

# Odonata of Negro Mountain Bog

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This report covers the field work completed in 1995 and 1996 for partial fulfillment of the Maryland Department of Natural Resources (DNR), Heritage and Biodiversity Conservation Programs (HBCP) contract. The purpose for the contract was to identify and survey for dragonflies and damselflies (Insecta:Odonata) at Finzel Swamp, Negro Mountain Bog, and the Glades of Cherry Creek.

Of all my survey locations in 1996 (Glades, Finzel Swamp, Cranesville Bog, and Mt. Nebo WMA) Negro Mountain Bog was the most pristine, the least studied, and to me, the most enjoyable to visit. This high mountain meadow/bog was, at least in part, created by beavers which have either abandoned the location or were removed. Exposed trees appeared to be very vulnerable to frequent lightning strikes which helped maintain the openness of the bog in the absence of the beavers.

The field trips to Negro Mountain Bog provided me the opportunity to see a number of uncommon animals which I rarely see in Maryland -- let alone at a single location. These included Black Bear (S2), Bobcat (S3), and Silver-Border Fritillary (S3), plus a healthy assortment of summer (likely breeding) birds. Including the HBCP listed: Alder Flycatcher (S2), Dark-eyed Junco (S2), Hermit Thrush (S3,S4), Nashville Warbler (S1,S2), and Canada Warbler (S3).

In addition, on July 6, 1995, while eating lunch at the main beaver pond, I heard what was probably a Swainson's Thrush, calling along with a Hermit Thrush, Wood Thrush, and Veery. The Swainson's Thrush is listed by HBCP as a SX organism. If the ascending spiral of whistles indeed was a Swainson's Thrush then I was listening to four species of *Catharus* singing at the same time! The July record of a singing Swainson's Thrush is a note worthy record (if confirmed in subsequent years) since only historical records of breeding Swainson's Thrush in Maryland are known (Iliff et al, 1996).

*Sorex palustris*, the Southern Water Shrew (S1 -- recorded from

Cranesville Bog), is most likely present at Negro Mountain Bog.

I flushed a small mouse-sized animal into the narrow, slow-flowing bog stream on the morning of May 16, 1995. I watch it swim a short distance underwater until it disappeared under the overhanging bank. Underwater it resembled a large silver bubble due to the trapped air around its body. Although I did not have any previous experience with the Southern Water Shrew, this animal's size and behavior reminded me very much of *Sorex bendirei*, the Pacific Water Shrew, which I have observed in Oregon.

Negro Mountain Bog proper is a minerotrophic fen dominated by sphagnum, sedges, rushes, and grasses. Bog Clubmoss, Round-leaved Sundews, Narrow-leaved Gentian, White Beakrush, and St. John's-wort (at least two species) are abundant. Speckled Alder and Roughish Arrowwood are common shrubs in the bog with Rhododendron, Red Maple, Black Cherry, Mountain-ash and Mountain Holly surrounding it. No attempt was made to probe deeper into the flora, but based on Negro Mountain Bog's pristine nature and it's unique assemblage of invertebrates and vertebrates, the bog probably has some botanical surprises.

Table 1 summarizes the data collected on Odonata during the 1995-1996 survey. Both dragonfly and damselfly adults and larval cast skins were used to gather data during the survey. No direct larval sampling was done.

The dragonfly and damselfly species found were representative of a northern bog, more so than any of my other survey locations. During late spring and early summer the abandoned beaver pond was active with a healthy assemblage of odonate species including *Aeshna canadensis* (Canada Darner), *Leucorrhinia hudsonica* (Hudsonian Whiteface), *Leucorrhinia glacialis* (Crimson-ringed Whiteface), *Libellula julia* (Chalk-fronted Corporal) and *Lestes disjunctus disjunctus* (Common Spreadwing) all of which are northern or high Appalachian mountain bog species not recorded in Maryland before 1993. Two species, the Crimson-ringed Whiteface (found in 1995) and the Hudsonian Whiteface (found in 1996) are still known only from Maryland from this one site.

Four species are identified in Table 1 as species which are of potential interest to the HBCP. A summary of each is presented.

**1. *Aeshna canadensis* (Canada Darner)** had not been recorded from Maryland before 1993. In Maryland, it has only been recorded from Garrett County. *Aeshna canadensis* appeared to be common

throughout my survey areas in 1995 and somewhat less so in 1996. Voucher specimens were taken and reside in the authors collection.

*Aeshna canadensis* is an abundant northern boreal species and a powerful insect capable of covering great distances in flight. The Canada Darner most likely extends its range along its southern border under ideal conditions. For details on the biology and natural history of *A. canadensis* see Walker, 1958.

The current information on *Aeshna canadensis* implies that it is either a recent but temporary invader or has been established for some time but not reported due to a previously low numbers of individuals in the population. Which hypotheses is correct can not be answered until additional field work is completed. The

**TABLE 1: ODONATA OF NEGRO MOUNTAIN BOG**

|                                              | MAY | JUNE | JULY | AUG | SEPT |
|----------------------------------------------|-----|------|------|-----|------|
| <b>DRAGONFLIES:</b>                          |     |      |      |     |      |
| Gomphidae                                    |     |      |      |     |      |
| 1. <i>Arigomphus villosipes</i>              |     | C    |      |     |      |
| 2. <i>Gomphus lividus</i>                    |     | X    |      |     |      |
| Aeshnidae                                    |     |      |      |     |      |
| 3. <b><i>Aeshna canadensis</i></b> **+       |     |      |      | X   | X    |
| 4. <b><i>Aeshna tuberculifera</i></b> *      |     |      |      | X   |      |
| 5. <i>Aeshna umbrosa</i>                     |     |      |      | X   | X    |
| 6. <i>Anax junius</i>                        |     |      | X    | X   | X    |
| 7. <i>Basiaeschna janata</i>                 | X   |      |      |     |      |
| 8. <i>Epiaeschna heros</i>                   |     | X    |      |     |      |
| Cordulegasteridae                            |     |      |      |     |      |
| 9. <i>Cordulegaster diastatops</i> +         |     | X    | X    |     |      |
| 10. <i>Cordulegaster maculata</i>            |     | C    |      |     |      |
| Corduliidae                                  |     |      |      |     |      |
| 11. <i>Cordulia shurtleffi</i> +             |     | X    | X    |     |      |
| 12. <i>Epithea</i> sp.(S)                    |     | X    |      |     |      |
| 13. <i>Somatochlora tenebrosa</i>            |     |      |      | X   | X    |
| Libellulidae                                 |     |      |      |     |      |
| 14. <i>Erythemis simplicicollis</i>          |     | C    |      |     | X    |
| 15. <b><i>Leucorrhinia glacialis</i></b> **+ |     | X    | X    |     |      |
| 16. <b><i>Leucorrhinia hudsonica</i></b> **+ |     | X    |      |     |      |
| 17. <i>Leucorrhinia intacta</i> +            |     | X    |      |     |      |
| 18. <i>Libellula julia</i> +                 |     | X    | X    |     |      |
| 19. <i>Libellula luctuosa</i>                |     |      |      | X   |      |
| 20. <i>Libellula lydia</i>                   |     | X    | X    | X   | X    |
| 21. <i>Libellula pulchella</i>               |     | X    |      | X   |      |
| 22. <i>Libellula semifasciata</i>            | X   | X    |      | X   |      |
| 23. <i>Pachydiplax longipennis</i>           |     | C    |      | X   |      |
| 24. <i>Pantala flavescens</i>                |     |      |      | X   | X    |
| 25. <i>Sympetrum obtrusum</i>                |     |      |      | X   | X    |
| 26. <i>Sympetrum vicinum</i>                 |     |      |      | X   | X    |
| <b>DAMSELFLIES:</b>                          |     |      |      |     |      |
| Calopterygidae                               |     |      |      |     |      |
| 27. <i>Calopteryx maculata</i>               |     |      | X    |     |      |

Lestidae

|                                           |  |  |   |   |
|-------------------------------------------|--|--|---|---|
| 28. <i>Lestes disjunctus disjunctus</i> + |  |  | X | X |
| 29. <i>Lestes rectangularis</i>           |  |  | X |   |

Coenagrionidae

|                                   |   |   |   |   |
|-----------------------------------|---|---|---|---|
| 30. <i>Amphiagrion saucium</i>    | C | X |   |   |
| 31. <i>Chromagrion conditum</i>   | X | X |   |   |
| 32. <i>Enallagma hageni</i> +     | X | X | X |   |
| 33. <i>Ischnura hastata</i>       | X |   |   |   |
| 34. <i>Ischnura posita posita</i> |   |   |   | X |
| 35. <i>Ischnura verticalis</i>    | X | X | X |   |
| 36. <i>Nehalennia irene</i>       |   |   | X |   |

Key:

Bold = species of potential interest due to rarity in Maryland

(C) = Record from Dave Czaplak

+ = At present known from Maryland only from Garrett County

\* = Species or subspecies known from 5 or less sites in Maryland

\*\* = Species known only from this site in Maryland

(S) = Sight identification in which genus but not the species identified

southern most record of this species is Highland county, Virginia (Carle, 1982) and it is listed in Virginia as a S1 organism.

**2. *Aeshna tuberculifera* (Black-tipped Darner)** presents a similar scenario of being a powerful flying boreal species which could conceivably show up far from its normal range. *Aeshna tuberculifera* has a very spotty record from Maryland with two historical records (both in 1916) from Prince George's County, a 1996 record in Howard County and recent scattered records from Garrett County including Mt. Nebo WMA, Negro Mountain bog, and Finzel Swamp. A cast skin was collected from the edge of a small pond at Mountain Negro Bog and resides in the author's collection. See Orr, 1996, for the present distributions of all known dragonflies and damselflies from the Maryland and Washington D.C. area.

The Black-tipped Darner's southern known limit is Russell County in Virginia (Carle, 1982). In Virginia, *A. tuberculifera* is encountered more often than *A. canadensis*, just the opposite from what the 1995-1996 data from Garrett County shows. In Virginia, *A. tuberculifera* is listed as a S2. For details of the biology and natural history of the Black-tipped Darner see Walker, 1952.

**3. *Leucorrhinia hudsonica* (Hudsonian Whiteface)** is known from Maryland only from Negro Mountain Bog. It was first found on June 10, 1996, near the abandon beaver pond. All specimens found on that day were mature. Voucher specimens were taken and reside in the author's collection. This species was also photographed in the field.

The Hudsonian Whiteface has a transcontinental distribution in the far north and has been reported in the eastern United States as far south as Pendleton and Tucker Counties, West Virginia, and Highland County, Virginia (Carle, 1982). Based on the known distribution of the Hudsonian Whiteface I suspect that it will turn up at other high mountain bog locations in Garrett County.

*Leucorrhinia hudsonica* is listed as S1 in Virginia and New Jersey. See Walker and Corbet, 1978, for details on the biology and natural history of *L. hudsonica*.

**4. *Leucorrhinia glacialis* (Crimson-ringed Whiteface)** was the highlight of the 1995 field season. Like the preceding Hudsonian Whiteface the Crimson-ringed Whiteface has a transcontinental distribution in the far north. The Negro Mountain Bog population is the most southern population known in the eastern United States. It has not been found in West Virginia or in Virginia. The previous southern record for the northeast was Pennsylvania where it is known from Centre, Clearfield, Schuylkill, and Warren counties (Carle, 1982).

The Crimson-ringed Whiteface population at Negro mountain bog is healthy. On July 6, 1995, it was the most abundant dragonfly at the old abandoned beaver ponds. On June 10, 1996, this species was emerging in large numbers at the edge of the ponds. It should be noted that *L. hudsonica* was mature and on territory at this date so there probably is little if any competition between these two species, at least in the adult stage.

The Manual of the Dragonflies of North America by Needham and Westfall claims that the Crimson-ringed Whiteface is "*in life and at maturity one of [the] most beautiful of Odonata*". I will second that observation. This really is quite an impressive new animal for Maryland.

Voucher specimens and photographs (in the field) were taken of *Leucorrhinia glacialis*. These reside with the author. Details on the biology and life history of this species can be found in Walker and Corbet, 1978.

#### **Recommendations for Negro Mountain Bog:**

1) Additional survey of the fauna and flora is strongly recommended. Most important would be a detailed botanical survey. Although I have completed my two year contract survey

with HBCP of this bog, I would like to request funds to extend the odonate survey into the 1997 field season.

2) No wetland is stable. However, Negro Mountain Bog was sculptured and its integrity was maintained by the presence of beavers. If the beaver were removed due to trapping, hunting, or by some other factor independent of the environment, then I strongly recommend transplanting them back to Negro Mountain Bog as soon as possible. If however, the beavers left because of a diminishing food supply then I would not recommend returning them. It is important to recognize that when the beaver ponds disappear (they are already in poor condition) so will the Crimson-ringed Whiteface.

3) The Swainson's Thrush and Southern Water Shrew should be confirmed by specialists more experienced with these animals than I.

4) This wetland is one of the crown jewels in Maryland's natural heritage. It should be treated as such. Mountain Negro Bog should receive the best protection possible under State law.

5) *Leucorrhinia glacialis* and *L. hudsonica* should be listed as S1 organisms. *Aeshna canadensis* and *A. tuberculifera* should be listed as S2 or S3 organisms.

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