

Survey of the Odonata of Wyoming with Emphasis  
on Their Altitudinal Distribution  
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This study on Odonata in Wyoming was part of a study including areas in South Dakota and Nebraska, also. Collections were made in South Dakota and Nebraska, and in eastern Wyoming in July of 1969. During July 1971, almost daily collecting of adults in the Teton area, but also at widely separated Wyoming localities, resulted in a total of 98 collections. Twenty new state records resulted for Wyoming.

### Distribution

The twenty new state records for Wyoming may be grouped into two categories: 1. The collection fills a gap in the distribution of Anax junius, Somatochlora hudsonica, Libellula forensis, Libellula pulchella, Plathemis lydia, Leucorrhinia intacta, Calopteryx aequabilis, Hetaerina americana, Argia alberta, Argia fumipennis violacea, Nehalennia irene, Enallagma carunculatum, Enallagma hageni, Ischnura damula. 2. The collection is near the limits or extends the range of Ophiogomphus severus montanus, Aeshna californica, Ischnura cervula, eastward, and Lestes forcipatus, Enallagma antennatum, Ischnura verticalis, westward.

### Elevation

Ten sites at 8,100-9,600' were sampled. Eight were bog ponds, one a bog lake, and one a bog creek. No odonates were seen at the three locations above 9,100'. Species present and the number of collections of each were: Aeshna eremita (2), Aeshna interrupta interna (1), Aeshna juncea (2), S. hudsonica (2), Somatochlora semicircularis (3), Leucorrhinia borealis (2), Leucorrhinia hudsonica (1), Leucorrhinia proxima (1), Lestes disjunctus disjunctus (1), Coenagrion resolutum (4), Enallagma boreale (5), Enallagma cyathigerum (1). A. juncea alone was restricted to these higher elevations, and Hess (1940) found it only at approximately 9,700' in the Pikes Peak area. However, this circumboreal species does have a greater altitudinal range in other parts of the world. The other species were not restricted to elevations higher than 8,000', i.e., they are not an obligatory high altitude group. Even boreale, the most frequent of these, also occurred regularly at much lower elevations. Although Hess collected Aeshna palmata, L. pulchella, O. severus, Tarnetrum corruptum, and Sympetrum danae above 8,000', and although these were present in our area of most intensive collecting, we did not find them

above 8,000'. The contrast must be due to a multiplicity of habitat factors rather than to altitude per se.

### Habitat

The array of species collected at hot spring areas, bogs, and lotic water was of particular interest. In the Tetons, four sites fed by warm to hot water springs were sampled: a very small, well vegetated creek, a large, well vegetated pond with a small creek flowing from it, and a large thermal area consisting of a rocky creek, adjacent boggy areas, and a very small pond. Each habitat had unusually large amounts of algae. Nymphs were not collected, but adults of many species were associated with these areas. The species and the number of collections of each were: O. s. montanus (1), Somatochlora minor (1), S. hudsonica (1), L. forensis (2), Libellula quadrimaculata (2), Libellula saturata (4), P. lydia (2), L. hudsonica (2), Erythemis collocata (2), C. aequabilis (1), Lestes dryas (1), A. alberta (2), Argia vivida (4), Amphiagrion sp. (4), Enallagma anna (3), E. cyathigerum (1), I. cervula (1). Of these, montanus, saturata, alberta, vivida, and collocata were collected only at hot spring areas. However, we have found the first four at habitats other than hot springs in other parts of the U.S., and Gloyd (1958) collected collocata in Texas at both hot and cold springs. In our experience, the often recorded association of vivida with spring fed water holds whether such water is hot or cold. Of the species listed above from hot spring areas in Wyoming, the following are reported by others from such habitats: forensis, lydia, cyathigerum (Kennedy, 1917), cervula, vivida (Walker, 1953), collocata (Gloyd, 1958), saturata (Kennedy, 1917; Gloyd, 1958).

The greatest diversity of species was associated with ponds or small streams bordered by wet areas with dark soil containing abundant organic matter. We combined all such collections under the term bogs without considering pH, plant composition, or quaking substrate. These areas, common in the Tetons, yielded 21 species. However, most of these were also recorded from other habitats. We calculated the degree of species-habitat association for species represented in five or more collections. Among these 18 species, the majority of collections for 10 were from bogs. These and the per cent occurrence at bogs were: L. borealis (100), L. proxima (100), Cordulia shurtleffi (100), C. resolutum (94), S. semicircularis (93), L. hudsonica (71), L. quadrimaculata (64), E. boreale (63), L. d. disjunctus (60), L. dryas (57).

In contrast with the diversity of species at bogs and thermal areas, very few were associated with lotic water. Odonates were entirely absent along the cold rushing melt waters of streams such as Wind River, Pilgrim, Pacific, Lava, and Cascade Creeks. They were present only at the much more moderately flowing streams, where only Argia emma and E. anna were characteristic.



A paper on this study is being prepared for publication and includes a list of all species collected in Wyoming along with brief habitat notes.

#### LITERATURE CITED

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