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Trichoptera (Caddisflies) Collected on and Near Plummers Island, Maryland in 2004 and 2005

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Abstract.—During 2004 and 2005 insects were collected on or adjacent to Plummers Island, Montgomery County, Maryland using an ultraviolet light trap (2004, 2005) and two Malaise traps (2005). Forty-seven species of Trichoptera were identified from this material, representing 13 families and 25 genera. Most of the species are common and widely distributed over eastern North America, and none is considered of special concern or sensitive.

Key words.—inventory, Malaise trap, blacklight trap, Potomac River.

The caddisflies are an order of holometabolous insects closely related to the Lepidoptera (butterflies and moths). The immature stages of almost all species are found in fresh water habitats, both lotic and lentic. Their larvae are well known for the portable cases that many make, but many make fixed retreats and spin fine silken nets to capture their food, and some are wholly free-living (Ross 1944, Wiggins 2004). The adults are aerial and can be captured near their breeding sites, and most readily come to light at night.

The order contains about 10,000 described species, estimated to be only one-fourth that of the total world fauna (Morse 2006). Around 1400 species are known from the New World north of Mexico (Morse 1993). Nearly 350 species currently are known from Virginia (Flint et al. 2004), but probably fewer occur in the smaller and less diverse state of Maryland. Forty-seven are here recorded from Plummers Island. However, this is probably quite a few less than are actually resident there.

Below are listed in alphabetical order by family, genus, and species those species taken during surveys on Plummers Island and the adjacent mainland property using an ultraviolet light trap (in 2004 and 2005) and two Malaise traps (2005). No attempt has yet been made to search the National Museum of Natural History (USNM) collection for earlier records; many are present there. The dates are chronological by day and month; the years are random. All specimens are deposited in the USNM.

Family Brachycentridae

This family is widespread over the northern hemisphere, although not very diverse. The larvae construct cases, often square in cross section, which they anchor on the solid substrate facing into the current.

Two genera occur in eastern North America, *Brachycentrus* here recorded, and *Micrasema* not yet taken on the Island although it probably will be found there.

Brachycentrus nigrosoma Banks

The species is widespread along eastern United States from Georgia to Maine. It flies, often in great numbers, for a very short time in early spring.

Records.—Malaise trap, 12–23 April 2005, J. Brown & D. Smith.

Family Dipseudopsidae

This is a rather small family found in most zoogeographic regions of the world, but most diverse in the more tropical ones. The larvae spin silken tubes in muddy substrates under the water. One species of the sole North American genus has been taken on the Island, although it is possible two more species could occur.

Phylocentropus placidus (Banks)

This species is widespread from Canada to the Gulf and west to the 100th meridian.

Records.—Blacklight trap, 26 June 2004, J. Brown.

Family Glossosomatidae

The larvae of this family construct portable cases of small sand grains in the shape of a turtle's shell. The family is widespread over most of the world being found on all the continents except Antarctica. In addition to the genus *Protoptila*, *Culoptila plummerensis* Blahnik was taken on the Island in the 1900s. It is also possible that species of the genera *Agapetus*,

Glossosoma, and *Matrioptila* may be taken on the Island sometime as they all occur in nearby areas.

Protoptila georgiana Denning

This is a species of the eastern United States, ranging from Alabama to the Potomac River.

Records.—Blacklight trap, 26 June 2004, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; lower Malaise trap, 9–22 May 2005, 22–29 May, J. Brown & D. Smith; upper Malaise trap, 9–22 May 2005, 22–29 May, J. Brown & D. Smith.

Protoptila palina Ross

This species is more widespread over eastern United States than the former, being known from Maine to Alabama, east of the Mississippi River.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown; lower Malaise trap, 12 September–2 October 2005, J. Brown & D. Smith; upper Malaise trap, 22–29 May 2005, J. Brown & D. Smith.

Family Helicopsychidae

A family widespread over the world, Helicopsychidae are well known for their larval cases made from small sand grains in the form of a snail shell. Only two species are known from eastern United States, but the genus is very diverse in tropical areas and on many larger oceanic islands.

Helicopsyche borealis (Hagen)

This species is widely distributed over North and Central America.

Records.—Blacklight trap, 23 July 2005, 5 September 2005, J. Brown.

Family Hydropsychidae

This is a very large and diverse family found on all regions of the world and on most larger oceanic islands. The larvae construct fixed retreats on solid substrate and weave a trap net affixed in various manners to the retreat which is used to strain their food from the passing current. The mesh size, manner of attachment of the net, and current velocity selected allow the species to finely partition the habitat (Wiggins & MacKay 1978).

In addition to the four genera listed below, the genus *Potamyia* was taken frequently around the Potomac in the 1960s and 1970s. It also is possible that *Diplectrona* and *Homoplectra* could be taken in some small, spring-fed creek nearby. It is quite probable that additional species in *Cheumatopsyche* and *Hydropsyche* will be taken on the Island with additional collecting.

Cheumatopsyche ela Denning

The species is widespread in eastern North America from southern Canada to the Gulf of Mexico, but not west of the Mississippi.

Records.—Blacklight trap, 14 May 2005, 24 June 2005, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; Malaise trap, J. Brown & D. Smith, 12–23 April 2005; upper Malaise trap, 24 April–8 May 2005, 29 August–11 September 2005, J. Brown & D. Smith.

Cheumatopsyche minuscula (Banks)

This species is widespread over eastern North America as far west as the 100th meridian.

Records.—Blacklight trap, 14 May 2005, 24 June 2005, 26 June 2004, 23 July 2005, 5 September 2005, J. Brown.

Hydropsyche betteni Ross

The species is found everywhere in eastern North America east of the 100th meridian.

Records.—Blacklight trap, 26 May 2005, 24 June 2005, 26 June 2004, 30 October 2004, J. Brown.

Hydropsyche bronta Ross

This species ranges widely across Canada and the United States as far west as the Rocky Mountains.

Record.—Blacklight trap, 26 June 2004, J. Brown.

Hydropsyche brunneipennis Flint & Butler

This is a species of rather restricted distribution in the east, ranging from Pennsylvania to Tennessee. The type locality is the Potomac River at Carderock, Maryland, just east of Plummers Island.

Records.—Blacklight trap, 14 May 2005, 26 June 2004, 5 September 2005, J. Brown; upper Malaise trap, 24 April–8 May 2005, J. Brown & D. Smith.

Hydropsyche hageni Banks

Although widespread from Manitoba to Quebec and south to Alabama, this species seems to be absent from New England.

Records.—Blacklight trap, 14 May 2005, 24 June 2005, 5 Sept 2005, J. Brown; lower Malaise trap, 9–22 May 2005, J. Brown & D. Smith.

Hydropsyche phalerata Hagen

This is a common and widespread species east of the Mississippi River in North America from Quebec to Florida.

Records.—Blacklight trap, 14 May 2005, 26 June 2004, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; upper Malaise trap, 24 April–8 May 2005,

J. Brown & D. Smith; lower Malaise trap, 24 April–8 May 2005, 9–22 May 2005, 28 July–14 August, 29 August–11 September, J. Brown & D. Smith.

Hydropsyche scalaris Hagen

There appear to be valid records of this species from Quebec south to Alabama and west to Texas.

Records.—Blacklight trap, 14 May 2005, 26 June 2004, 23 July 2005, J. Brown.

Hydropsyche sparna Ross

This species is widespread east of the Mississippi River in North America, with an outlying report from Kansas.

Records.—Blacklight trap, 26 June 2004, J. Brown.

Macrostemum zebratum (Hagen)

This colorful species is widespread east of the 100th meridian over all of North America.

Records.—Blacklight trap, 24 June 2005, 5 September 2005, J. Brown; lower Malaise trap, 30 May–13 June, J. Brown & D. Smith.

Family Hydroptilidae

Species of this family are known as the microcaddisflies as few have a forewing length of more than 3 mm. It is one of the most diverse and speciose families of caddisflies on earth. Almost all genera make portable cases of silk, sand, or plant fragments. The larvae have a type of hypermetamorphosis as the first 4 instars are very small and slender, caseless, and passed through quickly; almost all growth takes place in the fifth instar when the case is finally constructed.

Two genera are recorded from Plummers Island, but several others (*Agraylea*, *Leucotrichia*, *Mayatrichia*, *Neotrichia*, and *Stactobiella*) almost surely will be taken on the Island with additional collecting, as will many more species in the genera herein recorded.

Hydroptila armata Ross

The species has been taken quite generally over eastern North America, east of the 100th meridian.

Record.—Blacklight trap, 14 May 2005, J. Brown.

Hydroptila spatulata Morton

This species is widespread in eastern North America from Manitoba to Arkansas and east to the Atlantic Ocean.

Records.—Blacklight trap, 14 May 2005, 26 May 2005, 24 June 2005, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; upper Malaise trap, 9–22

May 2005, J. Brown & D. Smith; lower Malaise trap, 9–22 May 2005, J. Brown & D. Smith.

Hydroptila waubesiana Betten

This species is widespread over eastern North America as far west as Saskatchewan, Montana, and Colorado, and as far south as the Gulf Coast states.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown.

Ochrotrichia tarsalis (Hagen)

This is a widespread species in North America, ranging from Canada to Mexico, mostly east of the 100th meridian.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown.

Orthotrichia aegerfasciella (Chambers)

This species is known from Quebec south to northern South America and the Greater Antilles.

Records.—Blacklight trap, 24 July 2004, J. Brown.

Family Lepidostomatidae

This is a moderately diverse family, found mainly in the Northern Hemisphere, with species south through Central America; however, it also occurs in Africa, Madagascar, and Indonesia. Males tend to have bizarre secondary sexual modifications, which has led to a very unstable generic classification that has swung between multitudinous genera and just two or three.

The immature stages make tubular cases out of sand or leaf fragments, sometimes circular in cross section, other times square. Only the type genus is likely to be taken on the Island, although additional species may occur.

Lepidostoma togatum (Hagen)

The species is widespread over North America from the Northwest Territories to Nova Scotia south to Alabama, but only east of the Rocky Mountains.

Records.—Blacklight trap, 14 May 2005, J. Brown.

Family Leptoceridae

This family is widespread, being found on all zoogeographic regions, but perhaps most diverse in tropical realms. The larvae are case-makers, usually constructing slender, tubular cases of sand or plant matter but sometimes wholly silken. They are found in all types of waters, both flowing and still. In addition to the genera mentioned below, it is quite probable that *Leptocerus*, *Mystacides*, and *Setodes*, as well as many

more species in the reported genera, will be found in future collections from the Island.

Ceraclea flava (Banks)

The species is known from most of the eastern states, at least as far west as the Mississippi River.

Records.—Blacklight trap, 26 June 2004, 24 June 2005, 23 July 2005, J. Brown; upper Malaise trap, 14–26 June 2005, J. Brown & D. Smith.

Ceraclea maculata (Banks)

Another common, widespread eastern species, it is recorded from Minnesota to Texas, east to the Atlantic Ocean.

Records.—Blacklight trap, 26 June 2004, 24 July 2004, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown; lower Malaise trap, 14–26 June 2005, J. Brown & D. Smith.

Ceraclea slossonae (Banks)

This species ranges from Canada to the Florida along the East Coast of North America.

Records.—Blacklight trap, 24 June 2005, J. Brown.

Ceraclea transversa (Hagen)

This species is found throughout the northeastern United States and Canada, west to the Mississippi River and Oklahoma.

Records.—Blacklight trap, 26 June 2004, J. Brown.

Ceraclea uvalo Ross

This is a rather uncommon species found in the east central United States. The record is based on a single female that is assigned to *C. uvalo*, rather than the very similar *C. punctata* (Banks), based on a male taken 6 September 1993 and on other occurrences of the species in similar localities in nearby sites.

Records.—Blacklight trap, 5 September 2005, J. Brown.

Nectopsyche candida (Hagen)

The species is found generally east of the 100th meridian from Canada to Florida.

Records.—Blacklight trap, 26 June 2004, J. Brown.

Nectopsyche exquisita (Walker)

This very pretty species has a range similar to the previous one, but it extends a bit further north.

Records.—Blacklight trap, 5 September 2005, J. Brown.

Oecetis avara (Banks)

The species, as presently defined, has a very wide range in North America, extending as far south as northern South America.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown; lower Malaise trap, 29 August–11 September 2005, J. Brown & D. Smith.

Oecetis ditissa Ross

This species, very similar to *O. inconspicua* (Walker) and *O. nocturna* Ross, is known from east of the 100th meridian to the Atlantic Ocean in the United States.

Records.—Blacklight trap, 5 September 2005, J. Brown; upper Malaise trap, 14–28 August 2005, J. Brown & D. Smith.

Oecetis inconspicua (Walker)

One of the most wide-ranging species of the New World, *Oecetis inconspicua* is recorded over all of North, Central, and South America and the West Indies.

Records.—Blacklight trap, 26 May 2005, 24 June 2005, 26 June 2004, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; upper Malaise trap, 22–29 May 2005, 28 July–14 August 2005, J. Brown & D. Smith; lower Malaise trap, 27 June–11 July 2005, 28 July–14 August 2005, 14–28 August 2005, J. Brown & D. Smith.

Oecetis nocturna Ross

This species is very closely related to *O. inconspicua* and *O. ditissa* and can be distinguished only by the male genitalia. It is known from the Gulf Coast to southern Canada, west to the 100th meridian.

Records.—Blacklight trap, 23 July 2005, J. Brown.

Oecetis persimilis (Banks)

This species seems to be restricted to riverine habitats and is found generally in North America east of the 100th meridian.

Records.—Blacklight trap, 26 June 2004, 24 July 2004, 24 June 2005, J. Brown; upper Malaise trap, 29 August–11 September 2005, J. Brown & D. Smith.

Triaenodes flavescens Banks

The species has been taken over much of eastern North America, generally east of the Mississippi River, with an outlying record from British Columbia.

Records.—Blacklight trap, 5 September 2005, J. Brown.

Triaenodes injusta (Hagen)

The species ranges across most of eastern North America as far west as Kansas and Texas, and through Canada to British Columbia and south to Oregon.

Records.—Blacklight trap, 26 June 2004, 24 June 2005, 3 July 2005, 5 September 2005, J. Brown.

Family Limnephilidae

The family is a large one, primarily of the Northern Hemisphere, but there is one genus in Australia and another group of species and genera in the Chilean subregion. They all make cases using a great variety of substances from inorganic to organic matter. In addition to the genera documented below, others may be taken such as *Hydatophylax*, *Frenesia*, *Platycentropus*, and *Pseudostenophylax*. Additional species of *Ironoquia* and *Pycnopsyche* are also quite likely to be found on Plummers Island.

Ironoquia kaskaskia (Ross)

This species is not commonly taken, and all the records are from east of the Mississippi River.

Records.—Blacklight trap, 9 October 2004, J. Brown.

Limnephilus submonilifer Walker

This is probably the commonest and most widespread species of the genus in eastern North America. It is reported from North Carolina to southern Canada, extending west in Arkansas and Manitoba.

Records.—Upper Malaise trap, 24 April–8 May 2005, 9–22 May 2005, J. Brown & D. Smith.

Pycnopsyche lepida (Hagen)

The species is widespread over eastern North America, primarily near larger streams and rivers. The known range is from southern Canada to the Gulf coast and west to the 100th meridian.

Records.—Blacklight trap, 9 October 2004, J. Brown.

Pycnopsyche subfasciata (Say)

The range of this species is essentially the same as the preceding, but it extends a bit further west into Colorado and Alberta.

Records.—Blacklight trap, 30 October 2004, J. Brown.

Family Philopotamidae

This large family is worldwide in distribution, both in temperate and tropical climates. The larvae construct long, fingerlike nets from silk attached to the

underside of rocks, etc. In addition to the one recorded genus, it is possible that two more genera, *Dolophilodes* and *Wormaldia*, will be taken in the future.

Chimarra aterrima Hagen

This ubiquitous species has been recorded from almost every state and province east of the 100th meridian.

Records.—Blacklight trap, 23 July 2005, J. Brown.

Chimarra obscura (Walker)

Another very common species, *Chimarra obscura* has a range essentially the same as that of the previous species.

Records.—Blacklight trap, 23 July 2005, 5 September 2005, J. Brown.

Chimarra socia Hagen

This species is taken much less frequently than the preceding two, but its range is just about the same as theirs.

Records.—Blacklight trap, 23 July 2005, J. Brown.

Family Polycentropodidae

This family contains many genera and species, both in temperate and tropical areas. The larvae all make silken nets of a great variety of shapes and forms, most in lotic situations but some in ponds and marshes. The genus *Cernotina* almost certainly will be taken on the Island as will more species of *Polycentropus*.

Cyrnellus fraternus (Banks)

This species has an extremely wide distribution from Argentina to northern United States, where it is known primarily from east of the 100th meridian.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, 24 July 2004, 5 September 2005, J. Brown; upper Malaise trap, 14–26 June 2005; 28 July–14 August 2005, J. Brown & D. Smith; lower Malaise trap, 28 July–14 August 2005, 29 August–11 September 2005, J. Brown & D. Smith.

Neureclipsis crepuscularis (Walker)

The species ranges from Alberta and Montana to the Atlantic, but in the United States it is found mostly east of the 100th meridian all the way south to the Gulf Coast.

Records.—Blacklight trap, 24 June 2005, 23 July 2005, J. Brown; lower Malaise trap, 24 April–8 May 2005; 9–22 May 2005; 22–29 May 2005, J. Brown & D. Smith.

Paranyctiophylax sp.

Several females of an unknown species of the genus were taken on the Island. As several species might occur at the Island, and the females of none are yet distinguishable, it is left unnamed.

Records.—Blacklight trap, 26 June 2004, J. Brown.

Polycentropus cinereus Hagen

The species is widespread over North America except for the southwestern states.

Records.—Blacklight trap, 14 May 2005, 24 June 2005, 23 July 2005, 5 September 2005, J. Brown.

Family Psychomyiidae

The family is not very diverse and contains relatively few genera. It is found in north temperate and tropical regions. The larvae spin silken shelters and tubes, often covered with debris, on the substrate. The genus *Lype* possibly will be found on the Island.

Psychomyia flavida Hagen

The species is transcontinental from British Columbia to California and from Nova Scotia to Florida, but seems to be missing in the southwestern states. It is also unusual in that it is primarily parthenogenic in eastern North America, but males are relatively common west of the 100th meridian.

Records.—Blacklight trap, 14 May 2005, 24 June 2005, 23 July 2005, J. Brown.

Family Uenoidae

This is another rather small family of the Northern Hemisphere. The larvae construct tubular cases of small sand grains, often with a few larger grains on each side. There is only one genus in eastern North

America, but there are other species that could be found on the Island.

Neophylax sp., near *stolus* Ross

This undescribed species is known from the Potomac River in the vicinity of Plummers Island, and from the Shenandoah River near Woodstock and Boyce.

Records.—Blacklight trap, 9 October 2003, 30 October 2004, J. Brown.

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