

NOTE

Discovery of *Culex coronator* Dyar and Knab (Diptera: Culicidae) in Georgia

Several counties in Georgia have improved and/or initiated mosquito control and disease surveillance activities following the detection of WNV in GA in 2001, most with the assistance of CDC West Nile grant funds. Included in these activities are extensive adult monitoring, larval surveillance, and disease surveillance programs. Mosquito surveillance, as part of the WNV program, occurs primarily in urban areas where human cases have been found. In southern Georgia, most of the surveillance is done by the Georgia Division of Public Health and is conducted monthly when possible. Additionally in Lowndes County, weekly surveillance, supported by the county and the local Public Health office, is conducted by Dr Mark Blackmore at Valdosta State University. Both gravid and light traps are set in areas where human WNV cases have occurred or where WNV positive birds have been found. Mosquitoes collected in these traps are identified to species, pooled, and sent to the Southeastern Cooperative Wildlife Disease Study at The University of Georgia for arbovirus testing.

Prior to 2003, *Cx. coronator* had been collected in south-central, southwestern, and north-central Texas (Carpenter and LaCasse 1955; Bolling et al. 2005), southern New Mexico (Wolff et al. 1975), and southeastern Arizona (Richards et al. 1956). It was found in Pittsburg County, southeastern Oklahoma, in 2003 (Bradley 2004), and Louisiana (Hill et al. 1958; Debboun et al. 2005), Mississippi (Varnado et al. 2005; Goddard et al. 2006), and Florida in 2005 (Smith et al. 2006).

A total of 10 female *Cx. coronator* were collected from 6 different sites

during routine mosquito-borne virus surveillance (Fig. 1) in Albany, Dougherty County (31°34'17"N, 84°9'43"W) on Sept 26, 2006. The mosquitoes were collected using CDC miniature light traps. They were identified from whole specimens using a key modified from "Keys to the Adult Female and Fourth Instar Larvae of the Mosquitoes of Florida" by Darsie and Morris (2000). Identification of *Cx. coronator* was confirmed by BAH and pinned voucher specimens have been deposited in the Georgia Natural History Museum, Department of Entomology, The University of Georgia, Athens. An additional 13 female *Cx. coronator* were collected from one trap site in Columbus, GA (Fig. 1) in October (Muscookee County, 32°29'N, 84°55'56"W); these were also collected from a CDC light trap. The sites in Dougherty County were in several older urban areas. The site in Muscookee County was a woodlot, also in an older neighborhood. One female *Cx. coronator* was collected in Valdosta (Lowndes County 30°52'23"N, 83°16'13"W), in extreme south-central Georgia, in October (Fig. 1). This site is in an older heavily wooded neighborhood. The three counties in Georgia where *Cx. coronator* was collected had surveillance programs for several years prior to 2006, yet no specimens were found before 2006.

In 2007, *Cx. coronator* was again collected starting in August. In Lowndes County, seven female *Cx. coronator* were collected at 3 additional sites as well as at the original 2006 site (a total of 4 locations in 2007 compared to 1 in 2006, suggesting that it is becoming established in the county). In Dougherty County, adult female *Cx. coronator* were collected

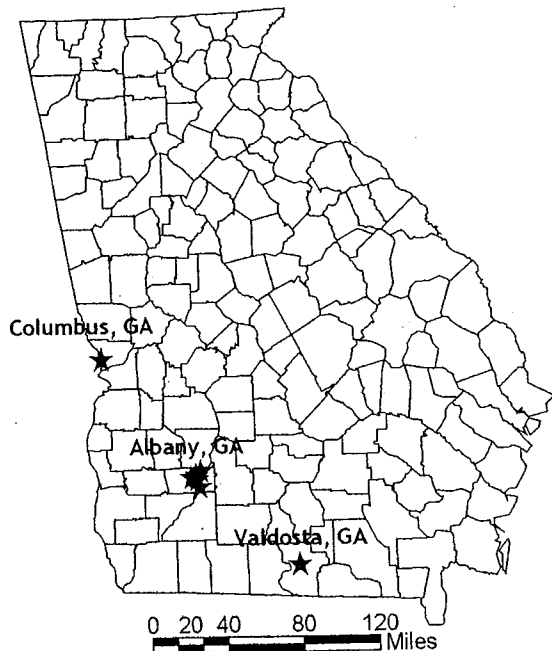


Fig. 1. *Culex coronator* in Georgia, 2006.

at 3 of the original sites and one new site; a total of 12 *Cx. coronator* have been trapped to date in Dougherty County.

Carpenter and LaCasse (1955) indicated that larvae of this species could be found in a wide variety of container, ground pool, and stream-associated habitats throughout its range. They state that larvae have been collected in permanent and temporary sources of water, in the shade or in the sun, and in sylvatic and domestic habitats. Goddard et al. (2006) reported larvae of this species collected in association with *Aedes vexans* (Meigen), *Anopheles punctipennis* (Say), *Culex nigripalpus* Theobald, *Cx. restuans* Theobald, *Cx. salinarius* Coquillett, and *Cx. territans* Walker, in ditches and seeps. Areas where the adults were collected in the three Georgia counties had abundant potential larval habitats, but to date, larvae of *Cx. coronator* have not been collected.

*Culex coronator* Dyar and Knab is one of 61 mosquito species reported by the Centers for Disease Control and Prevention (2005) as positive for West Nile virus (WNV) in the United States. The

single WNV positive pool was collected in 2003 in Orange County, Texas. Previous studies have demonstrated that *Cx. coronator* is a competent laboratory vector of St. Louis encephalitis virus (Hammon and Reeves 1943) and this virus was detected in pools of *Cx. coronator* collected in the field in Trinidad (Aitken et al. 1969). Carpenter and LaCasse (1955) reported that *Cx. coronator* is not known as a human biter; however, Jones et al. (1977) collected specimens feeding on equines in Texas and New Mexico. Currently, there is no direct evidence to suggest that it is an important endemic maintenance vector of any arbovirus.

We acknowledge Donell Mathis and the Dougherty County Mosquito Control crew, Shawn Taylor and the Muscogee County Environmental Health Vector Control crew, Dr. Mark Blackmore and the students involved with mosquito surveillance at Valdosta State University, and Dr. Robert Wirtz at the CDC Entomology Branch in Atlanta, and others who have helped make this surveillance possible. Funding for surveillance in Georgia is from the CDC Epidemiology and Laboratory Capacity Cooperative Agreement.

#### LITERATURE CITED

- Aitken, T. H. G., L. Spence, A. H. Jonkers, and W. G. Downs. 1969. A 10-year survey of Trinidadian arthropods for natural virus infections (1953-1963). *Journal of Medical Entomology* 6: 207-215.
- Bolling, B. G., J. H. Kennedy, and E. G. Zimmerman. 2005. Seasonal dynamics of four potential West Nile virus vector species in north-central Texas. *Journal of Vector Ecology* 30: 186-194.
- Bradley, K. K. 2004. Oklahoma State Report: Twenty-fifth Biennial State Public Health Vector Control Conference. <http://www.cdc.gov/ncidod/dvbid/westnile/conf/25thbiennialVectorControl/index.htm>
- Carpenter, S. J. and W. J. LaCasse. 1955. *Mosquitoes of North America (North of Mexico)*. University of California Press, Berkeley, 360 pp.

- Centers for Disease Control and Prevention. 2005. West Nile virus. Division of Vector-Borne Infectious Diseases. National Center for Infectious Diseases, Fort Collins, CO, <http://www.cdc.gov/ncidod/dvbid/westnile/mosquitospecies.htm>
- Darsie, R. F. Jr. and C. D. Morris. 2000. Keys to the adult females and fourth-instar Larvae of the mosquitoes of Florida. Florida Mosquito Control Association, Technical Bulletin No. 1 (revised): 1-159.
- Debboun, M., D. D. Kuhr, L. M. Rueda, and J. E. Pecor. 2005. First record of *Culex (Culex) coronator* in Louisiana, USA. *Journal of the American Mosquito Control Association* 21: 455-457.
- Goddard, J., W. C. Varnado, and B. A. Harrison. 2006. Notes on the ecology of *Culex coronator* Dyar and Knab, in Mississippi. *Journal of the American Mosquito Control Association* 22: 622-625.
- Hammon, M. D. and W. C. Reeves. 1943. Laboratory transmission of St. Louis encephalitis virus by three genera of mosquitoes. *Journal of Experimental Medicine* 78: 241-253.
- Hill, S. O., B. J. Smittle, and F. M. Philips. 1958. Distribution of mosquitoes in the fourth U.S. Army area. Entomology Division, Fourth U.S. Army Med Lab, Fort Sam Houston, TX, 155 pp.
- Jones, R. H., R. O. Hayes, H. W. Potter, Jr., and D. B. Francy. 1977. A survey of biting flies attacking equines in three states in the southwestern United States. *Journal of Medical Entomology* 14: 441-447.
- Richards, C. S., L. T. Nielsen, and D. M. Rees. 1956. Mosquito records from the Great Basin and the drainage of the lower Colorado River. *Mosquito News* 16: 10-17.
- Smith, J. P., J. D. Walsh, E. H. Cope, R. A. Tennant, Jr., J. A. Kozak, III, and R. F. Darsie Jr. 2006. *Culex coronator* Dyar and Knab: A new Florida species record. *Journal of the American Mosquito Control Association* 22: 330-332.
- Varnado, W. C., J. Goddard, and B. A. Harrison. 2005. New state record of *Culex coronator* Dyar and Knab (Diptera: Culicidae) from Mississippi. *Proceedings of the Entomological Society of Washington* 107: 476-477.
- Wolff, T. A., L. T. Nielsen, and R. O. Hayes. 1975. A current list and bibliography of the mosquitoes of New Mexico. *Mosquito Systematics* 7: 13-18.
- Rosmarie Kelly, Daniel Mead, and Bruce A. Harrison, (RK) *The Georgia Division of Public Health, Atlanta, GA, 2 Peachtree St NW, Atlanta, GA 30303, U.S.A. (e-mail: rmkelly@dhr.state.ga.us); (DM) The Southeastern Cooperative Wildlife Disease Study, 589 D.W. Brooks Drive, Athens, GA 30602, U.S.A.; (BAH) North Carolina Department of Environment and Natural Resources, 585 Woughtown St., Winston-Salem, NC 27107, U.S.A.*

A

zi  
M  
do  
th  
N  
as  
se  
m  
su  
ir  
l  
n  
a  
v  
p  
foa  
N  
I  
c  
T  
s  
l  
a  
p  
s  
a  
c  
c  
a  
l  
c

