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6. The Aquatic and Semiaquatic Hemiptera and Coleoptera of Point Clear Island, Hancock County, Mississippi

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Abstract. This third contribution on the insects of Point Clear Island and surrounding marshlands reports the occurrence of aquatic and semiaquatic Hemiptera and Coleoptera on the island proper. Twenty one species of Hemiptera in 11 families and 53 species of Coleoptera in 11 families were represented in our samples. Both freshwater and brackish habitats supported diverse faunas. Among the Hemiptera, only *Pentacora signoreti* (Saldidae) represented a new state record; however, 24 species of Coleoptera in the families Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Scyrtidae, Heteroceridae and Curculionidae were previously unreported from the state. Most abundant in our collections were *Trichocorixa verticalis* (Corixidae), *Pentacora hirta* (Saldidae) *Thermonectes basillaris* (Dytiscidae), *Berosus exiguus*, *B. infuscatus*, *Enochrus hamiltoni*, *E. ochraceus*, *E. reflexipennis*, *Tropisternus quadristriatus* (Hydrophilidae) and *Neoheterocerus fatuus* (Heteroceridae).

Introduction. Point Clear Island is part of the Late Holocene littoral ridge complex associated with the extensive tidal marsh of southwestern Hancock County, Mississippi (Otvos, 1973). The island, separated from the mainland by Bayou Caddy and 0.5 to 2.0 miles of *Juncus - Spartina* marsh, is a low sand ridge approximately 2.5 miles long and 250 yards wide (near mid-length) and, for the most part, is forested. (For a general description of the study area, see Lago and Testa, 1988). From September, 1985, through April, 1987, we conducted a general survey of insects inhabiting Point Clear Island and surrounding marshlands and have reported previously on portions of that fauna (Lago and Testa, 1987; Lago, Testa and Dakin, 1988). Herein we consider the species of aquatic and semiaquatic Hemiptera and Coleoptera collected from ponds and marshes on the island during that study.

Aquatic habitats on the island were of two distinctly different types: brackish and freshwater. Several brackish ponds and small marshes were located near the center of the island. Salinities varied in these habitats from 3.5 ppt to 10.0 ppt. No connection between any of these habitats and waters of the Gulf was discovered. Rain is the only apparent source of water for the brackish habitats, the "salt" undoubtedly entering through innundation by storm tides. During periods of drought, all of these habitats were subject to drying, and most disappeared during the summer of 1986. Only an "alligator hole" in one brackish pond contained water during that period. With the exception of this single deep hole, water depths in the brackish habitats seldom exceeded 30 cm, and bottoms were fairly solid at all times. Vegetation associated with these habitats was composed primarily of species of *Juncus* and *Spartina patens* (Ait.) Muhl.

Only one freshwater pond was found during this study, and it was located on the eastern end of the island near Point Clear. This pond is fed by a flowing artesian well, and any "salt" that might have entered through storm tides was flushed out. Unlike the brackish ponds, water level here remained stable (about 50cm mid-pond) throughout the study period. The bottom was very soft and mucky. The pond supported a diverse community of submerged and emergent plants (eg. *Sagittaria* sp., *Panicum* sp., *Hydrocotyle* sp.) typical of freshwater and not seen in other aquatic habitats on the island.

Methods. Although collections for this study were made during nine trips (26 days) from September, 1985 through April, 1987, most collecting was done from early Spring through Autumn of 1986. Standard D-frame aquatic nets were used to sample individual ponds and marshes during each trip. Samples were sorted in enamel pans in the field and specimens were stored in 80% ethanol for transport to the laboratory.

Aerial netting and hand-collecting were used to obtain a few semiaquatics (eg. Saldidae, Heteroceridae), but most specimens of these groups were captured at ultraviolet lights placed on the margins of aquatic habitats. During most collecting trips, UV lights, placed over pans of ethanol, were run at both freshwater and brackish ponds for 60 to 90 minutes beginning about dusk. As would be expected, many specimens of aquatic species, as well as semiaquatics, were collected in the light traps.

Voucher specimens have been deposited in the insect collection of the University of Mississippi.

Results. Aquatic and semiaquatic Hemiptera were represented in our samples by 21 species in 11 families, and Coleoptera by 53 species in 11 families. The following abbreviations are used in the checklist: AP -artesian pond; BP - brackish pond; imm. - immature, LT - ultraviolet light trap. Number of specimens examined is given in parentheses following collection date. Unless otherwise indicated, numbers refer to adults. New state records are indicated by an asterisk (*).

HEMIPTERA

NEPIDAE

Ranatra australis Hungerford. AP - 24 Apr 1987 (3,2 imm.); 23 Jun 1987 (2); 23 Oct 1986 (2). BP - 24 Apr 1987 (1).

BELOSTOMATIDAE

Belostoma flumineum Say. AP - 24 Apr 1987 (2 imm.); 23 Jun 1987 (1). BP- 28 Sept 1985 (1 imm.). Lethocerus uhleri (Montandon). AP - 23 Jun 1987 (1 imm., 1 LT); 12 Aug 1986 (1-LT).

CORIXIDAE

Trichocorixa kanza Sailer. AP - 14 Feb 1987 (2); 28 Feb 1987 (3); 24 Apr 1987 (4); 20 May 1987 (6); 23 Jun 1987 (1); 27 Sept 1985 (3-LT); 23 Oct 1986 (3). BP - 24 Apr 1987 (3).

Trichocorixa louisianae Jaczewski. AP - 14 Feb 1987 (15); 24 Apr 1987 (1); 23 Jun 1987 (3); 15 Aug 1986 (1-LT); 23 Oct 1986 (2).

Trichocorixa sexcinta Champion. AP - 14 Feb 1987 (4). BP - 28 Feb 1987 (2); 24 Apr 1987 (3); 12 Aug 1986 (1-LT); 27 Sept 1985 (9-LT).

Trichocorixa verticalis (Fieber). AP - 28 Feb 1987 (6); 24 Apr 1987 (20); 20 May 1987 (3); 23 Jun 1987 (9); 15 Aug 1986 (200). BP - 14 Feb 1987 (22); 28 Feb 1987 (7); 24 Apr 1987 (5); 9 May 1986 (100-LT); 23 Jun 1987 (16); 24 Jun 1986 (50-LT); 12 Aug 1986 (100-LT); 27 Sept 1985 (60-LT)

NAUCORIDAE

Pelocoris femoratus (Beauvois). AP - 14 Feb 1987 (25); 28 Feb 1987 (7); 24 Apr 1987 (8,3 imm.); 20 May 1987 (4,2 imm.); 23 Jun 1987 (5); 23 Oct 1986 (4)

NOTONECTIDAE

Buenoa scimitra Bare. AP - 23 Jun 1987 (1-LT). BP - 24 Apr 1987 (1); 23 Jun 1987 (4); 12 Aug 1986 (1).

Notonecta indica L. BP - 28 Feb 1987 (1).

MESOVELIIDAE

Mesovelia amoena Uhler. AP - 14 Feb 1987 (1); 28 Feb 1987 (2 imm.); 20 Mar 1987 (3,1 imm.). BP - 28 Feb 1987 (2 imm.); 24 Apr 1987 (1 imm.).

Mesovelia mulsanti bisignata Jaczewski. AP - 23 Jun 1987 (1 imm.). BP -24 Apr 1987 (1); 23 June 1987 (1).

HYDROMETRIDAE

Hydrometra australis Say. AP - 20 May 1987 (1); 24 Apr 1987 (14,5 imm.).

HEBRIDAE

Merragata brevis Champion. AP - 24 Apr 1987 (4).

VELIIDAE

Microvelia hinei Drake. AP - 14 Feb 1987 (2).

GERRIDAE

Gerris marginatus Say. BP - 24 Apr 1987 (1).

Gerris sp. AP - 14 Feb 1987 (1).

Limnoporus canaliculatus (Say). AP - 24 Apr 1987 (1).

SALDIDAE

Pentacora hirta (Say). BP - 9 May 1986 (73-LT); 24 Jun 1986 (5); 12 Aug 1986 (2). On beach - 20 May 1987 (l); 23 Jun 1987 (3); 15 Aug 1986 (4, plus 36-LT).

Pentacora sphacelata (Uhler). AP - 15 Aug 1986 (2-LT). BP - 9 May 1986 (15-LT); 24 Jun 1986 (5-LT); 12 Aug 1986 (2-LT). On beach - 23 Jun 1987 (9); 15 Aug 1986 (5).

**Pentacora signoreti* (Guerin) On beach - 26 Jun 1986 (1).

Saldula pallipes (F.) BP - 9 May 1986 (7-LT).

COLEOPTERA

HALIPLIDAE

**Haliplus triopsis* Say. BP - 24 Apr 1987 (1).

Peltodytes dietrichi Young. AP - 14 Feb 1987 (2); 23 Jun 1987 (3); 23 Oct 1986 (6). BP - 24 Apr 1987 (4).

**Peltodytes dunavani* Young. AP - 14 Feb 1987 (2); 23 Jun 1987 (1).

Peltodytes sexmaculatus Roberts. AP - 14 Feb 1987 (2).

NOTERIDAE

Hydrocanthus atripennis Say. AP - 14 Feb 1987 (12); 28 Feb 1987 (13); 24 Apr 1987 (4); 20 May 1987 (9); 23 Jun 1987 (3); 23 Oct 1986 (1). BP - 24 Apr 1987 (1).

Suphisellus bicolor bicolor (Say). AP - 28 Feb 1987 (54); 24 Apr 1987 (14); 20 May 1987 (20); 23 Jun 1987 (2); 23 Oct 1986 (75).

DYTISCIDAE

**Copelatus caelatipennis princeps* Young. AP - 15 Aug 1986 (l-LT). BP - 12 Aug 1986 (l-LT).

**Copelatus chevrolati renovatus* Guignot. AP - 15 Aug 1986 (l-LT). BP - 12 Aug 1986 (l-LT).

**Cybister fimbriolatus* (Say). BP - 14 Feb 1987 (l); 12 Aug 1986 (l-LT).

Hydaticus bimarginatus (Say). AP - 23 Jun 1987 (l); 15 Aug 1986 (8-LT); 23 Oct 1986 (1). BP - 12 Aug 1986 (4-LT).

**Hydrovatus pustulatus compressus* Sharp. AP - 28 Feb 1987 (6); 24 Apr 1987 (2); 20 May 1987 (7); 23 Jun 1987 (36); 23 Oct 1986 (1).

**Laccophilus fasciatus rufus* Melsheimer. BP - 14 Feb 1987 (1).

Laccophilus proximus proximus Say. AP - 24 Apr 1987 (l); 23 Oct 1986 (4). BP - 28 Feb 1987 (l); 12 Aug 1986 (5-LT).

**Liodessus affinis* (Say). BP - 14 Feb 1987 (1).

**Rhantus callidus* (F.). AP - 15 Aug 1986 (1).

Thermonectes basillaris basillaris (Harris). AP - 14 Feb 1987 (16); 28 Feb 1987 (7); 23 Jun 1987 (4-LT); 15 Aug 1986 (64-LT); 23 Oct 1986 (4). BP - 14 Feb 1987 (8); 28 Feb 1987 (6); 24 Apr 1987 (l); 23 Jun 1987 (3); 12 Aug 1986 (132-LT).

**Thermonectes ornaticollis* (Aube). AP - 24 Apr 1987 (1). BP - 28 Feb 1987 (1) .

**Uvarus falli* (Young). AP - 20 May 1987 (1).

GYRINIDAE

Dineutus carolinus LeConte. BP - 24 Apr 1987 (7).

**Gyrinus analis* Say. BP - 24 Apr 1987 (13).

**Gyrinus pachysomus* Fall. BP - 24 Apr 1987 (1).

HYDROPHILIDAE

Berosus exiquus (Say). AP - 14 Feb 1987 (11); 20 May 1987 (3); 23 Jun 1987 (3); 15 Aug 1986 (52-LT). BP - 9 May 1987 (32-LT); 23 Jun 1987 (3); 24 Jun 1986 (45-LT); 12 Aug 1986 (106-LT).

Berosus infuscatus LeConte. AP - 14 Feb 1987 (17); 28 Feb 1987 (6); 24 Apr 1987 (17). BP - 14 Feb 1987 (20); 28 Feb 1987 (56); 24 Apr 1987 (4); 9 May 1986 (24-LT); 23 Jun 1987 (15, plus 16-LT); 24 Jun 1986 (39-LT).

Enochrus consors (LeConte). AP - 23 Jun 1987 (l-LT).

Enochrus consortus Green. AP - 23 Jun 1987 (5); 15 Aug 1986 (1). BP - 9 May 1986 (l-LT); 23 Jun 1987 (3-LT).

Enochrus hamiltoni (Horn). AP - 14 Feb 1987 (11); 24 Apr 1987 (2); 15 Aug 1986 (32-LT). BP - 28 Feb 1987 (l); 9 May 1986 (284-LT); 23 Jun 1987 (14-LT); 24 Jun 1986 (8-LT); 12 Aug 1986 (l-LT).

Enochrus ochraceus (Melsheimer). AP - 14 Feb 1987 (4); 28 Feb 1987 (l); 24 Apr 1987 (5, plus ll-LT); 20 May 1987 (l); 23 Oct 1986 (1). BP - 28 Feb 1987 (9); 9 May 1986 (80-LT); 23 Jun 1987 (1, plus 3-LT); 12 Aug 1986 (5-LT); 27 Sept 1985 (2).

Enochrus perplexus (LeConte). AP - 15 Aug 1986 (l-LT).

Enochrus pygmaeus nebulosus (Say). AP - 15 Aug 1986 (l-LT); 23 Oct 1986 (1). BP - 12 Aug 1986 (8-LT).

**Enochrus reflexipennis* (Zimmerman). AP - 14 Feb 1987 (4); 28 Feb 1987 (l); 23 Jun 1987 (1, plus l-LT); 15 Aug 1986 (55-LT). BP - 28 Feb 1987 (2); 9 May 1986 (l-LT); 23 Jun 1987 (l); 12 Aug 1986 (108-LT).

**Enochrus sayi* Gundersen. AP - 14 Feb 1987 (l); 23 Jun 1987 (2-LT); 15 Aug 1986 (2-LT). BP - 9 May 1986 (l-LT).

Enochrus sublonqus (Fall). AP - 14 Feb 1987 (l); 23 Jun 1987 (l); 15 Aug 1986 (20-LT). BP - 9 May 1986 (3-LT).

Hydrobiomorpha casta (Say). BP - 9 May 1986 (l-LT).

**Hydrobius tumidus* (LeConte). On beach - 23 Jun 1987 (1).

**Paracymus confusus* Wooldridge BP - 12 Aug 1986 (2-LT).

**Paracymus lodingi* (Fall). AP - 23 Jun 1987 (l-LT); 15 Aug 1986 (41-LT). BP - 28 Feb 1987 (l); 9 May 1986 (2-LT); 12 Aug 1986 (35-LT).

Paracymus subcupreus Say. BP - 12 Aug 1986 (l-LT)

Tropisternus blatchleyi (d'Orchymont). AP - 14 Feb 1987 (7); 23 Jun 1987. BP - 28 Feb 1987 (l); 24 Apr 1987 (2); 24 Jun 1986 (l-LT); 12 Aug 1986 (4-LT).

Tropisternus lateralis nimbatus (Say). AP - 14 Feb 1987 (20); 28 Feb 1987 (7); 24 Apr 1987 (14); 20 May 1987 (2); 23 Jun 1987 (2); 15 Aug 1986 (1-LT); 23 Oct 1986 (1). BP - 14 Feb 1987 (8); 28 Feb 1987 (7); 24 Apr 1987 (2); 12 Aug 1986 (5-LT); 27 Sept 1985 (1).

Tropisternus collaris (F). AP - 14 Feb 1987 (l); 28 Feb 1987 (l); 24 Apr 1987 (4); ;20 May 1987 (l); 23 Jun 1987 (5, plus 6-LT); 15 Aug 1986 (8-LT) 23 Oct 1986 (3).

**Tropisternus natator* d'Orchymont. BP - 26 Sept 1985 (1).

Tropisternus quadristriatus (Horn). AP - 14 Feb 1987 (38); 28 Feb 1987 (13); 24 Apr 1987 (5); 20 May 1987 (2); 23 Jun 1987 (13, plus 54-LT); 15 Aug 1986 (52-LT); 23 Oct 1986 (3). BP - 14 Feb 1987 (34); 28 Feb 1987 (21); 24 Apr 1987 (28); 9 May 1986 (172-LT); 23 Jun 1987 (3); 24 Jun 1986 (28-LT).

HYDROCHIDAE

Hydrochus sp. AP - 20 May 1987 (1).

SCYRTIDAE

**Cyphon setulipennis* Klausniter. Near AP - 24 Apr 1987 (6); 20 May 1987 (l); 23 Jun 1987 (2); 15 Aug 1986 (2-LT); 23 Oct 1986 (1). Near BP - 9 May 1986 (4-LT); 12 Aug 1986 (2).

Cyphon n.sp. (?). Near AP - 21 May 1987 (l); 23 Jun 1987 (l); 15 Aug 1986 (2). Near BP - 12 May 1986 (l); 12 Aug 1986 (l-LT).

CHELONARIIDAE

Chelonarium lecontei Thomson. LT- 24 Jun 1986 (1).

HETEROCERIDAE

**Neoheterocerus fatuus* (Kiesenwetter). LT near AP - 15 Aug 1986 (149). LT near BP - 9 May 1986 (39); 24 Jun 1986 (10); 12 Aug 1986 (32). Edge of AP - 23 Jun 1987 (1).

Tropicus pusillus (Say). Lt near AP - 24 Apr 1987 (l); 15 Aug 1986 (2). LT near BP - 24 Jun 1986 (l); 12 Aug 1986 (21).

LIMNICHIDAE

Eulimnichus ater LeConte. LT near AP - 15 Aug 1986 (93).

CURCULIONIDAE

**Onychylis nigrirostris* (Babeman). AP - 20 May 1987 (I); 23 Jun 1987 (1).

**Lissorhoptrus oryzophilus* Kuschel. AP - 20 May 1987 (2).

**Listronotus cryptops* (Dietz). AP - 23 Jun 1987 (1).

**Stenopelmus rufinasus* Bullenhal. AP - 24 Apr 1987 (4).

Discussion. Based on the distribution records for Hemiptera presented by Wilson (1958), most of the species encountered on Point Clear Island were to be expected. *Belostoma flumineum* (Belostomatidae) has been reported previously from only three localities in the state, but one of those is Horn Island (Richmond, 1962). *Belostoma lutarium* (Stal), the most common member of the genus in Mississippi, has been reported from both Horn Island (Richmond, 1962) and Cat Island (Wilson, 1958), but was absent from the Point Clear fauna.

Although *Pentacora siqnoreti* was not known to occur in the state, Wilson (1958) included the species in his key to Mississippi Saldidae on the basis of known distribution. The specimen collected on Point Clear Island was found running on white sandy beach in association with *Cicindela dorsalis* (Say) (Cicindelidae), which it resembled quite closely. Hungerford (1920) provided a similar observation on the behavior of this species in Maryland.

Unlike the aquatic and semiaquatic Hemiptera, the Coleoptera associated with aquatic environments in Mississippi have received little attention. This is evidenced by the fact that 24 of the 53 species listed here were previously unreported from the state. Although many of these new records are for species that are common in the southeastern United States, at least two represent interesting range extensions. *Uvarus falli* has been reported previously only from Florida localities, and, in the southern states, *Hydrobius tumidus* has not been reported west of Florida. Other records may be equally significant, but we were unable to find general distribution information for several species.

Richmond (1962, 1968), in his comprehensive study of the fauna and flora of Horn Island, listed 13 species of aquatic and semiaquatic Hemiptera and 39 species of Coleoptera from similar habitats. The overall greater diversity on Point Clear Island (21 and 53 species, respectively) is undoubtedly a function of distance from the mainland. Thirty species

(nine Hemiptera and 21 Coleoptera) are common to both islands. Primary differences in the aquatic bug faunas occur at the family level. Gerridae, Veliidae, Naucoridae and Hebridae were not reported from Horn Island but occur on Point Clear Island; Gelastocoridae and Ochteridae were collected on Horn Island, but not on Point Clear Island. Most families of aquatic beetles occur on both islands; however, Richmond (1962, 1968) did not collect aquatic weevils (Curculionidae), Chelonariidae or Limnichidae on Horn Island. Because of the great mobility of most water beetles, it is probable that future collecting efforts will reveal an even greater similarity between the faunas of these islands.

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