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CHIRONOMUS COLUMBIENSIS (DIPTERA: CHIRONOMIDAE) NEW TO THE FAUNA OF THE UNITED STATES

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Previously, two of us have reported collection records for some Chironomidae (Diptera) from the Florida Keys (Hribar & Epler 2007). During that study some specimens of midges in the genus *Chironomus* Meigen were collected that proved especially difficult to identify via morphological characters. By examination of the polytene chromosome banding pattern of the larvae, it was determined that these midges are *Chironomus columbiensis* Wülker, Sublette, Morath, and Martin. Adults of this species are very difficult to separate from those of *C. anonymus* Williston (Wülker et al. 1989), which also is known from Florida. On the other hand the polytene chromosomes provide a ready distinction between these 2 species, because *C. columbiensis* has a unique combination of chromosome arms (Wülker et al. 1989). The larvae were fixed in ethanol, transferred to absolute AR ethanol on arrival in Australia. The head and thoracic segments were transferred to the normal cytological fixative (Martin et al. 2006), while the rest of the body was retained in ethanol for DNA extraction. Following preparation of chromosome squashes from the salivary glands by the normal technique (Martin et al. 2006), the larval head capsule was mounted on the same slide as the chromosomes. These slides will constitute the voucher specimens for DNA sequences submitted to GenBank, and will be lodged in the Australian National Insect Collection (Canberra, ACT, Australia). The collection data are as follows: Florida, Grassy Key, Monroe Co., 15 Jun 2006. C. Samul, coll., MK189, ex: rooting pail, 24 third and fourth instars, and reared adults. The larval specimens examined were cohabiting the pail with larvae of another chironomid, *Dicrotendipes* sp., and the mosquito *Aedes aegypti* (L).

Specimens in the collection of J. Martin verify that *C. columbiensis* also has been collected in the U.S. Virgin Islands. Collection data: US Virgin Islands, St. John, Lameshur Bay, 18 Mar 2003, S. Werle, coll., ex: freshwater cistern, about 15 third and fourth instars. These specimens have poor quality chromosomes, but the identity was confirmed by the similarity of the mitochondrial Cytochrome c oxidase subunit I (COI, commonly used for DNA barcoding, e.g., Hajibabaei et al. 2007) sequences, which showed only 1.3% base changes in a 612-base pair sequence. These sequences will be submitted to GenBank as part of an ongoing analysis of DNA sequence relationships of *Chironomus* species.

This species previously was known only from Brazil, Colombia, and Guatemala (Wülker et al. 1989; Correia & Trivinho-Strixino 2005). Females apparently seek temporary water bodies as oviposition sites, as the only place it has been found is in manmade habitats such as reservoirs, a cistern, an artificial pond, rainwater tanks, and a rooting pail. Many other examples of preference for temporary water bodies exist in the family Chironomidae (Frouz et al. 2003). *Chironomus columbiensis* is not the only chironomid species to be found in both North and South America; Fittkau (1965), Reiss & Sublette (1985), Spies & Reiss (1996) and Wülker et al. (1989) all report commonalities between the 2 continental faunas. *Chironomus columbiensis* joins other Neotropical Chironomidae recently detected in the United States, viz., *C. anonymus*; *C. calligraphus* Goeldi; *C. strenzkei* Fittkau; *Goeldichironomus amazonicus* (Fittkau); *G. fluctuans* Reiss; *Monopelopia caraguata* Mendes, Marcondes & de Pinho; *Polypedilum obelos* Sublette & Sasa; *P. nubifer* (Skuse); *Rheotanytarsus hamatus* Sublette & Sasa; *Siolimyia amazonica* Fittkau; and *Tanytarsus hastatus* Sublette & Sasa (Wirth 1979; Wülker et al. 1989; Sublette & Mulla 1991, 2000; Sublette et al. 1998; Spies & Reiss 1996; Epler 2001; Jacobsen & Perry 2007; Jacobsen 2008, *in press*).

SUMMARY

We document the first records of *Chironomus columbiensis* in the United States. It is one of a number of Neotropical Chironomidae recently detected in the United States.

REFERENCES CITED

CORREIA, L. C. S., AND S. TRIVINHO-STRIXINO. 2005. New records of *Chironomus* Meigen (Diptera: Chironomidae) in the state of São Paulo, Brazil. Rev. Bras. Entomol. 49: 430-433.

EPLER, J. H. 2001. Identification Manual for the larval Chironomidae (Diptera) of North and South Carolina. A Guide to the Taxonomy of the Midges of the

Southeastern United States, including Florida. Special Publication SJ2001-SP13. North Carolina Department of Environment and Natural Resources, Raleigh, NC, and St. Johns River Water Management District, Palatka, FL. 526 pp.

FITTKAU, F. J. 1965. Revision der von E. Goeldi aus dem Amazonasgebiet beschriebenen Chironomiden (Diptera). Chironomidenstudien X. Bietr. Neotrop. Fauna 4: 209-226.

FROUZ, J., J. MATĚNA, AND A. ALI. 2003. Survival strategies of chironomids (Diptera: Chironomidae) living in temporary habitats: a review. Eur. J. Entomol. 100: 459-465.

HAJIBABAEI, M., G. A. C. SINGER, P. D. N. HEBERT, AND D. A. HICKEY. 2007. DNA barcoding: how it complements taxonomy, molecular phylogenetics and population genetics. Trends Genet. 23:167-172.

HRIBAR, L. J., AND J. H. EPLER. 2007. Collection records for some Chironomidae (Diptera) in the Florida Keys. Florida Scient. 70: 111-113.

JACOBSEN, R. E. 2008. A Key to the Pupal Exuviae of the Midges (Diptera: Chironomidae) of Everglades National Park, Florida. U.S. Geological Survey Open-File Report 2008-0000 (in press).

JACOBSEN, R. E., AND S. A. PERRY. 2007. *Polypedilum nubifer*, a chironomid midge (Diptera: Chironomidae) new to Florida that has nuisance potential. Florida Entomol. 90: 264-267.

MARTIN, J., E. N. ANDREEVA, I. I. KIKNADZE, AND W. F. WÜLKER. 2006. Polytene chromosomes and phylogenetic relationships of *Chironomus atrella* (Diptera: Chironomidae) in North America. Genome 49: 1384-1392.

REISS, F., AND J. E. SUBLETTE. 1985. *Beardius* new genus with notes on additional Pan-American taxa. Spixiana Suppl. 11: 179-193.

SPIES, M., AND F. REISS. 1996. Catalog and bibliography of Neotropical and Mexican Chironomidae (Insecta, Diptera). Spixiana Suppl. 22: 61-119.

SUBLETTE, J. E., AND M. S. MULLA. 1991. *Goeldichironomus amazonicus* (Diptera: Chironomidae), a potentially pestiferous midge recently discovered in California. Entomol. News 102: 47-49.

SUBLETTE, J. E., AND M. S. MULLA. 2000. *Chironomus strenzkei* Fittkau—a new Pan-American distribution with a review of recent similar additions to the Nearctic midges (Insecta, Diptera, Chironomidae), pp. 145-149 *In* M. Baehr and M. Spies [eds.], Contributions to Chironomid Research in Memory of Dr. Friedrich Reiss. Spixiana 23.

SUBLETTE, J. E., L. E. STEVENS, AND J. P. SHANNON. 1998. Chironomidae (Diptera) of the Colorado River, Grand Canyon, Arizona, USA. I. Systematics and ecology. Great Basin Naturalist 58: 97-146.

WIRTH, W. W. 1979. *Siolimyia amazonica* Fittkau, an aquatic midge new to Florida with nuisance potential. Florida Entomol. 62: 134-135.

WÜLKER, W., J. E. SUBLETTE, E. MORATH, AND J. MARTIN. 1989. *Chironomus columbiensis* **n.sp.** in South America and *Chironomus anonymus* Williston in North America—closely related species. Stud. Neotrop. Fauna Environ. 24: 121-136.