

AMOEOBEGREGARINA NIGRA N. GEN., N. COMB. (APICOMPLEXA: GREGARINIDAE) FROM ADULT MELANOPLUS DIFFERENTIALIS (ORTHOPTERA: ACRIDIDAE) IN SOUTHEASTERN NEBRASKA

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ABSTRACT: *Amoebogregarina nigra* n. gen., nov. comb. (Eugregarinida: Gregarinidae) is described from trophozoites, gamonts, associations, gametocysts, and oocysts collected from adult *Melanoplus differentialis* (Orthoptera: Acrididae) in Nemaha County, Nebraska. Host alimentary canals were examined for eugregarine parasites. Gregarines encountered were fixed as permanent specimens or subjected to a series of morphometric measurements. Morphometric analysis indicated the presence of *Gregarina nigra*, a poorly described taxon reported from a variety of Nearctic grasshopper species. Examination of *G. nigra* revealed a metamorphic epimerite assimilated by the protomerite on maturity. This epimerite–protomerite complex is unique within Gregarinidae, prompting creation of the genus *Amoebogregarina*. *Amoebogregarina nigra* is the type species in new combination. *Gregarina indianensis* is recognized as a junior synonym of *A. nigra*.

Eugregarine parasites are reported from the alimentary canal of acridids across several genera: *Melanoplus* Stal (Hall, 1907; Watson, 1915; Semans, 1939), *Encoptolophus* Scudder (Watson, 1915; Semans, 1939), *Hesperotettix* Scudder (Watson, 1915), *Schistocerca* Stal (Watson, 1915; Semans, 1939; Canning, 1956), and *Dissosteira* Scudder (Semans, 1939). *Gregarina nigra* Watson, 1915 was described from the intestines of *Melanoplus femur-rubrum* deGeer, *Melanoplus differentialis* Uhler, and *Encoptolophus sordidis* Burmeister. The genus *Gregarina* is diagnosed, in part, using epimerite structure. Watson (1915) made no mention of an epimerite and, although she later remarked, “a slight indentation persists at the apex of the protomerite left by the detachment of the knoblike epimerite,” no morphometric datum or figure further details trophozoite structure (Watson, 1915, 1916; Semans, 1939). *Gregarina nigra* is a common and apparently widespread species parasitizing an economically important host group.

Populations of *G. nigra* were recovered and studied during an on-going biotic survey of the gregarine parasites of North American insects. These populations appear conspecific with Watson's *G. nigra*, but a knoblike epimerite was not encountered. Instead a metamorphic ontogenetically assimilated epimerite offset from the protomerite by a distinct hyaline zone was observed. This is an epimerite construction heretofore undescribed among the Gregarinidae, prompting the creation of a new genus and the redescription of *G. nigra* in new combination.

MATERIALS AND METHODS

Adult *M. differentialis* were collected from September to October 1997 near the Missouri River northeast of Peru, Nemaha County, Nebraska (N40°29'4.5"W, 95°41.5'3.7"). Grasshoppers were captured using a sweep net and maintained in collapsible insect cages at Peru State College. Grasshoppers were fed grass taken from the collection site, and distilled water was sprayed on the grass daily to provide moisture. Postmortem examinations were conducted within 48 hr of collection. Animals were eviscerated and alimentary canals were placed in insect muscle saline (Clopton and Lucarotti, 1997). For permanent museum specimens, the host's alimentary canal was dissected on a glass coverslip and a wet smear was prepared, fixed in alcohol–formalin–acetic

acid (AFA), washed in 70% ethanol, stained in Semichon's acetocarmine, dehydrated in ethanol, cleared with xylene, and mounted in Damar balsam. Morphometric data were taken from video recordings (S-VHS) of living gregarines. Wet mounts of freshly dissected host intestinal tract were prepared using insect muscle saline (Belton and Grundfest, 1962) and simultaneously examined and recorded with an Olympus binocular compound microscope adapted for video microscopy. Morphometric measurements depicted in Figure 1 were taken directly from a video monitor.

Gametocysts were collected from the alimentary canal during postmortem examinations, and the length and width of each gametocyst was recorded. Gametocysts were transferred to individual wells of a Miniwell® assay plate (Nunclon Miniwell minitray plate; 60 conical, flat-bottomed, 10-μl wells; Nunclon 439225, Nalge Nunc International Corp., Rochester, New York) and placed in a covered petri dish for dehiscence.

Parasite ontogenetic stages are defined as follows: trophozoites are solitary gregarines possessing a distinct epimerite; gamonts are solitary gregarines that have structurally incorporated the epimerite into protomerite; immature associations are gregarine pairs in which the primite is a trophozoite; mature associations are gregarine pairs in which the primite is a gamont. Terminology for the shapes of planes and solids is consistent with that suggested by the Systematics Association Committee for Descriptive Biological Terminology (Anonymous, 1962a, 1962b).

All measurements are presented in μm as range values followed by the mean, standard deviation, and sample size in parentheses. Measurements and observations were made through an Olympus binocular compound microscope with 10× wide-field eyepieces, 4×, 10×, and 40× objectives, and a daylight filter. Video recordings were made using a Sony model DXC-107A video camera with a C-mount adapter.

The following specimens were examined for comparative purposes: (1) *G. nigra* Watson, 1915 (gamont vouchers, U.S. National Animal Parasite Collection 050994.02) and *Gregarina rigida* (Hall) Ellis, 1913 (trophozoite and gamont vouchers, U.S. National Animal Parasite Collection 050994.01, 050995.00) from an unidentified host in Urbana, Illinois.

DESCRIPTION

Amoebogregarina n. gen.

Diagnosis: Eugregarinida Léger, 1892, sensu strictu Levine et al. (1980); Septatina Lankester, 1885, sensu strictu Levine et al. (1980); Gregarinicae Chakaravarty, 1960; Gregarinidae Labbé, 1899; with characters of the genus *Amoebogregarina* n. gen.: epimerite metamorphic, in young trophozoites shallowly ovoid to transversely ellipsoid and constricted basad with a hyaline zone at its attachment to the protomerite, retained, metamorphosing through shallowly ellipsoid and obcotyliform stages, assimilated into the gamont protomerite after detachment from host gut epithelium; association precocious, caudofrontal, biassociative; gametocysts ellipsoid, with sporoducts; oocysts dolioform, dehiscing in chains.

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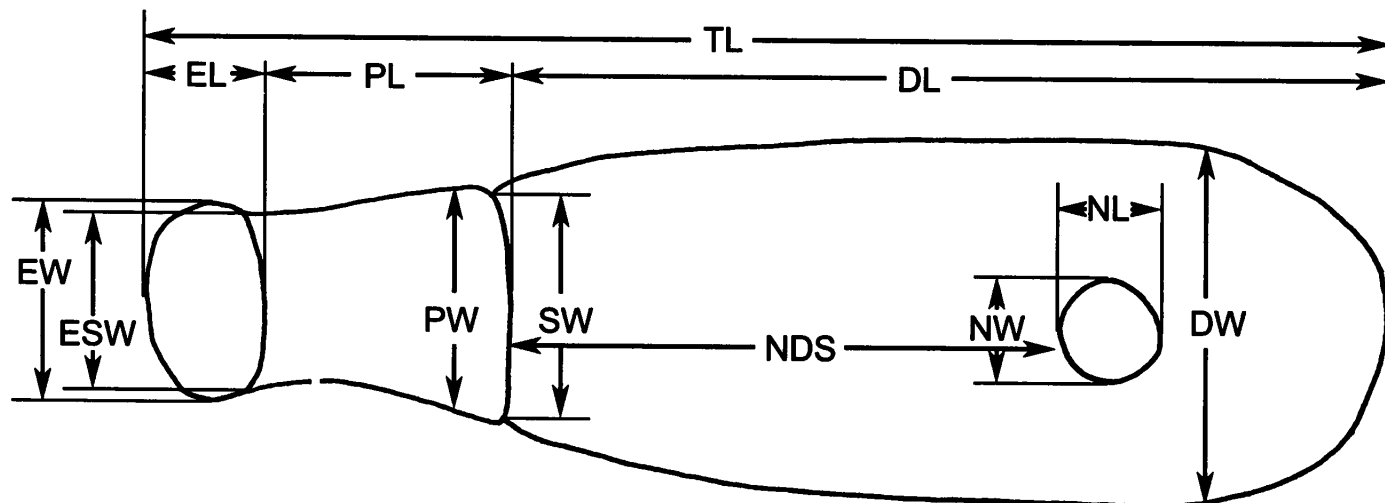


FIGURE 1. Morphometric measurements for *Amoebogregarina* n. gen. Total length (TL); epimerite width (EW); epimerite length (EL); epimerite septum width (ESW); protomerite width (PW); protomerite length (PL); protomerite-deutomerite septum width (SW); deutomerite width (DW); deutomerite length (DL); nucleus distance from the protomerite-deutomerite septum (NDS); nucleus width (NW); nucleus length (NL).

Taxonomic summary

Type species: *Amoebogregarina nigra* n. comb.

Etymology: The generic name *Amoebogregarina* is taken from the Greek root *amoibe* meaning "changing" or "transforming" and is given to mark the metamorphic nature of the epimerite-protomerite complex.

Remarks

Precocious caudofrontal biassociative association and gametocyst dehiscence through sporoducts place this genus among the Gregarinidae. The type species was placed in the genus *Gregarina* by Watson (1915) who described gamont and association structure but provided no direct detail or illustration of trophozoite morphology. She later reported that, "a slight indentation persists at the apex of the protomerite left by the detachment of the knob-like epimerite" (Watson, 1916). Data presented here indicate that her diagnosis of *Gregarina* was incorrect and based on incomplete data.

Among *Amoebogregarina* the epimerite is metamorphic and ontogenetically assimilated into the protomerite. In young trophozoites, the epimerite is shallowly ovoid to transversely elliptoid and constricted basad with a hyaline zone at its attachment to the protomerite. The epimerite is not shed but is absorbed, metamorphosing through shallowly elliptoid and obcotyliform stages before being assimilated into the protomerite as the gregarine matures. Epimerite structure is a cardinal generic-level character among the Eugregarinida and the unique metamorphic nature of the epimerite described herein signals a previously unrecognized genus.

Amoebogregarina nigra n. comb.

(Figs. 2–11)

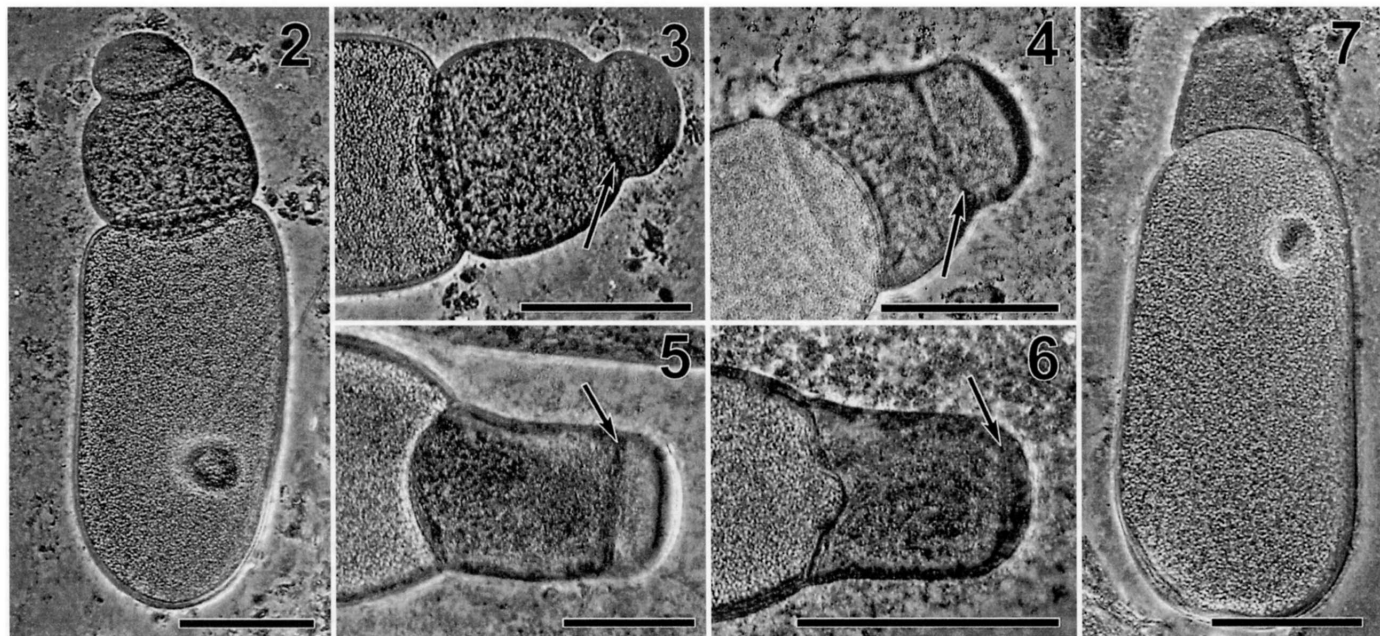
Synonyms: *Gregarina nigra* Watson, 1915 n. syn., *Gregarina indianensis* Semans, 1939 n. syn.

Trophozoite (Fig. 2): Attached to host ventricular epithelium, solitary or in precocious association. Epimerite metamorphic, in young trophozoites shallowly ovoid to transversely elliptoid, constricted basad with a hyaline zone at its attachment to the protomerite, metamorphosing through shallowly elliptoid and obcotyliform stages, finally assimilated into the protomerite in gamonts after detachment from host gut epithelium (Figs. 3–6); epimerite length (EL) 20.0–50.5 (37.9 ± 8.2 , 30), epimerite width (EW) 54.9–105.1 (81.0 ± 15.6 , 30), epimerite septum width (ESW) 38.8–106.4 (75.2 ± 20.0 , 30); EW/EL 1.52–3.44 (2.20 ± 0.46 , 30). Protomerite oblong to transversely oblong, slightly constricted at protomerite-deutomerite septum; protomerite length (PL) 54.5–123.7 (77.9 ± 16.7 , 30), protomerite width (PW) 42.0–126.4 (80.4 ± 20.8 , 30), width of protomerite-deutomerite septum (SW) 48.5–113.1

(79.0 ± 19.4 , 30); PW/PL 0.67–1.51 (1.05 ± 0.25 , 30). Deutomerite narrowly ovate to square; length (DL) 190.6–458.9 (303.9 ± 79.4 , 30), width (DW) 67.8–393.7 (111.1 ± 57.8 , 30); DW/DL 0.25–1.02 (0.37 ± 0.14 , 30). Total length (TL) 277.8–570.6 (417.5 ± 93.0 , 30); PL/TL 0.12–0.29 (0.19 ± 0.04 , 30); DL/TL 0.62–0.81 (0.72 ± 0.04 , 30); PL/DL 0.15–0.46 (0.27 ± 0.07 , 30); PW/DW 0.28–0.93 (0.77 ± 0.14 , 30). Nucleus circular; nucleus length (NL) 32.3–74.5 (51.7 ± 9.0 , 30), nucleus width (NW) 32.3–71.8 (51.3 ± 9.1 , 30); NW/NL 0.90–1.13 (0.99 ± 0.05 , 30); placement variable, nucleus distance from protomerite-deutomerite septum (NDS) 42.0–466.8 (210.8 ± 112.7 , 30); granular to opaque appearance, often with 2 nuclear endosomes. Live trophozoites with endocyte granular when young, becoming opaque with maturity. Yellow under dissecting microscope, brown under compound microscope with daylight filter.

Gamont (Fig. 7): Free in midgut, located between host ventricular peritrophic membrane and ventricular epithelium, solitary or in association. Epimerite structurally incorporated into protomerite with maturation. Protomerite oblong to transversely widely oblong; PL 79.8–223.4 (134.3 ± 38.4 , 30), PW 57.2–240.7 (113.8 ± 48.6 , 30); slightly constricted at protomerite-deutomerite septum; SW 49.2–218.1 (104.9 ± 47.6 , 30); PW/PL 0.56–1.30 (0.83 ± 0.17 , 30). Deutomerite narrowly ovate to oblong; DL 174.2–598.5 (384.5 ± 128.8 , 30), DW 66.5–320.5 (152.1 ± 70.2 , 30); DW/DL 0.27–0.59 (0.39 ± 0.08 , 30). TL 252.7–814.0 (509.0 ± 157.7 , 30); PL/TL 0.19–0.37 (0.27 ± 0.04 , 30); DL/TL 0.68–1.20 (0.75 ± 0.09 , 30); PL/DL 0.23–0.47 (0.36 ± 0.07 , 30); PW/DW 0.57–0.98 (0.77 ± 0.10 , 30). Nucleus circular; NL 34.6–78.5 (52.7 ± 13.7 , 30), NW 34.6–77.1 (52.2 ± 13.2 , 30); NW/NL 0.90–1.12 (0.99 ± 0.05 , 30); placement variable; NDS 13.3–458.9 (218.0 ± 126.7 , 30); granular to opaque appearance, often with 2 nuclear endosomes. Live gamonts with opaque endocyte. Yellow under dissecting microscope, dark brown under compound microscope with daylight filter.

Immature associations (Fig. 8): Association caudofrontal, biassociative; precocious. Primate: epimerite metamorphic, assuming shallowly elliptoid and obcotyliform stages, finally assimilated into the protomerite; EL 42.0–90.4 (53.9 ± 14.3 , 16), EW 54.9–109.8 (90.4 ± 14.4 , 16); EW/EL 0.96–2.54 (1.76 ± 0.43 , 16); ESW 58.1–100.1 (80.9 ± 13.6 , 16). Protomerite oblong to transversely widely oblong; PL 77.5–142.1 (104.4 ± 17.9 , 16), PW 54.9–132.4 (87.1 ± 17.6 , 16); PW/PL 0.49–1.15 (0.85 ± 0.20 , 16); slightly constricted at protomerite-deutomerite septum; SW 64.6–132.4 (85.4 ± 19.4 , 16). Deutomerite narrowly oblong to oblong; DL 239.0–442.5 (328.9 ± 60.6 , 16), DW 67.8–177.7 (129.8 ± 24.4 , 16); DW/DL 0.19–0.64 (0.41 ± 0.11 , 16). TL 390.8–642.8 (475.1 ± 64.5 , 16); PL/TL 0.17–0.30 (0.22 ± 0.04 , 16); DL/TL 0.60–0.90 (0.69 ± 0.08 , 16); PL/DL 0.22–0.49 (0.33 ± 0.09 , 16); PW/DW 0.43–1.19 (0.69 ± 0.17 , 16). Nucleus circular; NL 32.3–64.6 (50.7 ± 7.6 , 13), NW 35.5–64.6 (50.9 ± 6.7 , 13); NW/NL 0.93–



FIGURES 2–7. *Amoebogregarina nigra*, n. comb. 2. Trophozoite with constricted epimerite septum. 3. Epimerite–protomerite complex. 4. Early stage of epimerite incorporation into protomerite. 5. Relaxed epimerite septum prior to incorporation into protomerite. 6. Protomerite with structurally incorporated epimerite. 7. Solitary gamont. Scale bars = 100 μ m. Arrows indicate interface of epimerite and protomerite.

1.10 (1.01 ± 0.05 , 13); placement variable; NDS 37.2–293.9 (232.4 ± 66.8 , 13); granular to opaque appearance, often with 2 nuclear endosomes. Satellite: protomerite square to narrowly transversely oblong; PL 54.9–145.4 (97.7 ± 21.3 , 16), PW 87.2–274.6 (124.0 ± 47.2 , 16); PW/PL 0.92–2.83 (1.30 ± 0.47 , 16); slightly constricted at protomerite–deutomerite septum; SW 71.1–197.0 (113.1 ± 29.3 , 16). Deutomerite narrowly ovate to oblong; DL 226.1–581.4 (337.2 ± 84.1 , 16), DW 109.8–277.8 (153.8 ± 42.8 , 16); DW/DL 0.34–0.64 (0.46 ± 0.08 , 16). TL 323.0–700.9 (433.8 ± 94.3 , 16); PL/TL 0.15–0.30 (0.23 ± 0.04 , 16); DL/TL 0.70–0.83 (0.77 ± 0.04 , 16); PL/DL 0.19–0.43 (0.30 ± 0.07 , 16); PW/DW 0.63–1.85 (0.82 ± 0.28 , 16). Nucleus circular; NL 45.2–71.1 (53.2 ± 8.7 , 11), NW 45.2–64.6 (52.5 ± 7.4 , 11); NW/NL 0.88–1.13 (1.01 ± 0.07 , 11); placement variable; NDS 109.8–455.4 (229.9 ± 96.4 , 11); granular to opaque appearance, often with 2 nuclear endosomes. Live primites and satellites with granular to opaque endocyte. Yellow under dissecting microscope, brown under compound microscope with daylight filter.

Mature associations (Fig. 9): Association caudofrontal, biassociative; between host ventricular peritrophic membrane and ventricular epithelium. Primate: epimerite as in gamont, assimilated into an epimerite–protomerite complex. Protomerite oblong to square; PL 93.1–184.1 (144.4 ± 25.6 , 23), PW 74.3–106.6 (93.4 ± 9.0 , 23); PW/PL 0.49–0.94 (0.66 ± 0.11 , 23); slightly constricted at protomerite–deutomerite septum; SW 48.5–90.4 (74.5 ± 11.4 , 23). Deutomerite narrowly oblong to oblong; DL 219.6–397.3 (308.1 ± 51.3 , 23), DW 87.2–177.7 (126.8 ± 20.8 , 23); DW/DL 0.23–0.63 (0.42 ± 0.08 , 23). TL 335.2–581.4 (450.0 ± 70.3 , 23); PL/TL 0.25–0.38 (0.32 ± 0.04 , 23); DL/TL 0.63–0.75 (0.69 ± 0.04 , 23); PL/DL 0.34–0.60 (0.47 ± 0.07 , 23); PW/DW 0.56–1.04 (0.75 ± 0.11 , 23). Nucleus circular; NL 37.2–58.1 (45.6 ± 5.8 , 11), NW 35.5–58.1 (45.3 ± 6.2 , 11); NW/NL 0.85–1.08 (0.99 ± 0.06 , 11); placement variable; NDS 32.3–323.0 (204.5 ± 83.2 , 11); granular to opaque appearance, often with 2 nuclear endosomes. Satellite: protomerite oblong to transversely oblong; PL 64.6–148.6 (94.7 ± 20.4 , 23), PW 67.8–132.4 (94.3 ± 18.1 , 23); PW/PL 0.61–1.86 (1.03 ± 0.28 , 23); slightly constricted at protomerite–deutomerite septum; SW 61.4–129.2 (89.6 ± 15.8 , 23). Deutomerite narrowly ovate to oblong; DL 177.7–387.6 (285.6 ± 62.0 , 23), DW 78.5–177.7 (118.0 ± 20.9 , 23); DW/DL 0.32–0.57 (0.42 ± 0.07 , 23). TL 251.9–500.7 (383.9 ± 72.0 , 23); PL/TL 0.16–0.34 (0.25 ± 0.05 , 23); DL/TL 0.51–0.85 (0.74 ± 0.07 , 23); PL/DL 0.19–0.50 (0.35 ± 0.09 , 23); PW/DW 0.51–1.15 (0.81 ± 0.13 , 23). Nucleus circular; NL 34.6–54.9 (44.5 ± 5.5 , 12), NW

35.9–51.7 (44.4 ± 5.0 , 12); NW/NL 0.88–1.14 (1.00 ± 0.07 , 12); placement variable; NDS 105.1–277.8 (197.4 ± 51.5 , 12); granular to opaque appearance, often with 2 nuclear endosomes. Live primites and satellites with opaque endocyte. Yellow under dissecting microscope, dark brown under compound microscope with daylight filter.

Gametocyst (Fig. 10): Oblate to transversely elliptic; gametocyst length (GL) 318.7–488.0 (386.1 ± 44.2 , 11), gametocyst width (GW) 216.0–348.0 (301.3 ± 46.5 , 11); GW/GL 0.61–0.89 (0.78 ± 0.08 , 11); dehiscing through sporoducts 72–96 hr after removal from host alimentary canal. Yellow under dissecting microscope.

Oocysts (Fig. 11): Dolioform; oocyst length (OL) 7.9–8.9 (8.3 ± 0.3 , 37), equatorial oocyst width (EOW) 5–6.2 (5.6 ± 0.3 , 37), terminal oocyst width (TOW) 2.2–3.1 (2.7 ± 0.2 , 37); EOW/OL 0.6–0.8 (0.7 ± 0.1 , 37), TOW/OL 0.3–0.4 (0.3 ± 0 , 37), EOW/TOW 1.8–2.7 (2.1 ± 0.2 , 37); with distinct lateral carinae and an obliquely transverse carina linking opposing lateral margins of serial oocysts.

Taxonomic summary

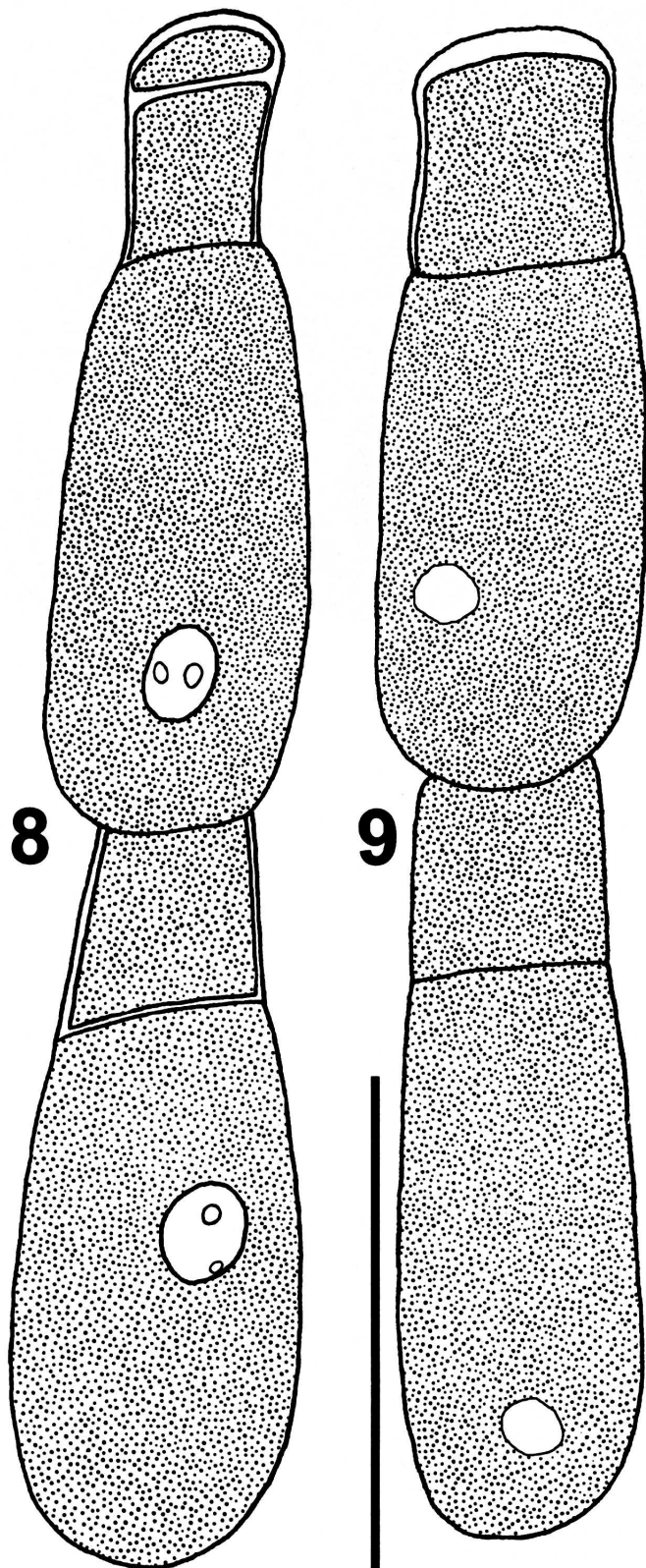
Type host: *Melanoplus differentialis* (Acrididae: Melanoplinae).

Symbiotype: One symbiotype specimen is deposited with the Division of Entomology, University of Nebraska State Museum (UNSM), Lincoln, Nebraska. The symbiotype is identified with 3 labels: a collection label, “NE: Nemaha Co.; Missouri River at Peru, Nebraska, N40°29’4.5”W, 95°41.5’3.7”, October, 1997: R. R. Kula, coll.”; an NSF Deposition label, “Clopton: NSF DEB-9705179, NSF PROJECT VOUCHER, RRK-970156”; and a blue UNSM voucher label “RESEARCH PROJECT Voucher Specimen.” Additional voucher specimens are retained by the author.

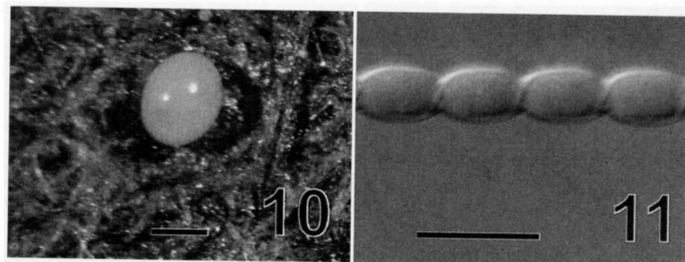
Host records: *Melanoplus differentialis*; *Melanoplus femur-rubrum* (Acrididae: Melanoplinae), *Encoptolophus sordidis* (Acrididae: Oedipodinae) (Watson 1915, 1916); *Chorthippus curtipennis* Harris, *M. differentialis*, *Melanoplus bivittatus*, *Melanoplus mexicanus*, Saussure (Acrididae: Melanoplinae) (Semans, 1939).

Type locality: Near the Missouri River (N40°29’4.5”W, 95°41.5’3.7”), northeast of Peru, Nebraska.

Infection site: Trophozoites attached to the host ventricular epithelium along the midgut or free along the midgut between the ventricular epithelium and the peritrophic membrane. Gamonts located free along the midgut between the ventricular epithelium and the peritrophic membrane.



FIGURES 8, 9. *Amoebogregarina nigra*, n. comb. 8. Immature association. 9. Mature association. Scale bars = 250 μ m.



FIGURES 10, 11. *Amoebogregarina nigra*, n. comb. 10. Gametocyst. Scale bar = 250 μ m. 11. Oocyst chain as revealed by differential interference microscopy; note obliquely transverse carinae linking oocysts. Scale bar = 10 μ m.

Specimens deposited: The neotype is deposited in the Harold W. Manter Laboratory for Parasitology (HWML), Division of Parasitology, University of Nebraska State Museum, Lincoln, Nebraska. The neotype is a primite from an immature association on slide HWML 39744 (author's slide number RRK970161) and is marked by an etched circle. The remaining trophozoites, gamonts, and associations in HWML 39745 (9 slides, author's slides RRK970166B; RRK970177; RRK970180; RRK970181; RRK970182; RRK970188; RRK970190; RRK970191A, B) are voucher specimens.

Remarks

Analysis of the morphometric data collected during this study indicates that *A. nigra*, *G. nigra*, and *G. indianensis* are conspecific (Table I). Watson's (1915) description of *G. nigra* is fundamentally correct but lacks detailed morphometric data and descriptions of epimerite structure, gametocysts, and oocysts. The study presented herein provides a complete redescription of this taxon. Based on the structure and ontogenetic assimilation of an epimerite distinct from those of all described genera within Gregarinidae, *A. nigra* is recognized as the type species of a previously unrecognized genus.

Semans (1939) cited differences in apical epicyte thickness to distinguish *G. indianensis* from *G. nigra*. Variation in apical epicyte thickness is within the normal developmental variation observed in *A. nigra* and reflects various stages of epimerite assimilation. Slight differences in morphometric measurements among *G. indianensis*, *G. nigra*, and *A.*

TABLE I. Comparison of mean morphometric values for *Gregarina nigra*,* *Amoebogregarina nigra*, and *Gregarina indianensis*.†

Parameter	<i>G. nigra</i>		<i>A. nigra</i>		<i>G. indianensis</i>	
	Primite	Satellite	Primite	Satellite	Primite	Satellite
Total Length (TL)	500.0	456.7	450.0	383.9	444.0	372.0
Protomerite						
Length (PL)	146.7	100.0	144.4	94.7	128.0	78.0
Protomerite						
Width (PW)	130.0	120.0	93.4	94.3	101.0	114.0
Deutomerite						
Length (DL)	353.3	356.7	308.1	285.6	316.0	294.0
Deutomerite						
Width (DW)	166.7	160.0	126.8	118.0	133.0	124.0
PW/PL	0.89	1.20	0.66	1.03	0.79	1.46
DW/DL	0.47	0.45	0.42	0.42	0.42	0.42
PW/DW	0.78	0.75	0.75	0.81	0.77	0.91
PL/DL	0.42	0.28	0.47	0.35	0.41	0.27
PL/TL	0.29	0.22	0.32	0.25	0.29	0.21
DL/TL	0.71	0.78	0.69	0.74	0.71	0.79

* Values from Watson (1916)

† Values from Semans (1939)

nigra are consistent with expected population variation within a single species, indicating synonymy of the 3 taxa.

Gregarina currently consists of at least 298 species reported from at least 17 orders (Levine, 1988). Species diversity among *Gregarina* is at least an order of magnitude greater than any other gregarine genus. Breadth of host utilization among *Gregarina* is equally striking when compared to other gregarine genera. Although not diagnostic, such anomalous diversity and host usage may indicate that presumptive generic diagnosis is a pervasive problem within *Gregarina*. The diagnostic structure of the epimerite in *Gregarina* is "simple," a generalized description that invites lax generic diagnosis and has made *Gregarina* a repository of poorly or inadequately described forms. *Amoebogregarina nigra* is an excellent example of the phenomenon. The epimerite is not described in the original description of *G. nigra* and its form is presumed in later descriptive work (Watson, 1915, 1916; Semans, 1939). No later author provides comparative morphometric data or details of epimerite structure. The current work demonstrates the need for careful reconsideration and interpretation of epimerite morphology among *Gregarina*. Such reconsideration in combination with detailed morphometric analysis of all ontogenetic stages may reveal a wide range of unique epimerite morphological forms and thus unrecognized genera hidden within *Gregarina*.

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