TWO NEW SPECIES OF *ISOGLRADICRIS* (CESTOIDEA: 
CARYOPHYLLAeidAE) FROM ALABAMA

ERNEST H. WILLIAMS, JR.
Department of Marine Sciences, University of Puerto Rico,
Mayaguez, Puerto Rico 00708

WILLIAMS, E. H., Jr. 1975. Two new species of *Isoglaridacris* (Cestoidea: 
caryophyllaeid cestodes, *Isoglaridacris erraticus* n. sp. from an undescribed species 
of *Moxostoma* similar to *M. poecilurum* (Jordan) and *I. etowani* n. sp. from the 
Alabama hog sucker *Hypentelium etowanum* (Jordan), are described from Alabama. 
*Isoglaridacris erraticus* most closely resembles *I. folius* Fredrickson & Ulmer, differing 
by the arrangement of testes and the size of the cirrus; *I. etowani* most closely 
resembles *I. jonesi* Mackiewicz, differing by having postovarian and median vitellaria. 
A new host record for *I. agminis* from *Minntrema melanops* (Rafinesque) is reported 
from Alabama. The description of *I. agminis* is corrected with new observations on 
variation. The distribution of vitellaria in the genus *Isoglaridacris* is discussed.

Seven species of the caryophyllaeid cestode *Isoglaridacris* are known from the 
literature (Fredrickson & Ulmer, 1967; Hunter, 1930; Mackiewicz, 1965, 1968, 
1972, 1974; Williams & Rogers, 1972). Two additional species are described below and compared with the seven in Table I. *Isoglaridacris agminis* from the lake 
chubsucker *Erinmyzon sucta* (Lacépède), previously described from Alabama by Williams & Rogers (1972), is redescribed in the present paper. Also reported 
here is an additional catostomid host for *I. agminis* from Alabama.

**Materials and Methods**

Host fishes were collected with 10- and 50-foot seines, boat, backpack 
shockers, monofilament gill nets and trammel nets. They were held alive and 
examined within 24 hr of capture.

Cestodes were fixed in hot 5% formalin. Paraffin sections of 12 μm thickness 
were prepared and stained with hematoxylin and eosin; whole mounts were 
stained with Semichon’s carmine or Semichon’s carmine with a fast green 
counterstain. All specimens were mounted in Permount. Measurements were 
based on relaxed, unflattened specimens. Measurements of testes and of vitellaria 
follow Mackiewicz (1963). Egg size is based on 10 specimens from the uterus of 
each cestode measured. Drawings were made with the aid of a Bausch and 
Lomb Trisymplex microprojector and a camera lucida.

Comparative material (all USNM Helm. Coll.) consisted of a parallectotype of 
*Isoglaridacris hexactoyte* (Linton, 1898) (4793), the holotype of *I. longus* 
Fredrickson & Ulmer (60302), and paratypes of *I. bulbocirrus* Mackiewicz 
(39268), *I. folius* Fredrickson & Ulmer (60301), *I. jonesi* Mackiewicz (73211), 
and *I. agminis* Williams & Rogers (72236).

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Restoration funds).

RESULTS

*Isoglaridacris erraticus* n. sp.

(Figs. 1-6)

Host and locality: Undescribed species of *Moxostoma* similar to *Moxostoma poecilurum* (Jordan), Miller Creek, north of Valley, Alabama, Lee County (10 March 1972).

Habitat: Intestine, loosely attached.

Specimens studied: 7 (6 measured; 1 cross-sectioned, 2 sagittal sectioned).

Type-specimens: Holotype and two paratypes, USNM Helm. Coll. Nos. 72547 and 72548; 4 paratypes in author's collection.

Description: Gravid adults 9.7 (8.4–11.4) mm in length by 558 (530–603) μm in greatest width. Wedge-shaped scolex 828 (810–845) μm in width, with three pairs of shallow loculi. Length 3.6 to 5.1 times combined length of neck and scolex. Inner longitudinal musculature well developed, outer present and poorly developed. Neck long, length from tip of scolex to vitellaria 2.2 (1.8–2.6) mm. Testes numbering 163 to 219, randomly arranged. Testes 134 (95–183) μm by 121 (84–150) μm, beginning 3.2 (2.6–3.5) mm from tip of scolex and extending to uterus; not extending to anterior limit of preovarian vitellaria. Gonopore 1.2 (1.0–1.6) mm from posterior end. Cirrus unarmed, eversible, pouch spherical 224 (215–233) μm in diameter. External seminal vesicle 199 (180–218) μm in length by 70 (66–75) μm in width. Ovary elongate, lobulate, H-shaped; arms 1.0 (0.9–1.2) mm in length. Vagina lacking distinct seminal receptacle. Vitellaria 103 (59–187) μm by 62 (33–99) μm, beginning 2.2 (1.8–2.6) mm from tip of scolex and extending to ovary; postovarian vitellaria present, not continuous with preovarian vitellaria. Eight pairs of indistinct osmoregulatory canals in the testicular portion of the body. Eggs operculate, shell smooth, 36 (33–38) μm by 25 (24–27) μm, measured in utero.

Remarks: *Isoglaridacris erraticus* n. sp. most closely resembles *I. folius* (Table I) in size, testes number range, and neck length. It differs from *I. folius* in arrangement of testes and size of cirrus (averaging 224 and 156 μm, respectively).

The seven specimens of *I. erraticus* n. sp. occurred in the anterior intestine of one specimen of *Moxostoma* sp. The posterior intestine was occupied by 20 mature specimens of the acanthocephalan *Neoechinorhynchus cylindratum* (Van Cleave, 1913). Two undetermined species of caryophyllaeid cestodes were also recovered from the undescribed species of *Moxostoma* during the present study. Neither caryophyllaeid was associated with *I. erraticus* n. sp.

An abnormal testis occurred in one specimen of *I. erraticus* n. sp. (Fig. 5). The testis was located between the anterior members of the preovarian vitellaria well separated from the normal anterior testes and approximately half their size.

The newly proposed specific name is from Latin (erraticus—wandering, erratic) and refers to the arrangement of testes.

*Isoglaridacris etowhani* n. sp.

(Figs. 7–11)

Host and locality: Alabama hogsucker, *Hypentelium etowhani* (Jordan), unnamed tributary of Suagahatchee creek, near Reeltown, Alabama.

Habitat: Intestine, loosely attached.

Specimens studied: 50 (10 measured; 2 cross-sectioned, 5 sagittal sectioned).

Type-specimens: Holotype and two paratypes, USNM Helm. Coll. Nos. 72545 and 72546; 20 paratypes in author's collection.
Description: Gravid adults 8.9 (5.6–13.8) mm in length by 549 (400–730) μm in greatest width. Wedge-shaped scolex 819 (805–830) μm in width, with three pairs of shallow loculi. Length 1.9–2.9 times combined length of neck and scolex. Inner and outer longitudinal musculature well developed. Neck long,
<table>
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<th>Character</th>
<th>\textit{agminis}</th>
<th>\textit{bulbocirrus}</th>
<th>\textit{calentini}</th>
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<th>\textit{erraticus}</th>
<th>\textit{folios}</th>
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<th>\textit{jonesi}</th>
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<td>3.8–10.6</td>
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<td>wedge-shaped to rounded</td>
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<tr>
<td>Egg size</td>
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<td>41–43 × 29–31</td>
<td>25–43 × 15–18</td>
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\textsuperscript{1} Measured in water.
length from tip of scolex to vitellaria 3.1 (1.9–4.8) mm. Testes numbering 80–105, in two dorsal and two ventral rows. Testes 129 (108–187) µm by 123 (92–153) µm, beginning 3.9 (2.4–6.0) mm from tip of scolex and extending to uterus; not extending to anterior limit of preovarian vitellaria. Gonopore 1.1 (0.8–1.7) mm from posterior end. Cirrus unarmed, eversible, pouch spherical 176 (137–196) µm. External seminal vesicle 121 (90–169) µm in length by 58 (34–111) µm in width. Ovary elongate, lobulate, inverted A-shaped with closed apex, arms 0.9 (0.6–1.1) mm in length. Vagina lacking seminal receptacle. Vitellaria 71 (52–101) µm by 62 (40–94) µm, beginning 2.7 (2.0–4.2) mm from tip of scolex and extending to ovary; postovarian vitellaria present, not continuous with preovarian vitellaria. Ten pairs of osmoregulatory canals in the testicular portion of the body. Eggs operculate, shell smooth, 33 (25–43) µm by 23 (15–18) µm, measured in utero.

Remarks: *Isoglaridacris etowani* n. sp. most closely resembles *I. jonesi* (Table 1), but varies in smaller total size, testes size, and in having postovarian vitellaria. *Isoglaridacris etowani* differs from all known members of the genus in having vitellaria in the median field.

Some specimens of *I. etowani* occurred with an inverted A-shaped ovary with slightly open apex. One specimen with an H-shaped ovary was observed.

Of the 87 adult *Hyptelium etowanum* examined, only one specimen harbored *I. etowani*, and 154 of the parasites were recovered from the one host. No other intestinal parasites were present.

Mackiewicz (1972) includes a species in the genus *Isoglaridacris* which does not have postovarian vitellaria but conforms to all other characteristics of the genus. This character does vary in a genus; for example, in the genus *Monothrium* species occur with and without such vitellaria. The present species, *I. etowani*, possesses vitellaria in the median field, unlike all other species in the genus; but, otherwise, it conforms in all other generic characteristics. Erection of a new genus based on one differing character does not seem justified, although additional data may support such action. Therefore, the present species is included in *Isoglaridacris*, and the genus is not emended at this time. The presence or absence of median vitellaria is not known to vary in a genus. However, in a new genus presently being described from the southeastern United States by the author, the amount of median vitellaria varies from abundant in one species to sparse in two other species. A new species of *Penarchigetes* presently being described by the author has median vitellaria, although the original species of the genus *P. oklensis* Mackiewicz does not have them.

*Isoglaridacris agminis* Williams & Rogers, 1972

New host and localities: Spotted sucker, *Minotrema melanops* (Rafinesque); recovered from numerous collections of the host in the Chattahoochee, Coosa, and Tallapoosa River systems in central and eastern Alabama.

Habitat: Throughout intestine, occasionally occurring only in anterior intestine and "stomach."

Specimens studied: 46 (20 measured).

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Figs. 7–11. *Isoglaridacris etowani* n. sp. (all measurements in mm). Fig. 7. Scolex. Fig. 8. Sagittal section through gonopore. Fig. 9. Reproductive organs. Fig. 10. Whole specimen. Fig. 11. Cross-section through testicular region. Legend: C, cirrus sac; CG, common gonopore; E, external seminal vesicle; EB, excretory bladder; IL, inner longitudinal muscles; O, ovary; OC, osmoregulatory canal; OL, outer longitudinal muscles; P, postovarian vitellaria; T, testis; U, uterus; V, vitellaria; VA, vagina.
Remarks: The ranges of measurements in most cases exceed the ranges of the original description, but the new measurements in each case overlap or bracket the original values. Based on the small number of specimens examined, this parasite shows very little variation in measurements in two different hosts, the spotted sucker and the lake chubsucker *Erimyzon succetta* (Lacépède). The new measurements are so similar to the original that their larger ranges are a function of the larger sample size.

Type-specimens studied in the original description of *I. agminis* possessed a scolex with very shallow loculi. Specimens of *I. agminis* from the spotted sucker in the present study had a scolex with deeper loculi.

Infection of *I. agminis* varied from one to 24 specimens in the spotted sucker. *Isoglaridacris agminis* occurred in the presence and absence of the following caryophyllaeid cestodes and their various combinations in the spotted sucker; *Promonobothrium minytremai* Mackiewicz, *Biacetabulum banghami* Mackiewicz, and an undetermined species of *Biacetabulum*. Five specimens of *I. agminis* occurred with six adult and 14 immature specimens of the lissoriidi trematode *Triganodistomum* sp. in one spotted sucker.

Arrangement of testes in some specimens of *I. agminis* from the lake chubsucker is in an irregular instead of a uniform row and was discussed and illustrated in the original description (Williams & Rogers, 1972). The deviation from the normal one-row arrangement was much more pronounced in specimens of *I. agminis* from the spotted sucker. Arrangement in some specimens was random, approaching a very irregular two-row configuration.

An error occurred in the original description of *I. agminis*: the measurement of the vitellaria given as 54 (34–66) μm by 34 (32–43) μm should have read 116 (85–182) μm by 70 (36–143) μm.

**Literature Cited**


