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THE MOURNING SCORPIONFLY, *PANORPA LUGUBRIS*, IN VIRGINIA (MECOPTERA: PANORPIDAE). – Early in 2006, O.S. Flint, in conjunction with G. W. Byers (University of Kansas), W. Bicha (Oliver Springs, TN), and D. W. Webb (Illinois Natural History Survey), began collecting records of Mecoptera found in Virginia. While searching the collection of the Virginia Museum of Natural History (VMNH) in Martinsville, Flint discovered a long series of the mourning or black scorpionfly, *Panorpa lugubris* (Swederus), that had been taken in the vicinity of the University of Richmond campus between 1935 and 1959. These visually striking and somewhat uncommon insects immediately aroused our interest and other collections were examined that contained specimens from scattered localities in southeastern Virginia that were taken from 1929 to 1974. No further examples of this species were known until two males were taken in a drift fence-pitfall trap at the Elm Hill State Game Management Area, Mecklenburg County, in 1995.

*Panorpa lugubris* (Fig. 1) is easily distinguished from all other species of *Panorpa* in North America by its mostly black wings with a few scattered white spots and its reddish orange body. It inhabits both the Atlantic and Gulf coastal plains, from Virginia south through the Carolinas, Georgia, and west across the Florida panhandle to Louisiana (Byers, 1993). Adults seem to prefer sandy soils in open habitats or habitats with scant tree cover, especially sandhills and old fields (Byers, 1993). Somma & Dunsford (2008) consider *P. lugubris* the most abundant and widespread *Panorpa*



Fig. 1. Female mourning scorpionfly, *Panorpa lugubris* (Swederus).

species in Florida, where it is found throughout all but the extreme southern part of the peninsula. Most adults are collected from September through December, but smaller numbers of individuals are sometimes encountered from mid-April through early June; additional specimens were taken in August and January (Byers, 1993).

In Virginia, the known specimens of *P. lugubris* were collected primarily in September and October, with records for Chesterfield, Fluvanna, King & Queen, Mecklenburg, and Nottoway counties and the cities of Chesapeake, Newport News, Petersburg, Richmond, Suffolk, and Williamsburg. More recently, populations of *P. lugubris* were located in the sandhills of the Blackwater Ecological Preserve (BEP) in Isle of Wight County and Chub Sandhill Natural Area Preserve in Sussex County.

On 11 September 2008, Allen Belden, A.V. Evans, and Darren Loomis (Virginia Department of Conservation and Recreation, Division of Natural Heritage) joined Flint at the BEP to search for *P. lugubris*. Around noon, Loomis observed and collected the first individual, a male, as it landed in the middle of a dirt road that cut through a closed-canopy of longleaf pine (*Pinus palustris* Mill.)/turkey oak (*Quercus laevis* Walter) sandhill community at BEP (N36.82346° W76.85551°).

The next two individuals of *P. lugubris* were encountered on the same day in a section of the BEP known to local land managers as “burn unit 2” (N36.82161° W76.85197°). This area (Fig. 2) was subjected to a prescribed burn in 2007. The open overstory consists of longleaf pine, pond pine (*Pinus serotina* Michx.), and the occasional loblolly pine (*P. taeda* L.). The sandy substrate below is patchily covered with a low-growing understory consisting primarily of dwarf huckleberry, *Gaylussacia dumosa* (Andres) Torr. & A. Gray, blue huckleberry, *G. frondosa* (L.) Torr. & A. Gray ex Torr.), and sheep laurel (*Kalmia angustifolia* L.).

*Panorpa lugubris* was observed in the vicinity flying across the scattered open areas that were covered with a thin layer of mostly dried pine needles and huckleberry leaves. These open patches are bordered by slightly taller and denser stands of bracken fern (*Pteridium aquilinum* (L.) Kuhn var. *pseudocaudatum* (Clute)). Taller sprigs of red maple (*Acer rubrum* L.), sweetgum (*Liquidambar styraciflua* L.), sweetbay (*Magnolia virginiana* L.), coastal sweet-pepperbush (*Clethra alnifolia* L.), and Piedmont staggerbush (*Lyonia mariana* (L.) D. Don) punctuate the site’s periphery.

In addition to *P. lugubris*, six specimens of *P. gracilis* Carpenter, one of *P. virginica* Banks, and 16 of



Fig. 2. The most productive habitat for *Panorpa lugubris* at Blackwater Ecological Preserve (Isle of Wight County, Virginia) consists of an open overstory of mostly pond pines and longleaf pines with sandy openings patchily covered with low-growing huckleberry and sheep laurel.

*P. rufescens* Rambur were taken during the day. Unfortunately, several different habitats were visited the same day and the other species of scorpionflies were not separated by exact location. However, many of these were taken from 2-4 foot (61-122 cm) high roadside shrubs, another series was taken from about a foot (30 cm) high shrubby vegetation on a low, dry riverside bench beside the Blackwater River, near the border with Antioch Pines Natural Area Preserve (N36.82640° W76.85590°). Others were taken in burn unit 2 among the higher, shrubby growth. By 1530 h, all scorpionfly activity had virtually ceased and the search for them was discontinued. In North Carolina, *P. lugubris* was observed to fly from dusk until just before dark (J. Jones, pers. obs.).

Evans revisited burn unit 2 at BEP on 0930 h on 18 September 2008, but did not locate any *P. lugubris* until 1000 h when the temperatures had warmed up to the mid 60s to low 70s (°F). At the beginning of the flight period, males and females were observed perched with their heads upward at a slight angle on the vertical stems of huckleberry. When disturbed, they would fly short distances and either land on nearly vertical leaf surfaces or dive into the center of a plant clump. When pursued, they would land and run short distances over open ground with amazing speed. Still others secreted themselves almost immediately among the plant detritus on the ground, or would lie motionless on their sides (see Sherman, 1908).

The height of *P. lugubris* activity was between 1000 h and 1100 h. By noon the insects were scarce, but the search continued to about 1300 h. Only eleven females were collected, but approximately another dozen individuals of both sexes were observed.

On 23 September 2008, Evans, Flint, and Loomis

revisited the Blackwater site between 1000 and 1500 h and collected 13 individuals at burn unit 2. At the Blackwater riverside bench, Loomis collected an additional specimen, and two more were taken in the low growth along the road to the entrance gate. Most of the vegetation at the gate is the same as previously described for burn unit 2, plus an abundance of giant cane, *Arundinaria gigantea* (Walker) Muhl. ssp. *tecta* (Walter).

Collections made at different sites this time were kept separate. In addition to one *P. lugubris* specimen, the river bench along the Blackwater River yielded 15 specimens of *P. gracilis*. From the taller, shrubby vegetation around burn unit 2 and along the road, 18 examples of *P. rufescens* were taken. As before, many individuals of all species, especially *P. lugubris*, were very elusive and escaped capture.

On 26 September 2008, Loomis observed hundreds of *P. lugubris* at the Chub Sandhill NAP in Sussex County. This tract of land is a pine/scrub sandhill community dominated by loblolly pine, and southern red oak, *Quercus falcata* Michx. However, the actual habitat where *P. lugubris* was observed in a weedy, sandy field with longleaf pine in the grass stage and little or no leaf litter. The field had been fallow since 2006 and was planted with longleaf pine in April of 2008 (D. Loomis, pers. comm.).

Flint and S.M. Roble returned to the Chub site (36°52.482' N, 77°10.597' W) on 24 October 2008. Collecting commenced around 1000 h, but the first individuals were not found for another half hour. Searching continued in the old fields, especially in the plowed strips where the seedling longleaf pines had been planted. Nineteen specimens were collected, mostly along a weedy dirt road. After 1400 h, scorpionfly activity stopped and collecting was terminated. No other species of *Panorpa* were seen.

Specimens of *P. lugubris* were deposited in the collections of the VMNH, National Museum of Natural History (USNM), and A.V. Evans (AVEC).

#### Additional Natural History Notes

Sherman (1908) and Mampe & Neunzig (1965) found adult *P. lugubris* abundant in open fields and harvested tobacco fields in North Carolina in early September through November, while the population reached its peak during the first week of October. However; some individuals were still active in December and January. They were observed feeding on dead grasshoppers and parasitized tobacco hornworms (*Manduca sexta* Johannson). In captivity, the adults accepted dead grasshoppers, required drinking water, and laid their eggs one at a time in cracks in the soil

(Mampe & Neunzig, 1965).

The larva of *P. lugubris* was described in detail by Mampe & Neunzig (1965) and Boese (1973). In captivity, the larvae primarily ate dead insects, including grasshoppers and flies, but they also consumed mushrooms, tobacco stalks, and tobacco seed capsules.

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