OKEFENOKEE SWAMP MACROINVERTEBRATES

E.E. Bilger¹, D.P. Batzer² and J.V. McHugh³

AUTHORS: ¹Graduate Student and ²Associate Professor, Department of Entomology, University of Georgia, Athens, GA 30602.
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Abstract. The Okefenokee Swamp is one of the largest wetlands in North America, covering 3781 km² of the Southeastern Atlantic Coastal Plain. Despite the prominence and magnitude of the Okefenokee, little is known about the resident invertebrate fauna. We conducted a 2 year study to describe the aquatic invertebrate communities and their spatial and temporal variation within the Okefenokee Swamp. We collected invertebrates from 6 sampling areas spread across 3 hydrologic units. Within each area, sampling was stratified to include aquatic (lake, river, or canal), herbaceous marsh, scrub-shrub, and cypress habitats. Sampling was conducted in May, August, and December of each year. The invertebrate community structure is unique, but not especially diverse.

INTRODUCTION

The Okefenokee Swamp covers 3781 km² of the Southeastern Atlantic Coastal Plain. It is a habitat of international significance and is included in the “List of Wetlands of International Importance” under the Ramsar Convention (Mitsch and Gosselink 1993). Despite the magnitude and prominence of the swamp, little data are available describing abundances or species richness of Okefenokee invertebrates (Porter et al. 1999). Wetland invertebrate species are the major trophic link between plants and higher animals in wetland ecosystems, and thus knowledge about the structure and function of the Okefenokee invertebrate fauna will provide valuable insight into the habitat’s ecological functioning.

METHODS

Sampling for macroinvertebrates was concentrated around 6 portions of the Okefenokee: Durden prairie, Double lakes, Grand prairie, Chase prairie, Floyd’s prairie, and Billy’s Lake (Fig. 1). These sites were selected to cover three of the major watersheds in the Okefenokee (Loftin 1997). At each of these sites we sampled invertebrate communities from the major plant types within the swamp, prairies, scrub-shrub thickets, and cypress stands (Hamilton 1982). We also sampled deepwater weedbeds (in lakes, rivers, and canals) and the borders of maintained canoe trails. We collected samples in December 1998, May 1999, August 1999, December 1999, May 2000, and August 2000. Each sample was a composite of three 1-m D-net sweeps. Samples were preserved in 95% ethanol and were brought back to the lab for further processing.

RESULTS AND DISCUSSION

The macroinvertebrate community in the Okefenokee is not particularly diverse given the mosaic of habitats within the wetland (Table 1). The Chironomidae (Diptera) were the most abundant family, followed by the water mites, Ceratopogonidae (Diptera), and the Hydroptilidae (Trichoptera). The community can be characterized by large numbers of these small-bodied consumers coexisting with numerous large-bodied invertebrate predators (Odonata, Dytiscidae beetles, Hemiptera). This community structure appears to conflict with the hypothesis of Wellborn et al. (1996), which states that large-bodied invertebrate predators are usually rare in habitats with fish. Large numbers of fish occur across the Okefenokee, although most are small (Freeman and Freeman 1985). Several macroinvertebrate groups that commonly occur in wetlands were conspicuously absent or rare in the Okefenokee (e.g. oligochaetes, leeches, mollusks). These organisms may be unable to tolerate the acid conditions (pH 3.5-4.0).

On-going analyses will examine spatial and temporal variations in the Okefenokee invertebrate community, specifically among watershed units, plant communities, and seasons. The invertebrate data set that we have generated will be used to establish reference conditions to better permit objective analyses on future natural and anthropogenic changes.
Fig. 1. Map of the Okefenokee Swamp showing the locations (asterisks) of the six sites where invertebrates were collected.
Table 1. Okefenokee Invertebrates Taxa List

**ARTHROPODS**

**Crustaceans**
- Anomopoda (Cladocera)
  - Daphniidae
- Copepoda
- Arguloida
  - Argulidae
    - *Argulus sp.*
- Isopoda
  - Asellidae
    - *Caecidotea sp.*
- Amphipoda
  - Crangonyctidae
    - *Crangonyx sp.*
  - Gammaridae
    - *Gammarus sp.*
- Decapoda
  - Cambaridae
  - Palaemonidae
    - *Palaemonetes sp.*

**Mites**
- Acari

**Insects**
- Collembola
  - Sminthuridae
  - Poduridae
- Ephemeroptera
  - Caenidae
    - *Caenis sp.*
- Odonata
  - Coenagrionidae
    - *Enallagma sp.*
    - *Ischnura sp.*
    - *Nehalennia sp.*
  - Lestidae
    - *Lestes sp.*
  - Aeshnidae
    - *Aeshna sp.*
    - *Coryphaeschna sp.*
  - Corduliidae
    - *Epitheca sp.*
  - Libellulidae
    - *Celithemis sp.*
    - *Erythemis sp.*
    - *Libellula sp.*
    - *Pachydiplax sp.*
    - *Perithemis sp.*
    - *Sympetrum sp.*
    - *Tramea sp.*

**Hemiptera**
- Naucoridae
  - *Pelocoris sp.*
- Nepidae
  - *Ranatrala sp.*
- Belostomatidae
  - *Belostoma sp.*
- Corixidae
  - *Trichocorixa sp.*
- Pleidae
  - *Neoplea sp.*
  - *Paraplea sp.*
- Notonectidae
  - *Buenoa sp.*
  - *Notonecta sp.*
- Mesoveliidae
  - *Mesovelia sp.*
- Hydrometridae
  - *Hydrometra sp.*
- Gerridae
  - *Aquarius sp.*

**Neuroptera**
- Sisyridae
  - *Sisyra sp.*
- Megaloptera
  - Corydalidae
    - *Chauliodes sp.*
  - Sialidae
    - *Sialis sp.*

**Coleoptera**
- Halphilidae
  - *Peltodytes sp.*
- Noteridae
  - *Hydrocanthus sp.*
  - *Suphisellus sp.*
- Dytiscidae
  - *Agabetes sp.*
  - *Celina sp.*
  - *Coptotomus sp.*
  - *Cybister sp.*
  - *Hydroporus sp.*
  - *Hydrovatus sp.*
  - *Hygrotris sp.*
  - *Ilybius sp.*
  - *Laccophilus sp.*
  - *Neoporus sp.*
  - *Matus sp.*
  - *Rhatius sp.*
  - *Uvarus sp.*
Table 1. continued

<table>
<thead>
<tr>
<th>Order</th>
<th>Family</th>
<th>Species</th>
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<tr>
<td>Diptera</td>
<td>Hydrophilidae</td>
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<td>Culex sp.</td>
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<td></td>
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<td>Mansonia sp.</td>
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<td></td>
<td>Ceratopogonidae</td>
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<td>Chironomidae</td>
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<td>Tabanidae</td>
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<td>Trichoptera</td>
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<td></td>
<td>Polycentropodidae</td>
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<td>Hydroptilidae</td>
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<td>Leptoceridae</td>
<td>Oecetis sp.</td>
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<td>Lepidoptera</td>
<td>Pyralidae</td>
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<td>Acentria sp.</td>
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<td>Cossidae</td>
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<td>Prionoxystus sp.</td>
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<tr>
<td>NON-ARTHROPODS</td>
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<td></td>
<td>Gastropoda</td>
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or disturbances in the Okefenokee Swamp. Furthermore, the study can provide baseline data for generating and quantitatively testing ecological hypotheses related to community ecology, trophic interactions, and links to ecosystem function.

ACKNOWLEDGEMENTS

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REFERENCES


