

LUZIOLA SUBINTEGRA (POACEAE: ORYZEAE),
NEW TO FLORIDA AND THE UNITED STATES

John M. Kunzer

Department of Biology
University of South Florida
4202 E. Fowler Ave, SCA 110
Tampa, Florida 33620-5200, U.S.A.
kunzer@mail.usf.edu

Michael J. Bodle

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406-3007, U.S.A.
mbodle@sfwmd.gov

ABSTRACT

The Neotropical graminoid taxon *Luziola subintegra* Swallen has been found in Fisheating Bay of Lake Okeechobee, Glades County, Florida, U.S.A. This represents the first known record of this taxon in both Florida and the United States. A description and modified key to the genus *Luziola* are given.

RESUMEN

El taxón neotropical graminoide *Luziola subintegra* Swallen se ha encontrado en la bahía Fisheating, del Lago Okeechobee, en el condado Glades, Florida, EE. UU. Esto representa el primer registro conocido de este taxón en la Florida y los Estados Unidos. Se presentan una descripción y clave modificada para el género *Luziola*.

In early December 2007, the USF herbarium received a specimen of an unknown aquatic grass collected along the northwestern shore of Lake Okeechobee, Glades County, Florida. The specimen was not satisfactorily identifiable as anything currently known in the state's flora (Wunderlin & Hansen 2003; Wunderlin & Hansen 2008) and its morphological characteristics led to investigation of the genus *Luziola*.

Examination of the revision of *Luziola* (Swallen 1965) revealed that there are two named species of very similar morphology, *L. spruceana* Benth. ex Döll and *L. subintegra* Swallen. The material in question was determined to be closer to *L. subintegra*, and this was confirmed by Gerrit Davidse (MO; determination in duplicate). Consultation of the Flora of North America treatment of *Luziola* (Terrell 2007) and the USDA PLANTS database (USDA, NRCS 2008) revealed that this taxon is also new to the United States flora.

Luziola subintegra has a known distribution from Mexico southward through Central America and South America southward to Argentina, and the Caribbean basin (Judziewicz et al. 2000). It is apparently rare in Central America, at least in Costa Rica and Nicaragua (Morales 2003; Pohl & Davidse 2001).

Description.—Stoloniferous perennial, emergent, floating, mat-forming aquatic or prostrate-creeping terrestrial. Culms prostrate, to ca. 1 m long or more, 3–10 mm diameter, rooting from the nodes. Leaf sheaths inflated, spongy; ligule an auriculate membrane, acuminate, 1–4 cm long; leaf blades 1–7.5 dm long, to 7–20 mm wide. Inflorescence monocious, staminate and pistillate portions in separate panicles or rarely with a few pistillate spikelets within the staminate panicle. Staminate panicle terminal, open; spikelets 5–7 mm long, with one fertile floret per spikelet; glumes absent or obsolete; palea 3-nerved; lemma 4 or 5-nerved, both palea and lemma hyaline, similar; anthers 6(5–7) per floret. Pistillate panicle axillary, congested, 1–several per culm, barely exerted from the sheath, the primary branches sharply recurved when mature, with evident pulvini, spikelets 3–5.5 mm long, with one fertile floret per spikelet; glumes absent or obsolete; palea 5-nerved; lemma 5–7-nerved, palea and lemma similar. Caryopses (achenes) with a hard, brittle pericarp, minutely longitudinally striate, asymmetrically ovoid, to 2 mm long, with a persistent style base.

Luziola subintegra is unlike any other *Luziola* currently known to the United States. It is robust, with large, thick culms, and has leaves with inflated, spongy sheaths and long, broad blades. All of our other *Luziola* taxa can be described as delicate, slender plants with narrow culms, and shorter, narrower leaves. *Luziola subintegra* gives the overall impression of being quite similar in habit to *Paspalum repens* P.J. Berguis or to a lesser degree *Hymenachne amplexicaulis* (Rudge) Nees (Figs. 1–3).



FIG. 1. *Luziola subintegra* staminate panicle.

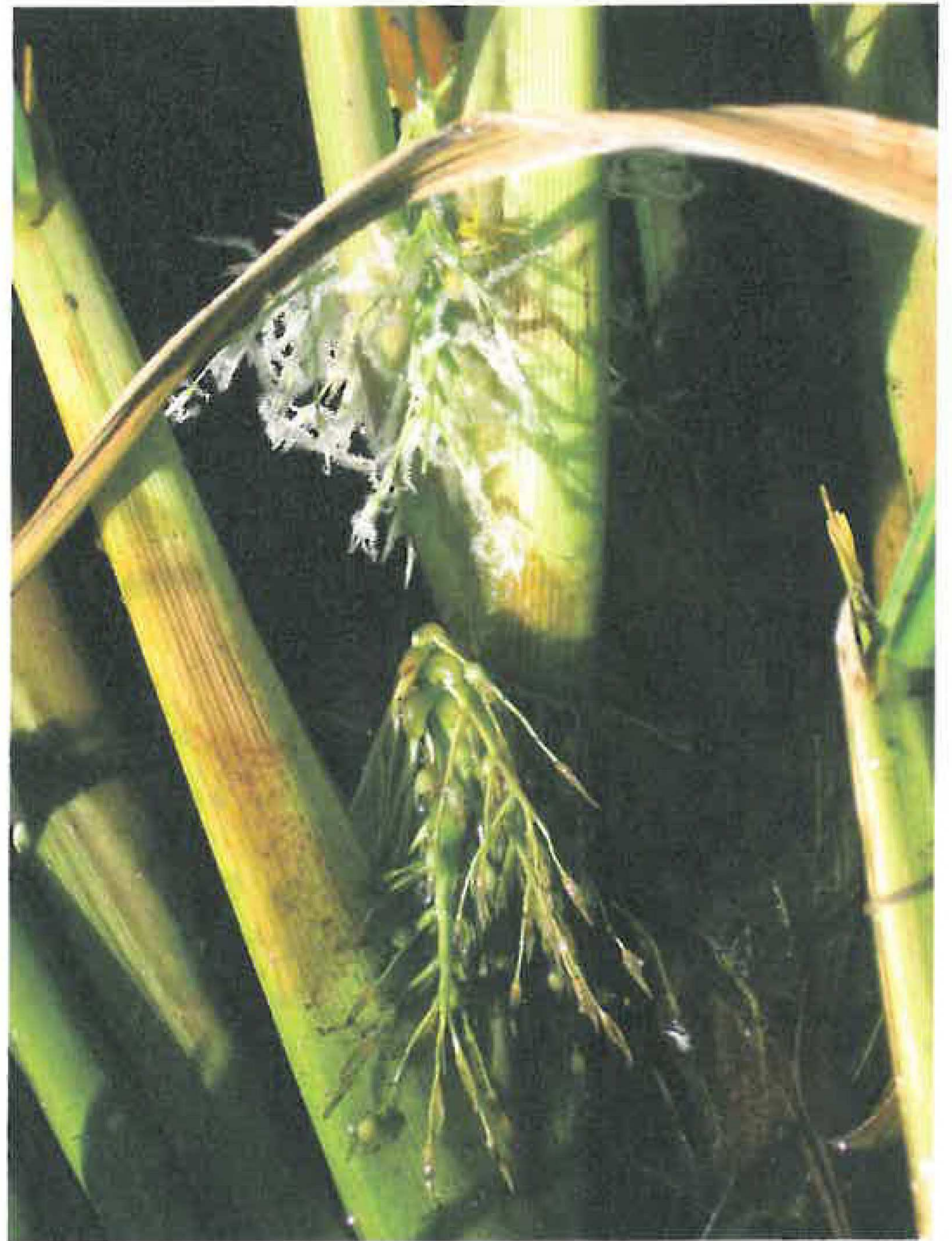


FIG. 2. *Luziola subintegra* pistillate panicles (upper—flowering, lower—mature).

The following key modified from Wunderlin and Hansen (2003) serves to differentiate *L. subintegra* from the rest of the genus in Florida and the United States.

MODIFIED KEY TO LUZIOLA

1. Culms robust, 3 mm in diameter or larger; leaf blades 7 mm wide or wider; ligules 1–4 cm long _____ **L. subintegra**
1. Culms slender, 2 mm or less in diameter; leaf blades less than 6 mm wide; ligules less than 6 mm long.
 2. Inflorescence a raceme; pistillate spikelets mostly included in the subtending sheath _____ **L. fluitans**
 2. Inflorescence a panicle; pistillate spikelets all or mostly exerted from the subtending sheath.
 3. Pistillate spikelet 2–2.5 mm long; fruit smooth _____ **L. peruviana**
 3. Pistillate spikelet 3–5 mm long; fruit striate _____ **L. bahiensis**

In late December 2007, we investigated the extent of the population within Fisheating Bay, and found it to be nearly ubiquitous there. The population consisted of two large, near-monoculture mats, one mat of ca. 2 ha, to the east of Harney Pond Canal, and the other of ca. 80 ha, to the west of the canal (Fig. 3). The locality of these two mats was within a portion of the lake bed that during the record low-water level of early June 2007 was completely exposed and bare of all vegetation. Surrounding each of the large mats and scattered throughout the open bay were sporadic, small clumps of one to several mature individuals. It was also found as both an emergent aquatic and a terrestrial inside the mouth of Fisheating Creek. At this location, the terrestrial individuals of a mature state were evident only in small, isolated clumps, and they appeared to be less competitive against the other terrestrial flora.

Fisheating Creek is the only remaining unregulated inflow to Lake Okeechobee. Based upon this information and the fact that *L. subintegra* is present in the creek, we speculate that Fisheating Creek is its point of introduction into Fisheating Bay and Lake Okeechobee. Given the extent of the current population and



FIG. 3. *Luziola subintegra* population W of Harney Pond Canal, from center of population, facing SW.

the plant's apparent fecundity, we suggest that this taxon be considered for listing by the Florida Exotic Pest Plant Council (FLEPPC). We also suggest that ecological research be immediately undertaken to determine its potential impact on Florida's natural systems.

Voucher specimens: **U.S.A. FLORIDA. Glades Co.:** Lake Okeechobee, Fisheating Bay, ca. 3.75 km S of the junction of C-721 and FL 78. 26° 58' 0.3" N, 81° 04' 9.5" W, 6 Dec 2007, *Mike J. Bodle s.n.* (MO, USF 244612, others to be distributed); Lake Okeechobee, Fisheating Bay, ca. 3.25 km SE of the junction of C-721 and FL 78. 26° 58' 13.8" N, 81° 03' 37.4" W, 20 Dec 2007, *John M. Kunzer, Mike J. Bodle, Kurt Ramsey 2253* (USF 244608, others to be distributed).

ACKNOWLEDGMENTS

The authors would like to thank Bruce Hansen (USF) and Richard Wunderlin (USF) for their generous advice in research and editing, and Gerrit Davidse (MO) for confirming our determination of the initial specimen. We would also like to thank Rufino Osorio for the original Spanish language version of the abstract, and Annie C. Schmidt for putting the authors in touch with each other.

REFERENCES

- JUDZIEWICZ, E.J., R.J. SORENG, G. DAVIDSE, P.M. PETERSON, T.S. FILGUEIRAS, and F.O. ZULOAGA. 2000. Catalogue of New World grasses (Poaceae): 1. Subfamilies Anomochlooideae, Bambusoideae, Ehrhartoideae, and Pharoideae. *Contr. U.S. Natl. Herb.* 39:1–128.
- MORALES, J.F. 2003. Poaceae. In: B.E. Hammel, M.H. Grayum, C. Herrera, and N. Zamora, eds. *Manual de plantas de Costa Rica Vol. 3. Monogr. Syst. Bot. Missouri Bot. Gard.* 93:598–821.

- POHL, R.W. and G. DAVIDSE. 2001. *Luziola*. In: W.D. Stevens, C.U. Ulloa, A. Pool, and O.M. Montiel, eds. Flora de Nicaragua: Angiospermas (Pandanaceae–Zygophyllaceae). Monogr. Syst. Bot. Missouri Bot. Gard. 85:2072–2073.
- SWALLEN, J.R. 1965. The grass genus *Luziola*. Ann. Missouri Bot. Gard. 52:472–475.
- TERRELL, E.E. 2007. *Luziola*. In: Flora of North America Editorial Committee, eds. 2007. Flora of North America north of Mexico. Vol 24. Magnoliophyta: Commelinidae (in part): Poaceae, part 1. Oxford Univ. Press, New York, New York.
- USDA, NRCS. 2008. The PLANTS Database (<http://plants.usda.gov>, 15 Feb 2008). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- WUNDERLIN, R.P. and B.F. HANSEN. 2003. Guide to the vascular plants of Florida: Second edition. Gainesville: University Press of Florida.
- WUNDERLIN, R.P. and B.F. HANSEN. 2008. *Atlas of Florida vascular plants* (<http://www.plantatlas.usf.edu/>). [S. M. LANDRY and K. N. CAMPBELL (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa.