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J. H. Frank University of Florida, jhfrank@ufl.edu

S. L. Kelly University of Central Florida, sandor.kelly@ucf.edu

D. T. Almquist Florida Natural Areas Inventory, dAlmquist@admin.fsu.edu

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Notes on *Diochus* Erichson, *Lissohypnus* Casey, and *Oxybleptes* Smetana (Coleoptera: Staphylinidae) in Florida, including a description of a new species of *Lissohypnus*

> J.H. Frank Entomology & Nematology Department University of Florida Gainesville, FL 32611-0630, USA

S.L. Kelly The Stuart M. Fullerton Collection of Arthropods (UCFC) Department of Biology University of Central Florida Orlando, FL 32816-2368, USA

> D.T. Almquist Florida Natural Areas Inventory 1018 Thomasville Road, Suite 200-C Tallahassee, FL 32303, USA

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J.H. Frank, S.L. Kelly, and D.T. Almquist

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Notes on *Diochus* Erichson, *Lissohypnus* Casey, and *Oxybleptes* Smetana (Coleoptera: Staphylinidae) in Florida, including a description of a new species of *Lissohypnus*

J.H. Frank Entomology & Nematology Department University of Florida Gainesville, FL 32611-0630, USA jhfrank@ufl.edu

S.L. Kelly The Stuart M. Fullerton Collection of Arthropods (UCFC) Department of Biology University of Central Florida Orlando, FL 32816-2368, USA sandor.kelly@ucf.edu

D.T. Almquist Florida Natural Areas Inventory 1018 Thomasville Road, Suite 200-C Tallahassee, FL 32303, USA dAlmquist@admin.fsu.edu

Abstract. The known range of *Oxybleptes meridionalis* Smetana (Coleoptera: Staphylinidae) is expanded in Florida, USA, from Indian River and Manatee counties to now include Brevard, Highlands, Orange, Seminole and Volusia. *Oxybleptes davisi* (Notman) is confirmed to exist in Florida, with records from Leon, Liberty and Wakulla counties in the Panhandle, and Orange County in central Florida. *Lissohypnus texanus* Casey is newly reported from Florida. A **new species**, *Lissohypnus fullertoni*, is described from Florida. *Diochus schaumii* Kraatz reverts to this original spelling; its widespread form in Florida is identical to that in the northeastern USA.

Key words. Diochini, Xantholinini, Florida, USA.

Introduction

Xantholinini are currently considered to be a tribe of the staphylinid subfamily Staphylininae (Newton et al. 2001). The species occurring in America north of Mexico were revised comprehensively by Smetana (1982) with supplements by Smetana (1988, 1990). This small contribution relies on Smetana's cited works to help to complete records of additional Xantholinini detected in Florida, and to document the widespread occurrence of the normal dark color form of *Diochus schaumii* Kraatz in the tribe Diochini. Although the number of species of Staphylinidae reported as occurring in Florida is approaching 450, dozens may remain to be discovered, identified and recorded. Behavioral and ecological studies of this family in Florida, as elsewhere in the Americas, are still in their infancy. Few genera have identification keys to the species level.

Materials and Methods

Materials studied are deposited in the following collections: **ABS** – Archbold Biological Station collection, Venus, FL; **FSCA** – Florida State Collection of Arthropods, Gainesville, FL; **JHFC** – JH Frank collection, Gainesville, FL; **UCFC** – The Stuart M. Fullerton Collection of Arthropods, Orlando, FL - the depository of almost all specimens mentioned. Each mounted specimen has an individual number, and all numbers are included in a database. The Malaise traps used to collect many UCFC specimens were of the 'Townes style' with a collecting head containing dilute isopropanol (Townes 1972).

All UCFC specimens had been mounted on card points; each specimen in *rigor mortis* was drooped in a C-shape with the card point attached to the underside of its thorax and the appendages sticking out in haphazard directions. This mounting method did not allow examination of the entire specimen in a single plane, so some were immersed in dilute alcohol in Syracuse dishes which, after a day or two, allowed some straightening of the body but not the appendages; it did allow dissection of the genitalia. The holotype of the new *Lissohypnus* was immersed in household ammonia in a Syracuse dish, for 48 hrs to soften; when this proved insufficient, the dish was placed in a sonic bath for 2 hrs, and this softened the joints of the appendages enough to allow them to be straightened for a habitus image. That specimen was then remounted with water-soluble glue on a small card plate as described by Smetana (1971: 10–11) and the aedeagus was dehydrated, transferred to xylene, and mounted in Canada balsam on a small celluloid rectangle pinned below the specimen as described by Smetana (1971, 1982).

Oxybleptes Smetana 1982: 253

Smetana (1982) described this genus as containing four species, with three in the eastern part of the continent, and one in the Pacific Northwest of the USA (none including Florida in its range). Smetana (1988) described an additional species, *O. meridionalis*, recorded only from Indian River County, Florida, from males only, and included it in a revised key to the five species. Frank et al. (2005) reported the presence of *O. meridionalis* in Manatee County, at the western side of the Florida peninsula, and described the female of the species, noting that females were the minority in all collections to date; they also noted the collection of one unidentified female specimen (not *O. meridionalis*) from the Florida Panhandle. Below we report (1) an expanded distribution of *O. meridionalis* in central Florida, and (2) new records of *O. davisi* (Notman) in the Florida Panhandle and in central Florida.

Oxybleptes meridionalis Smetana 1988: 566

USA, FL, **Brevard Co.**, Malabar, Malabar Rd, 11-25 Nov 2000, P.J. Russell, Z. Prusak, S.M. Fullerton/ Malabar scrub sand Fire Unit 16, xeric oak scrub Malaise trap/ (UCFC 0 091 165); Brevard Co., Titusville, SR405, 01-15 Aug 2000, Z Prusak, P.J. Russell, S.M. Fullerton/ Enchanted Forest Sanct. White trail, xeric oak hammock, Malaise trap/ (UCFC 0 079 521), same but 14-28 Sept. 2000 (UCFC 0 083 839)/ *Oxybleptes meridionalis* det S.L. Kelly, same but 31 Oct - 25 Nov 2000 (UCFC 0 091 420), same but 11-15 Nov 2000 (UCFC 0 091 165), same but 25 Nov-14 Dec 2000 (UCFC 0 089 019), same but 25 Nov - 10 Dec 2000 (UCFC 0 091 463), same but 14-31 Dec 2001 (UCFC 0 087 821), same but 1-15 Jan 2001 (UCFC 0 090 688, 0 090 694). Brevard Co. total = 10.

USA, FL, **Highlands Co.**, Archbold Biol. Sta., Lk. Placid, 12 May 1986, M. Deyrup/ Window trap, Burn Area; Sebring, Highlands Co. FL, 24 Nov. 1987, J. Cronin/ Flamingo Villas Scrub; Archbold Bio. Sta., 30 November 2004, Mark Deyrup/ several large mating aggregat. on recently turned sand. Highlands Co. total = 15.

USA, FL, **Orange Co.**, Orlando, UCF, V-18-1991/ sand pine rosemary scrub Malaise trap/ S.M. Fullerton collector/ (UCFC 0 173 626), same but V-26-1991 (0 173 843), same but VII-5-1991 (UCFC 0 174 040), same but VII-4-1991 (UCFC 0 173 712), same but VII-27-1991 (UCFC 0173 841), same but VIII-2-1991 (UCFC 0 174 032), same but VIII-8-1991 (UCFC 0 173 701), same but VIII-14-1991 (UCFC 0 174 033), same but VIII-18-1991 (UCFC 0 173 635 and 0 174 028), same but VIII-22-1991 (UCFC 0 174 042), same but VIII-28 (UCFC0 174 118), same but IX-20-1991 (UCFC 0 173 618), same but IX-22-1991 (UCFC 0 173 822), same but IX-26-1991 (UCFC 0 173 848), same but X-22-1991 (UCFC 0 173 833), same but X-28-1991 (UCFC 0 173 831, and 0 173 832), same but XI-24-1991 (UCFC 0 173 819, 0 173 840 and 0 174 110), same but XI-21-1991 (UCFC 0 174 021), same but XI-24-1991 (UCFC 0 174 044), same but XII-9-1991 (UCFC 0 174 026), same but XII-12-1991 (UCFC 0 173 712), same but pitfall trap, VII-10-1997 (UCFC 0 173 571, 0 173 572), same but VII-24-1997 (UCFC 0 173 574, 0 173 455, 0 173 456, and 0 173 457), same but VIII-1-1997 (UCFC 0 173 566 and 0 173 568), same but VIII-8-1997 (UCFC 0 173 569), same but VIII-8-1997 (UCFC 0 173 563), same but VIII-8-1997 (UCFC 0 173 564), same but VIII-8-1997 (UCFC 0 173 564), same but VIII

VIII-21-1997 (UCFC 0 173 575), same but IX-18-1997 (UCFC 0 173 573), same but X-2-1997 (UCFC 0 173 561); same but longleaf pine - saw palmetto, Malaise trap, V-26-1991 (UCFC 0 173 812), same but VIII-1-1997 (UCFC 0 173 314), same but VIII-8-1997 (UCFC 0 173 703 and 0 173 706), same but VIII-24-1997 (UCFC 0 173 545, 0 173 702 and 0 173 707), same but IX-4-1997 (UCFC 0 173 587), same but longleaf pine sand pine turkey oak I-14-1993 (UCFC 0 173 960), same but VII-10-1997 (UCFC 0 173 606), same but VII-24-1997 (UCFC 0 173 614); UCF campus, D.A. Woller, S.M. Fullerton III-27-2012, pitfall traps, oak - sand pine - rosemary scrub, $28^{\circ} 36' 16'' N 81^{\circ} 11. 38'' W$ (UCFC 0 488 987). Orange Co. total = 56.

USA, FL, **Seminole Co.**, Oviedo, Malaise trap scrubby flatwoods 28° 37' 18" N, 81° 10' 26" W, B. Gochnour, VII-30-2012 (UCFC 0 521 145, 0 521 146, 0 521 147, 0 521 148, 0 521 150), same but VI-11-2012 (UCFC 0 519 142), same but VII-16-2012 (UCFC 0 520 464), Seminole Co., Econ Wild. Area, Malaise trap, XI-18-2000 scrub oak saw palmetto (unburned) T. Smith, P. Russell, S.M. Fullerton (UCFC 0 080 477). Seminole Co. total = 8.

USA, FL, **Volusia Co.**, Orange City, VI-15-29-2002, S14 T185 R30E, sand pine scrub Malaise trap Sims Fullerton (UCFC 0 211 994). Volusia Co. total = 1.

Oxybleptes davisi (Notman) 1924: 72 (see Smetana 1982: 254 for redescription)

USA, FL, **Leon Co.**, Apalachicola Nat. For. Stand $231 - 10m^2$ sand J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 21' 34.76"$ N $84^\circ 29' 19.81'$ W, (UCFC 0 457 041); as above but Stand 245/13 - control J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 457 355, 0 457 357, 0 457 358, 0 457 359, 0 457 360, 0 457 361); as above but Stand 245/13 mow J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 457 492, 0 457 500); as above but Stand $245/13 1m^2$ sand J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 457 485, 0 457 492, 0 457 499, 0 457 500); as above but Stand $245/13 1m^2$ sand J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 457 232, 0 457 233, 0 457 233, 0 457 235, 0 457 236); as above but Stand $245/13 - 100m^2$ sand J.R. King Aug 2011/ Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 457 262, male dissected); as above but Stand $246W 1m^2$ sand J.R. King Aug 2011 Pine fltwd; Pitfall $30^\circ 19' 02.30"$ N $84^\circ 28' 40.05$ W (UCFC 0 456 961, 0 456 963, 0 456 964, 0 456 965, 0 456 966, 0 456 967, 0 456 969 and 0 457 235) 8 exx. Leon Co. total = 28.

USA, FL, **Liberty Co.**, Apal Blffs & Rav Pres, Coll: Preserve Staff, VII-29-2008/ Mxd Hrdwd closed canopy, seepage slope ravine, N 30° 29' 42.66" W 84° 58' 42.46" 183 ft. Malaise trap/ (UCFC 0 403 480). Liberty Co. total = 1.

USA, FL, **Orange Co**., Orlando,VI-21-1991, longleaf pine saw palmetto, Malaise trap, S.M. Fullerton (UCFC 0 173 709 male dissected, 0 173 908 male dissected), same but VIII-28-1991, longleaf pine - sand pine - turkey oak, (UCFC 0 173 616), same but longleaf pine - sand pine - turkey oak Malaise trap, VII-24-1997 (UCFC 0 173 616), Orange Co., UCF, 28° 36' 37" N 81° 12' 01" W longleaf pine flatwoods (burn), Malaise traps, M. Carey, S.L. Kelly, S.M. Fullerton V-23-2008 (UCFC 0 466 734), same but VII-20-2012, D.A. Woller, S.M. Fullerton, fluorescent yellow pan traps, oak - sand pine - rosemary scrub (UCFC 0 484 970); Walt Disney World 26 May - 02 June 1998, Z Prusak, S Fullerton, C-4 Stout site, S15,16 T24S R27E xeric oak flatwoods, Malaise trap (UCFC 0 173 649, 0 173 6500 and 173 658). Orange Co. total = 9.

USA, FL, **Wakulla Co.**, St. Mark's NWR, 30.13087°N, 34.30241°W 4-11 August 2011. D.T. Almquist, FL Natural Areas Inventory survey (gopher tortoise burrow façade trap in sandhill habitat). 5 exx. Same data but 11-18 August 2011. 3 exx. [Details of the trap will be explained in a later paper by DTA]. The specimens will be deposited in FSCA. Wakulla Co. total = 8.

The presence of *O. davisi* in the Florida Panhandle was already suspected (see Frank et al. 2005), but its known distribution was District of Columbia, New Jersey and New York (Smetana 1982). The bigger surprise was to find it also in Orange Co. in central Florida along with *O. meridionalis*. The new data show that adults of both species may be collected in pitfall traps and that *O. meridionalis* may be collected in Malaise traps. Adults of *O. meridionalis* have been collected in all months of the year except February and April, but nothing is known of the immature stages or diet. Smetana (1988) pointed to the smaller, less elongate bulbus of the aedeagus of *O. meridionalis*, the slightly smaller body size, and the narrower male tergite of the genital segment as differentiating characters from *O. davisi*. We dissected a male of *O davisi* from Leon Co., a male from Wakulla Co., and two from Orange Co. and found that the genitalia agree exactly with Smetana's (1982) description. We add that we find the elytra of *O. davisi* to be relatively longer and the head, pronotum, and elytra to be relatively glossier.

The original collector of *O. davisi* reported to Notman (1924) that considerable numbers of adults were found running on the tops of several gravestones at Staten Islands, NY on 7 August 1923, that they were running about in daylight, often in circles, and that more were found with the same behavior on 28 September. No mention was made of the kind of stone – whether it had a matte or glossy surface. The earliest collections of *O. meridionalis* (Frank et al. 2005) were all made in daylight, with the adults found drowning in water or soapy water in artificial containers in circumstances suggesting an attraction to light-colored or glossy surfaces. Later collections with abundant specimens were made by trapping, but in no instance by use of lights at night, supporting the idea of diurnal activity.

Lissohypnus Casey 1906: 398 (see Smetana 1982: 261 for redescription)

Smetana (1982) reported only one species of this genus: *L. texanus* Casey, in America north of Mexico, basing his information on 19 specimens from Texas and Louisiana. It later was noted by Navarrete-Heredia et al. (2002) to occur in Tamaulipas, Mexico.

Lissohypnus texanus Casey 1906: 399 (see Smetana 1982: 262 for redescription) Figures 1, 1a.

One female specimen was collected by JHF from the Welder Wildlife Sanctuary, San Patricio County, Texas, 30-XI-1973, under tiles in long grass (JHFC).

Three specimens were brought to JHF by R.W. Lundgren (an enthusiastic insect collector resident in Gainesville) ca. 2000 with a request for identification. Lundgren said he had collected them on 23-IV-1995 in Florida (without further details) – he was not in the habit of labeling his specimens and tended to use code numbers matching records in a card file. He had operated a Malaise trap at the Ordway Preserve in western Putnam County (see Frank et al. 2009) and this may be the collection site. He left Gainesville abruptly late in 2000 or in early 2001 without leaving a forwarding address and has not made contact with Gainesville coleopterists since that time. Thus, the collection locality is unrecorded, although the chances are that it was in Putnam County and by Malaise trap. The specimens were identified by JHF as *N. texanus* by use of Smetana (1982) and comparison with the female specimen in JHFC. One of the Florida specimens is a male, and a genitalic preparation was made, removing all doubt of its identity because it matches exactly the illustration provided by Smetana (1982, Fig. 458) except that the apex of the median lobe is not everted. A female from Florida is illustrated here (Fig. 1, 1a). Thus, *L. texanus* is newly recorded from northern Florida, most likely from Putnam County.

Lissohypnus fullertoni Frank and Kelly, new species.

Figures 2, 2a, 2b, 2c, 2d

In March 2014, SLK sent an unidentified xantholinine specimen suspected to be *Neohypnus* to JHF for identification. It proved to be a male *Lissohypnus*, but was not *L. texanus*. For further clarification of its systematic position especially in relation to the genera *Xantholinus* and *Neohypnus*, see Newton et al. (2001). Against the possibility that the specimen belongs to a West Indian species, JHF checked the key to West Indian '*Xantholinus*' provided by Blackwelder (1943); the specimen keyed out to *X. oakleyi* Blackwelder, but did not at all match the description of the diminutive (2.5-4.5 mm) adults of that species known from Hispaniola and Puerto Rico. Against the possibility that the specimen belongs to a Mexican species, the original descriptions of all the four species of *Lissohypnus* reported in Mexico by Navarrete-Heredia et al. (2002) were read and found not to match the specimen. Although we have seen only this one specimen, we think it is distinct from the single U.S. species known to belong to *Lissohypnus*, and it is not a West Indian species known to Blackwelder (1943), nor a Mexican species known to Navarrete-Heredia et al. (2002) so we here describe it as a new species.

Notes on Florida Staphylinidae

Description. Head piceous, pronotum castaneous, elytra, abdomen, maxillary palpi and legs paler to rufo-testaceous on apical 2/3 of elytra and first two visible segments of abdomen and 2nd and 3rd pairs of legs, antennae castaneous with antennomeres IV-X and base of XI infuscate. Head longer than wide (index 1.20), only slightly dilated posteriorly, posterior angles rounded; frontal groves moderately distinct and long, slightly curved medially in posterior half, ocular grooves absent; eyes small and almost flat, tempora much longer than length of eyes seen from above (index 2.2), punctation of head coarse and moderately dense laterally, punctures becoming sparser medially and gradually disappearing anteriorly; without impunctate median strip on posterior half of head; surface of head glossy, without



Figures 1-2. 1) *Lissohypnus texanus*, habitus of female, 8 mm long. 1a) head further magnified showing ocular punctures (arrowed). 2) *Lissohypnus fullertoni*, habitus of male holotype, 7.5 mm long, 2a) head further magnified showing ocular punctures (arrowed), 2b) tergite VIII, 2c) genital segment, dorsal side up, 2d) aedeagus (with fovea arrowed).

microsculpture; gula short and narrow, sutures behind it contiguous. Antennae geniculate with first antennomere (scape) long and stout, widened toward apex, antennomeres II and III elongate, III slightly longer than II, outer antennomeres strongly transverse, apical antennomere about as long as preceding two combined, and acorn-shaped. Pronotum longer than wide (index 1.3), slightly narrowed posteriorly; dorsal rows each with 11-12 punctures; lateral rows each with 6 punctures; surface of pronotum without microsculpture. Elytra moderately long, at suture a little (index 0.80); at sides feebly (index 0.97) shorter than length of pronotum at midline; punctation rather coarse and moderately dense, irregular; surface without microsculpture. Macropterous. Abdomen with punctation fine and moderately dense, gradually becoming sparser medially; pubescence pale, moderately dense; base of each tergite narrowly covered with microsculpture of fine and dense meshes; rest of tergite with microsculpture of dense and extremely fine transverse waves. Tergite VIII (Fig. 2b) with no special modification. Genital segment of male (Fig. 2c) very similar to that of *L. texanus* as described by Smetana (1982) and thus probably a generic character as specified by him. Aedeagus (Fig. 2d) similar to that of L. texanus described by Smetana (1982) as a generic character, but differing in the following details: parametes long and narrow, curved laterally and curved distally dorsad; each paramere with a short and acutely pointed basal apophysis, curved distally dorsad; apical portion of median lobe blunt, but having an extension consisting of a split structure narrowed and curved dorsad; distal to the fovea is a sclerotized ridge in form of a letter E turned at 45° (with short splines pointing basally); the internal sac with unsclerotized internal elongate spines. Slide-mounting of an aedeagus, perhaps with staining, might reveal the internal structures of the internal sac, but this was not attempted due to risk to the unique holotype (and at this stage in the description is not necessary because of the now obvious differences from the only known congener).

Male. Length 7.5 mm, described above.

Female. Yet unknown.

Holotype. Male in UCFC with collection no. UCFC 0 085 911. Label data: USA, FL, Brevard Co. Malabar, Malabar Rd. 23 Sept - 15 Oct. 2000 P.J. Russell, Z. Prusak, S.M. Fullerton/ Malabar scrub sand Fire Unit 16 xeric oak scrub Malaise trap / UCFC 0 085 911/.

Distribution. Malabar, Brevard Co., Florida, USA.

Etymology. Named in honor of Stuart M. Fullerton, the founder and benefactor of the University of Central Florida Insect Collection (UCFC), who was one of the named collectors of the type specimen. Stuart departed this life on 5 April 2014.

Diagnostic note. The *L. fullertoni* adult differs from *L. texanus* in color, slenderer appearance, head less broadened basally (Fig. 1 vs. 2), and aedeagal structure. The parameral apophyses are short, and acutely pointed, differing greatly from the slender, longer apophyses of *L. texanus*; the parameres are distinctly longer than the median lobe, as contrasted with equal length in *L. texanus*. It agrees with Smetana's generic diagnosis of *Lissohypnus* in that the distance between the ocular punctures (Fig. 2a) is no more than 2.5 times the distance from the inner margin of the eye (Fig. 1a, 2a), and in a similar complex structure of the aedeagus including a fovea in the distal part of the bulbus (Fig. 2d).

Diochus Erichson 1839: 300

Diochus schaumii Kraatz 1860: 27

Diochus schaumii Kraatz is the single species of Diochus recognized by Smetana (1982) among all 862 specimens that he examined in collections made in America north of Mexico. He placed three Casey (1906) species names (D. brevipennis, D. thoracicus and D. pallidiceps) as synonyms after examination of their type material in the Casey collection in the United States National Museum. He recognized a difference in specimens from the southern part of the distributional range (especially Florida and Georgia) in that they are uniformly testaceous, with the elytra very short and the wings micropterous, but found them to be conspecific.

It should not be supposed that pale specimens with short elytra are typical for Florida. All but one of the Florida specimens that we examined in JHFC (Alachua, Dade, Glades, Highlands, Indian River, Leon, Palm Beach, St. Lucie, Sarasota, Taylor and Walton counties) UCFC (Orange County) and FSCA (Baker and Marion counties) are of the normal dark form with elytra of normal length. One specimen in UCFC is of the normal dark color but is micropterous and with short elytra; it is labeled UCF, Orlando, Orange Co. FL, VIII-27-1997/LLP/Sand Pine Turkey Oak, Pitfall Trap/ S. M. Fullerton Collector (UCFC 0 173 591). In addition, a specimen was borrowed by SHK from the Archbold Biological Station Collection near Lake Placid, by courtesy of Mark Deyrup; it is pale, micropterous, and with short elytra and is labeled: Archbold Biol. Sta., Lk. Placid, Highlands Co., FLA., 14 Jan. 1984, M. Deyrup/ OAK LITTER, E. SIDE 18E, RSh.

Smetana (1977, 1982) used the spelling *D. schaumi*, which differs from the original spelling as *"schaumii"* by Kraatz (1860: 27), although ICZN (1999 article 33.4) states that original spellings with termination –ii are to be retained, not changed to –i.

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