THE ZYGOPTERA OF UNDERC
SUMMER 1991

BIOS 569 Practicum in Aquatic Biology

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1991

ABSTRACT

In the continuing effort to compile a complete identification guide to damsel flies, order Odonata, suborder Zygoptera, these insects were collected, studied, and identified. Twenty one species representing three families were collected. Correlations between species and habitat were studied.

INTRODUCTION

Because of the usefulness of UNDERC for studying aquatic biology, a comprehensive guide that clarifies what species, what locations, and what correlations there may be between habitat and species diversity of damsel flies would be useful. This study is a continuation of an effort started several summers ago.

MATERIALS AND METHODS

Cyanide killing jars were made for the collection of damsel flies. The bottom of a jar was covered by a small amount of Potassium cyanide and plaster of paris was poured in to cover it. The bottom of the outside of the jar was taped to protect against harmful shattering. The jars were kept covered unless a caught specimen was being placed in it.

Damsel flies were caught using large butterfly nets. In most habitats, sweeping the grass was the most effective way to catch them. At bogs, the damsel flies could usually be seen when flying or landed, which was fortunate because the vegetation was too stiff to beat. They are not aggressive fliers, and are often difficult to see, so beating the vegetation or sweeping back and forth were the best collecting methods in grassy areas and at lakes. Once captured, the damsel flies were placed in cyanide killing jars for approximately an hour. The shorter the time that they were left in the killing jar, the less coloration they lost. Unfortunately, blue coloration faded rapidly. But, metallic green coloring seemed to last. After the damsel flies were killed, they were pinned with their wings spread flat on spreading boars. The pinning of the fragile wings and thin abdomen tended to be easier after the damsel flies had hardened for a brief period after killing. But if too much time elapsed, they became brittle, and their heads and legs would break off easily, making identification difficult. A day was the ideal amout of time to wait before pinning initially. They dried the best and stayed identifiable when the spreading boards were placed in the freezer overnight, then removed and set out to dry for at least two days. Then they could be identified using An Introduction to the Aquatic Insects to find the family and genus, and The Odonata of Canada and Alaska Volume 1 to find the species. A label was made for each, and they were pinned through the thorax and placed in cedar boxes with naphthalene to protect from mice. Photographs were taken of the damsel flies that had retained a great deal of color.

Zygoptera nymphs were collected with delta nets, usually on the edge of the vegetation and water. Nymphs were preserved in ethanol. Identifications could be made using Aquatic Insects of Wisconsin.

preserved, and identified. Special attention was given to the location where each was found, and the type of habitat each was. The habitat classifications studied were bogs, lakes, vernal ponds or grassy areas, and streams. The lake habitat included roads bordering lakes, or out over the open water, usually near lily pads. There did exist some overlap in habitat. For example, Kickapoo Lake was surrounded by a shallow grassy area. This similarity in habitat can be seen by the correlation that many species found in grassy areas and ponds were also found near lakes. Each area supported a different type of Zygoptera population. Calopteryx maculata was found in swarms near the shore of fast moving sections of streams. Although no collection was done at Brown Creek, many of this species were seen there, too.

Upon observation and identification of the Zygoptera nymphs, there were expected correlations by habitat. Several of the species found as adults were seen in similar habitats.

DISCUSSION

Although a wide variety of habitats were studied and collected from, this collection cannot be thought of as complete. To be more thorough, each location ought to be collected from at least two different times during the summer to see shifts in species predominating. This repetition of collection was only done for a few of the location. Forest Service Bog was collected from more than once, and some species were there for much of the summer, but in general, there were two different predominating groups of damsel flies.

Picture taking was not very successful. The photographs probably would not even be helpful for future studies. By the time photographs were taken, all of the Enallagma species had simply darkened, so most were indistinguishable from each other. Also, most were too small to show distinguishing traits. Photographs of Calopteryx maculata and some of the larger Lestes species may be useful for future identification purposes.

ACKNOWLEDGEMENTS

I would like to thank the Hank family for their generous financial support of UNDERC. Dr. George Craig's expert advice and transportation made this project possible. I also must thank Michael Fisk for his invaluable assistance throughout the summer.

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Table 1: SPECIES, ABUNDANCE, AND COMMON HABITATS

**** most abundant, * least abundant

Habitats: stream, grass/pond, lake, bog (star=more common habitat)

FAMILY, GENUS, SPECIES	RELATIVE ABUNDANCE	HABITATS
CALOPTERYX		
Calopteryx maculata	**	stream
CAOENAGRIONIDAE		
Chromagrion conditum	*	bog
Coenagrion interrogatum	*	lake,grass/pond
Coenagrion resolutum	**	bog
Enallagma antennatum	*	bog
Enallagma boreale	***	*lake, bog
Enallagma civile	*	lake, grass/pond
Enallagma clausum	*	lake
Enallagma cyathigerum	**	lake
Enallagma ebrium	**	*bog, lake
Enallagma geminatum	*	lake
Enallagma hageni	****	*lake, bog
Ischnura verticalis	**	lake, grass/pond
Nehalennia gracilis	*	bog
Nehalennia irene	****	*bog, lake
LESTIDAE		
Lestes dryas	****	*grass/pond, bog
Lestes eurinus	****	bog
Lestes forcipatus	*	grass/pond

Lestes inaqualis	**	lake
Lestes rectangularis	*	lake
Lestes vigilax	*	bog

Table 2: ZYGOPTERA COLLECTING SITES AND SPECIES

BOGS

Bolger:

Enallagma antennatum

Enallagma hageni

Lestes vigilax

Cranberry:

Enallagma boreale

Enallagma hageni

Lestes eurinus

Nehalennia irene

Forest Service:

Enallagma boreale

Enallagma civile

Enallagma hageni

Lestes dryas

Lestes eurinus

Nehalennia irene

Raspberry:

Enallagma ebrium

Enallagma hageni

Tuesday:

Chromagrion conditum

Coenagrion resolutum

Enallagma ebrium

Enallagma hageni

Nehalennia irene

Nehalennia gracilis

GRASSY AREAS/PONDS

Firestone:

Ischnura vericalis

Lestes dryas

Lestes forcipatus

Frog pond:

Coenagrion interrogatum

Enallagma hageni

Lestes rectangularis

Nehalennia irene

Vernal pond #15:

Lestes dryas

LAKES

Bergner:

Enallagma boreale

Enallagma civile

Ischnura verticalis

Kickapoo:

Enallagma cyathigerum

Enallagma hageni

Lestes inaqualis

Nehalennia irene

Morris:

Enallagma boreale

Peter/Paul:

Enallagma boreale

Enallagma clausum

Enallagma cyathigerum

Enallagma hageni

Nehalennia irene

Plum/Inkpot:

Coenagrion interrogatum

Enallagma boreale

Enallagma hageni

Tenderfoot Lake:

Enallagma cyathigerum

Enallagma ebrium

Enallagma geminatum

Enallagma hageni

STREAM

Tenderfoot Creek:

Calopteryx maculata