) : P-I, 38 (32-42); P-II, 115 (99-123); P-III, 66 (55-74); P-IV, 115 (93-130); P-V, 41 (36-47); total palpal length 375 (341-409); capitulum, including anchoral process, 188 (153-231) in length, 119 (105-147) in width; dorsal lengths of segments of first leg: I-Leg-1, 80 (74-89); I-Leg-2, 143 (116-164); I-Leg-3, 180 (158-210); I-Leg-4, 255 (231-305); I-Leg-5, 272 (213-315); I-Leg-6, 237 (185-300); dorsal lengths of the distal segments of the fourth leg: IV-Leg-4, 275 (221-331); IV-Leg-5, 305 (242-349); IV-Leg-6, 286 (218-336); distal end of IV-Leg-3 with 3 (1-5) swimming hairs; distal end of IV-Leg-4 with 5 (3-6) swimming hairs; distal end of IV-Leg-5 with 5 (3-6) swimming hairs; five short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and six pectinate spines on the postero-ventral aspect of IV-Leg-5.

**TYPE MATERIAL:** holotype female from Lake Wingra, Madison, Dane Co., Wisconsin, on 1910.06.19 (Ruth MARSHALL, FMNH, MARSHALL Collection) deposited in the FMNH; allotype male, mount NE-1C-082-ROM, from Station XII, Chaffey's Locks, Lake Opinicon, Leeds Co., Ontario, on 1975.07.15 (N. L. GERRISH, ROM), deposited in the FMNH. Paratype, one male deposited in the CNC. The remaining paratypes are either in the CNC or retained in the author's collection.

**Material examined:** 17 males and 11 females; WISCONSIN: 1 female, holotype; 3 males, the Chief River, near Hayward, Sawyer Co., 1983.07.22 (J.C. CONROY); FLORIDA: 1 female, a slow stream, by Route 609, Indiantown, Martin Co., 1976.02.11 (I. M. SMITH, CNC, M76-0005); 1 female, an irrigation pond, at Route 609, Palm City, Martin Co., 1976.02.15 (I. M. SMITH, CNC, M76-0011); 1 female, an irrigation ditch, by Route 609, Indiantown, Martin Co., 1976.02.17 (I. M. SMITH, CNC, M76-0017); BRITISH COLUMBIA: 1 female, Okanagan Lake, at Pyramid Point Provincial Park, Summerland, 1976.07.13 (I. M. SMITH, CNC, M76-0216); ALBERTA: 1 female, a pond.
near the Paine Lake Dam, Waterton, 1965.06.15 (J.C. CONROY); 1 female, a small stream on the east side of Highway 6, 14.3 km south of Pincher Creek, 1982.07.31 (J.C. CONROY; 4 males and 2 females Chaffey’s Locks, Lake Opinicon, Leeds Co., (1 female, Station I 1975.06.04; 1 male Station XII, 1975.06.21; 2 males, including the allotype, Station XII, 1975.07.15; 1 male, Station VD and 1 female, Station XII, 1975.07.27; all by N.L. GERRISH, ROM); NOVA SCOTIA: 1 female, 9 nymphs, a pool in a flood course, near Cheticamp campground, La prairie, Highlands National Park, Cape Breton, 1984.07.05 (I.M. SMITH, CNC, M84-0034); 4 males, a stream crossing the Port Dufferin-Dufferin Mines road, Halifax Co., 1984.09.23 (I.M. and S.C. SMITH, CNC, M84-0098); 6 males, Cameron Lake, South Brookfield, Queen’s Co., 1984.09.26 (I.M. and S.C. SMITH, CNC, M84-0109); 1 female, Fancy Lake, beside the road between Bridgewater and Conqueral Mills, Lunen-
Neumania papillator Marshall, 1922
(Fig. 61, 68, 74, 78, 83)

MALE: length between anterior end of CP-I and posterior end of CP-IV 460 (397-504); body soft; epidermis covered by a fine stubble of small spines, arranged in a loose, reticulate pattern; coxae in four groups; tubercles at end of body prominent; dorsum with a pair of very small dorsalia; tips of coxae narrowed but not pointed; posterior projections of CP-IV somewhat hook-like; posterior apodemes of anterior CP-I/CP-II coxal group extending to middle of CP-IV; surface of coxae appearing punctate and weakly reticulate; genital field terminal (fig. 74); width of genital field 309 (221-410); width of gonopore 44 (26-95); 22-30 genital acetabula/plate; dorsal lengths of the palpal segments (fig. 61): P-I, 26 (23-34); P-II, 87 (78-107); P-III, 46 (42-55); P-IV, 78 (62-107); P-V, 33 (23-42); total palpal length 269 (244-345); capitulum, including anchoral process, 150 (116-179) in length, 93 (80-105) in width; dorsal lengths of segments of first leg: I-Leg-1, 63 (53-74); I-Leg-2, 113 (96-126); I-Leg-3, 132 (116-158); I-Leg-4, 187 (163-224); I-Leg-5, 203 (176-231); I-Leg-6, 241 (200-273); dorsal lengths of the distal segments of the fourth leg (fig. 83): IV-Leg-4, 195 (158-231); IV-Leg-5, 215 (189-252); IV-Leg-6, 224 (147-263); distal end of IV-Leg-3 with 2 (1-5) swimming hairs; distal end of IV-Leg-4 with 4 (3-6) swimming hairs; distal end of IV-Leg-5 with 3 (2-5) swimming hairs; four short and one long (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and eight pectinate spines on the postero-ventral aspect of IV-Leg-5.

FEMALE: length between anterior end of CP-I and posterior end of CP-IV 563 (525-641); dorsum and the venter, except for the genital field, as described for the male; genital field terminal (fig. 78); width of genital field 355 (294-431); width of gonopore 103 (53-179); 30-52 genital acetabula on each plate; pregenital sclerite well-removed from acetabular plates and with four free setae on each side between these sclerites; dorsal lengths of the palpal segments (fig. 68): P-I, 32 (26-36); P-II, 110 (95-133); P-III, 62 (55-73); P-IV, 104 (94-117); P-V, 39 (35-49); total palpal length 346 (322-377); capitulum, including anchoral process, 171 (147-
200) in length, 106 (74-126) in width; dorsal lengths of segments of first leg: I-Leg-1, 76 (63-95); I-Leg-2, 142 (132-158); I-Leg-3, 170 (147-200); I-Leg-4, 237 (210-294); I-Leg-5, 256 (221-311); I-Leg-6, 253 (210-317); dorsal lengths of the distal segments of the fourth leg: IV-Leg-4, 271 (231-347); IV-Leg-5, 297 (263-368); IV-Leg-6, 253 (210-357); distal end of IV-Leg-3 with 3 (1-4) swimming hairs; distal end of IV-Leg-4 with 5 (3-7) swimming hairs; distal end of IV-Leg-5 with 4 (2-7) swimming hairs; five small and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and six small and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-5.

Type material: holotype male from Lauderdale Lakes, Southern Wisconsin, on 1913.08.13 (Ruth Marshall, FMNH, Marshall Collection) deposited in the FMNH; allotype female from Madison Lakes, Madison, Dane Co., Wisconsin, on 1915.08.09 (R.A. Muttkowski, FMNH, Marshall Collection) deposited in the FMNH.

Material examined: 13 males and 44 females; Wisconsin: 1 male, 2 females, Gendell Lakes, Adams Co., 1903.10.01 (Ruth Marshall, FMNH, Marshall Collection); 2 males Lauderdale Lakes, Southern Wisconsin, 1913.08.13 (holotype); 2 females, the Madison Lakes, Madison, Dane Co., Wisconsin, 1915.08.09 (allotype); 2 females, the Yellow River at Highway 70, near Spooner, Washburn Co., 1983.07.23 (J.C. Conroy); 1 female from Tiger Cat Flowage, West, near Hayward, Sawyer Co., 1983.07.25 (J.C. Conroy); 1 female, Tiger Cat Flowage, East, near Hayward, Sawyer Co., 1983.07.25 (J.C. Conroy); Florida: 1 male, an irrigation ditch at Route 609, Indiantown, Martin Co., 1976.02.17 (I.M. Smith, CNC, M76-0017); Oregon: 4 females, Alsea River, Blackberry Campground, Tidewater, Lincoln Co., 1983.06.29 (I.M. Smith, CNC, M83-0010); British Columbia: 1 female, Marion Lake, UBC Forest Reserve, Haney, 1966.06.05, (D. McQueen, J.C. Conroy collection); 1 female, Cowichan Lake at Mesachie Lake Experimental Station, 1979.07.02 (I.M. Smith, CNC, M79-0031); Saskatchewan: 1 female, an unnamed creek at 57 Trail, Prince Albert National Park, 1967.08.29 (J.C. Conroy); Manitoba: 2 females, West Blue Lake, Duck Mountains Provincial Park (1, 1968.06.22 and the other, 1968.06.26) (J.C. Conroy); Ontario: 7 males and 8 females, Chaffey's Locks, Lake Opinicon, Leeds Co. (1 female, Station VIII, 1975.05.08; 1 female, Station XII, 1975.05.11; 3 females, Station IV, 1975.05.26; 1 male, 2 females, Station XII, 1975.06.21; 1 male, Station XII, 1975.07.15; 1 male, Station VI, 1975.07.26; 3 males, Station VI, 1975.08.07; 1 male, Station I, 1983.07.27; all by N.L. Gerrish, ROM); 2 females, Lake 382, Experimental Lakes Area, Kenora, 1979.07.02 (J.C. Conroy); Quebec: 2 males, 5 females, Lac Philippe, Gatineau Park, 1976.08.17 (I.M. Smith, CNC, M76-0302); Nova Scotia: 1 male, 1 female, a pool in a pothole, near Cheticamp Campground, La Prairie, Cape Breton Highlands National Park, 1984.07.05 (I.M. Smith, CNC, M84-0036); 1 female, Lake O'Law, by the Cabot Trail, north of Finlayson, Inverness Co., 1984.09.18 (I.M. and S.C. Smith, CNC, M84-0076); 3 females, Lake Charlotte, at the highway, Halifax Co., 1984.09.23 (I.M. and S.C. Smith, CNC, M84-0100); 4 females, Lake Ramsay, Lunenburg Co., 1984.09.25 (I.M. and S.C. Smith, CNC, M84-0104); 1 female, Cameron Lake, South Brookfield, Queen's Co., 1984.09.26 (I.M. and S.C. Smith, CNC, M84-0109); New Brunswick: 1 female, a boggy pool, beside Highway 17, 20.4 km of Highway 11, Kouchibouguac National Park, Kent Co., 1977.09.29 (I.M. Smith, CNC, M77-0165); 1 female, a small pond, north of Chamcook Lake, Charlotte Co., 1984.10.02 (I.M. and S.C. Smith, CNC, M84-0123).

Discussion: This species previously was recorded from Wisconsin and Louisiana (Marshall, 1922, 1933), Tennessee (Hoff, 1944) and Pennsylvania (Cribbins, 1959). I have been unable to locate the « Lauderdale Lakes » on any Wisconsin maps. The information on the two female allotypes does not further identify which of the lakes in or around Madison is the type location. Female coxal plates and legs appeared blue-green when preserved in Koenike's fluid. Marshall (1922) named the species after the prominent papilla located near the outer margin of the genital plate in the male. Marshall (1922) also noted “this is a small mite, the male measuring 0.60 mm., the female 0.78 mm.”
These figures are for total body length. Marshall (1933) reported the species from 5.0 meters depth in Green Lake, Wisconsin.

*Neumania pubescens* Marshall, 1929  
(Fig. 62, 63, 69, 75, 79)

**Male** : length between anterior end of CP-I and posterior end of CP-IV 390 (320-420); body soft; epidermis covered by a dense stubble of long, fine spines; coxae in four groups; tubercles at end of body of small size; dorsum with a pair of very small dorsalia; tips of coxae narrowed but not pointed; posterior projections of CP-IV somewhat hook-like; posterior apodemes of anterior CP-I/CP-II coxal group extending to middle of CP-IV; surface of coxae appearing distinctly reticulate; genital field terminal (fig. 75); width of field 212 (172-242); width of gonopore 41 (32-48); about 23-28 genital acetabula on either acetabular plate; several (from 5-10) long setae on the posterior border of each acetabular plate (hence the specific name); dorsal lengths of the palpal segments (fig. 62): P-I, 23 (18-31); P-II, 71 (65-81); P-III, 42 (34-57); P-IV, 59 (52-67); P-V, 30 (23-34); total palpal length 225 (203-242); capitulum, including anchoral process, 124 (95-144) in length, 78 (63-109) in width; dorsal lengths of segments of first leg: I-Leg-1, 55 (42-65); I-Leg-2, 92 (74-117); I-Leg-3, 116 (95-127); I-Leg-4, 155 (137-192); I-Leg-5, 194 (168-234); I-Leg-6, 216 (195-229); dorsal lengths of the distal segments of the fourth leg (fig. 63): IV-Leg-4, 197 (157-221); IV-Leg-5, 220 (189-246); IV-Leg-6, 221 (200-240); distal end of IV-Leg-3 with 2 (1-4) swimming hairs; distal end of IV-Leg-4 with 2 (2-5) swimming hairs; distal end of IV-Leg-5 with 2 (2-3) swimming hairs; four short and one large (distal) pectinate spines on the postero-ventral aspect of IV-

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Figs. 80-83: *Neumania* spp. Terminal segments of male fourth legs.  
80. — *N. media* n. sp., holotype. 81. — *N. nova-scotiae* n. sp., holotype. 82. — *N. ovata* Marshall, 1922, holotype. 83. — *N. papillator* Marshall, 1922, mount NEJC.188.ROM.
Leg-4 and seven short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-5.

**Female** : length between anterior end of CP-I and posterior end of CP-IV 557 (452-641); dorsum and the venter, except for the genital field, as described for the male; genital field terminal (fig. 79); width of genital field 366 (305-441); width of gonopore 100 (84-168); 22-30 genital acetabula/plate; pregenital sclerite well-removed from acetabular plate; and the venter, except for the genital field, as described for the male; genital field terminal (fig. 79); width of genital field 366 (305-441); width of gonopore 100 (84-168); 22-30 genital acetabula/plate; pregenital sclerite well-removed from acetabular plate and with 2 free setae on each side between these selerites; dorsal lengths of the palpal segments (fig. 69): P-I, 30 (23-39); P-II, 109 (86-125); P-III, 61 (34-78); P-IV, 94 (78-109); P-V, 41 (31-49); total palpal length 335 (278-380); capitulum, including anchoral process, 177 (126-252) in length, 113 (84-133) in width; dorsal lengths of segments of first leg: I-Leg-1, 75 (58-95); I-Leg-2, 135 (113-168); I-Leg-3, 163 (126-200); I-Leg-4, 235 (179-294); I-Leg-5, 270 (205-394); I-Leg-6, 286 (168-372); dorsal lengths of the distal segments of the fourth leg: IV-Leg-4, 313 (189-420); IV-Leg-5, 330 (221-420); IV-Leg-6, 319 (214-420); distal end of IV-Leg-3 with 3 (1-4) swimming hairs; distal end of IV-Leg-4 with 6 (2-9) swimming hairs; distal end of IV-Leg-5 with 5 (2-8) swimming hairs; four short and one large (distal) pectinate spines on the postero-ventral aspect of IV-Leg-4 and seven short and one large pectinate spines on the postero-ventral aspect of IV-Leg-5.

**Type Material**: holotype male from Lake Wawasee, Kosciusko Co., Indiana, on 1927.07.30 (R. A. Scott, FMNH, MARSHALL Collection) deposited in the FMNH; allotype female from Green Lake, Green Lake Co., Wisconsin, at 6.0 m, on July 1921 (E. A. Birge, FMNH, MARSHALL Collection), deposited in the FMNH.

**Material examined**: 9 males and 56 females;

**INDIANA**: 1 male, holotype; **WISCONSIN**: 3 females (1 = allotype); 1 female, Tiger Cat Flowage, West, near Hayward, Sawyer Co., 1983.07.25 (J. C. Conroy); **BRITISH COLUMBIA**: 1 female, McNeil Creek, near Haney, 1965.08.12 (J. C. Conroy); 4 females, Cowichan Lake, at Mesachie Lake Experimental Station, (3 on 1979.06.25, CNC, M79-0026, and 1 on 1979.07.02, CNC, M79-0031 — all by I. M. Smith); 2 females, a pond in Lakeview Park, Lake Cowichan, 1979.07.05 (I. M. Smith, CNC, M79-0033); 3 females, a spring-fed pool, subalpine meadow, at 1,098 m., on Heather Mountain, Nitinat, 1979.07.14 (I. M. Smith, CNC, M79-0041b); 1 female, a small pool, in a stream crossing Highway 4, 1 km east of the Pacific Rim road, Ucluelet, Vancouver Island, 1979.07.16 (I. M. Smith, CNC, M79-0044); 1 female, a beaver pond, by the road to the Ski Area, 10.7 km from the Seymour Lake Road, Hudson Bay Mountain, near Smithers, 1983.07.19 (I. M. Smith, CNC, M83-0042); 16 females, a boggy pond, by the road to the Ski Area, 11 km from the Seymour Lake Road, Hudson Bay Mountain, near Smithers, 1983.07.20 (I. M. Smith, CNC, M83-0045); 1 female, a boggy lake, by Highway 20, between Heckman Pass and Lake Anahim, 1983.08.05 (I. M. Smith, CNC, M83-0066); **MANITOBA**: 1 male, Edward's Creek Riding Mountain National Park, 1967.09.03 (J. C. Conroy); 1 female, West Blue Lake, Duck Mountains Provincial Park, 1968.06.26 (J. C. Conroy); **ONTARIO**: 1 male, 14 females, Chaffey's Locks, Lake Opinicon, Leeds Co., (1 female, Station VIII, 1975.05.08; 1 female, Station XII, 1975.05.11; 1 female, Station XII, 1975.05.12; 2 females, Station XII, 1975.05.13; 4 females, Station IV, 1975.05.26; 1 female, Station III, and 1 male, Station XII, 1975.06.21; 3 females, Station XII, 1975.07.15; 1 female, Station XII, 1975.08.08; all by N. L. Gerrish, ROM); **NOVA SCOTIA**: 1 male, 3 females, a stream crossing the Port Dufferin-Dufferin Mines Road, Halifax Co., 1984.09.23 (I. M. and S. C. Smith, CNC, M84-0098); 5 males, 2 females, Lake Charlotte at the Highways, Halifax Co., 1984.09.23 (I. M. and S. C. Smith, CNC, M84-0100); 1 female, a small lake, beside the road, south-east Parkdale, Lunenburg Co., 1984.09.25 (I. M. and S .C. Smith, CNC, M84-0106); 2 females from Cameron Lake, South Brookfield, Queen's Co., 1984.09.26 (I. M. and S. C. Smith, M84-0109); 1 female, a stream crossing the road to Harper's Lake, near Shelburne, Shelburne Co., 1984.09.27 (I. M. and S. C. Smith, CNC, M84-0114).

**Discussion**: This species previously was reported from Indiana (Marshall, 1929a), Iowa and Wisconsin (Marshall, 1933), Colorado (Bergstrom, 1953), and Manitoba (Conroy, 1976). The coxal
plates and legs are blue, green, purple, or even red when preserved in Koenike's fluid. Marshall (1929a, 1933) gives the characteristic feature of the species as being the length and abundance of the hairs on the genital plates. This feature is not readily apparent even in the holotype or allotype specimens. Certainly there are long hairs on the acetabular plates, but these usually number between seven and ten per plate. They are frequently lost during slide mounting.

(Continued)