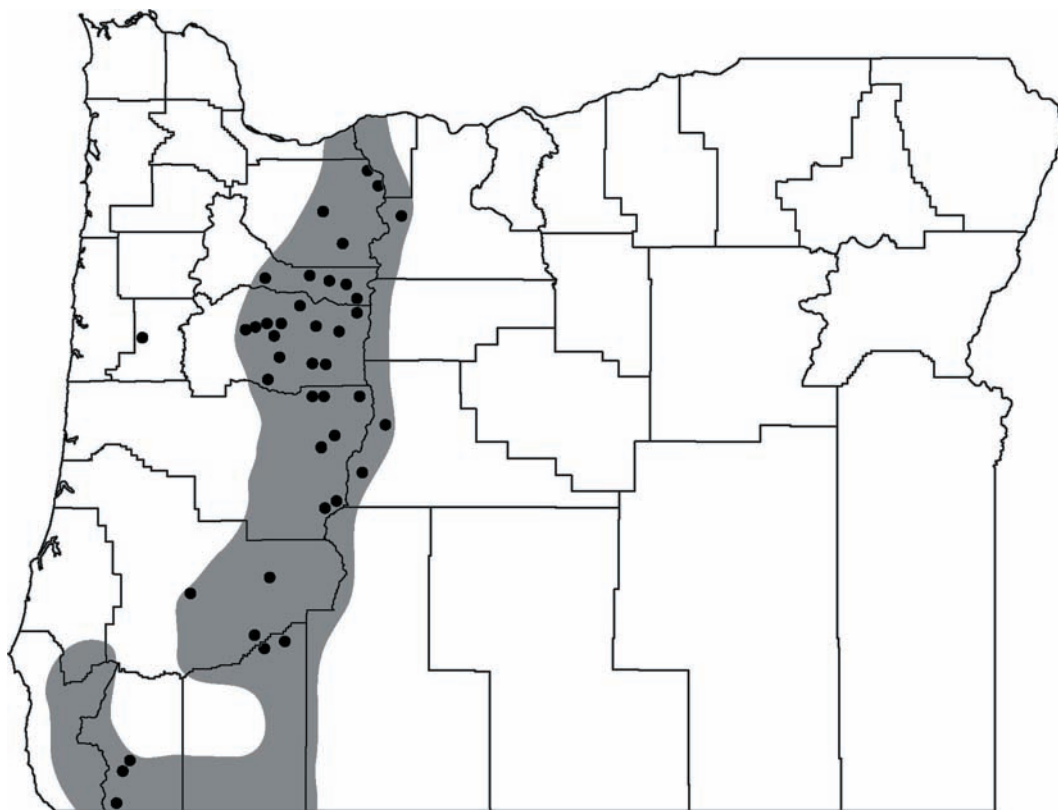


# BULLETIN OF AMERICAN ODONATOLOGY



*Tanypteryx hageni*

# The Dragonfly Society Of The Americas

Business address: c/o T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903

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# The Odonata of Oregon

**Jim Johnson**, 3003 Unander Avenue, Vancouver, WA 98660; <jt\_johnson@comcast.net>  
**Steve Valley**, 1165 S.W. Lawrence Avenue, Albany, OR 97321; <svalley2@comcast.net>

## Abstract

Eighty-seven species of Odonata are listed from Oregon. General distribution, habitat preference, flight period, and county records are presented for each species. A brief history of odonatological research conducted in Oregon is presented. Five species are discussed as likely additions to the odonate fauna.

## History of Odonatological Research in Oregon

The first evidence of interest in the Odonata of Oregon, originates from a few specimens in the Oregon State University (OSU) arthropod collection dated 1897. Biology students likely collected these. Prior to that, Oregon was reported as the type locality for *Progomphus borealis* (Selys 1873), but there have been no records of this species in the state in modern times and there are uncertainties regarding that first record (see discussion in the Expected Species section).

Clarence H. Kennedy became interested in western Odonata in 1898 while collecting in eastern Oregon (Kennedy 1915). He came west to collect for E.B. Williamson. No further record of that trip has been found, but under Williamson's encouragement, Kennedy returned to Oregon in 1909 and collected in Baker County from July through September. His list of 22 species was the first compilation for Oregon.

In 1913, he made a third trip to Oregon where he collected along the Columbia and Deschutes Rivers. He reported *Ophiogomphus occidentis* "emerging in abundance" from the Columbia River at Umatilla, Umatilla County (Kennedy 1917). He traveled up the Deschutes River by train and collected at several stops, but reports that odonates were scarce. He lists nine species from Sherman County. In Bend, he also found few odonates. Eighteen miles south of Bend, at Big Meadows in Deschutes County—a cattle ranch at the time, now a community/resort known as Sunriver—he finally found good collecting. He stayed there 4–7 July and collected 20 species. The wetlands at Sunriver still support diverse populations of odonates, but they are surrounded by bike paths, horse trails, golf courses and other trappings of a resort, that make collecting there a frustrating task. Kennedy's final tally for the four counties he visited is 52 county records and a total of 34 species.

Odonate collecting during the next two decades was sporadic as evidenced by the few specimens in the OSU collection from that period. In 1933 Joseph Schuh, a graduate student at OSU, began to study the odonates of Oregon and in 1936 submitted his M.S. thesis (Schuh 1936). Schuh relied heavily on Kennedy's earlier work (Kennedy 1915, 1917) and that of Essig (1929). With the help of various professors and students, he amassed an impressive collection of specimens and data from most of the regions of Oregon. Few of his specimens currently reside in the OSU collection, however his thesis contains a wealth of information about the biology, habitat and distribution of odonates in Oregon. It remains the most comprehensive study to date.

Schuh listed 71 species from Oregon, however taking into account what were certainly erroneous reports such as *Progomphus obscurus* by Essig (1929), and several taxonomic changes which have occurred since then, that number would be adjusted to 55. He reported 207 new county records from 28 of Oregon's 36 counties. At that point the total number of county records (including Kennedy's) stood at 259.

The next evidence of interest in Oregon Odonates came when Mrs. Whitney described the behavior of *Tanypteryx hageni* at Swim (Still Creek Forest Camp), Clackamas County, near Mt. Hood (Whitney 1947). She also conducted unsuccessful searches for the larvae.

Arthur Svihla, of the University of Washington in Seattle, spent four or five seasons studying *Tanypteryx hageni* at Still Creek and several sites in Washington beginning in 1954. Four years of searching ultimately led to the discovery of the larvae in 1958, which until then was undescribed (Svihla 1958). In his detailed description of the life history of *T. hageni*, Svihla states that several other odonatologists who had visited the site were unsuccessful at finding the larvae (Svihla 1960).

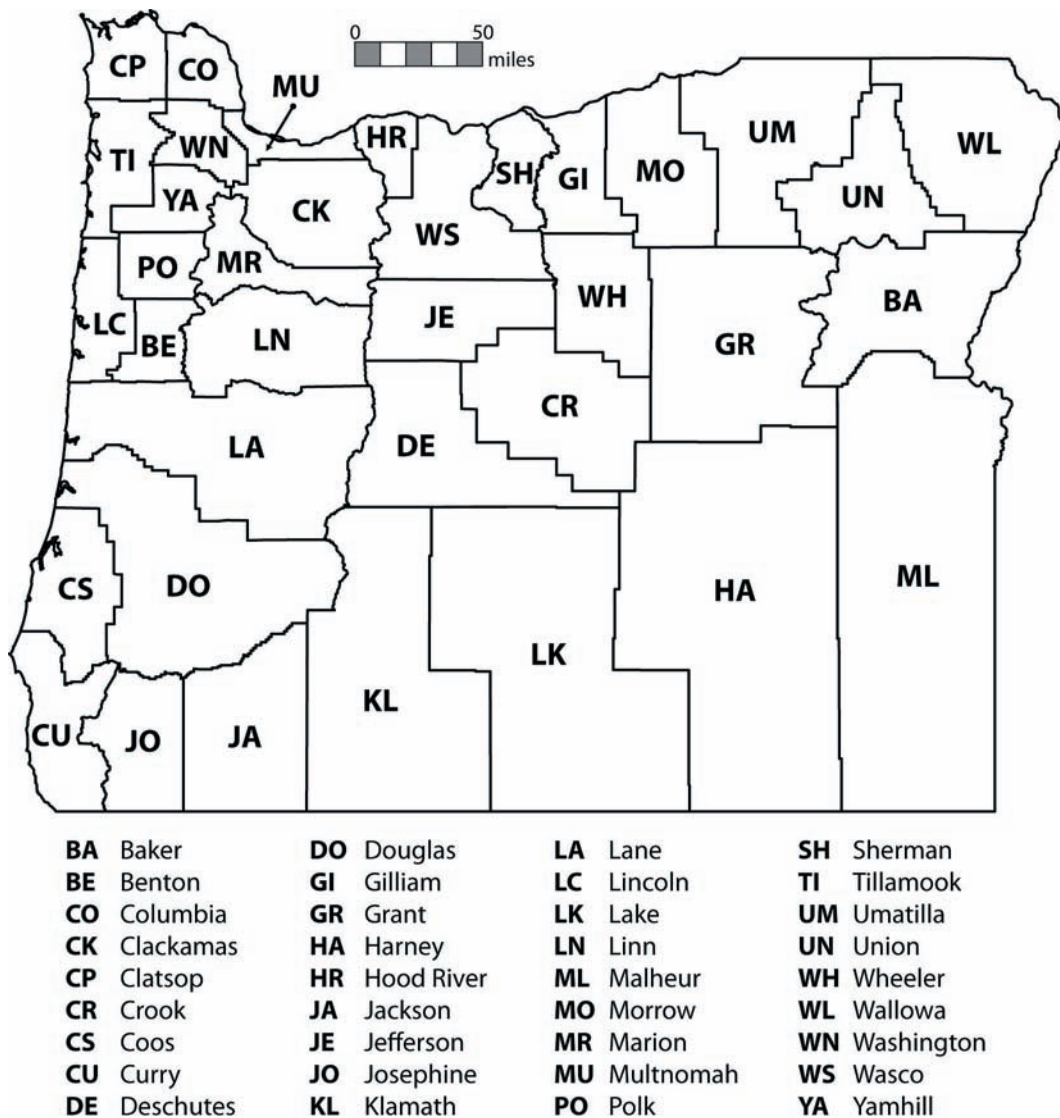


Fig. 1. Oregon counties and abbreviations used in species accounts.

Sometime around 1955, a chance encounter with an *Aeshna* at Todd Lake, Deschutes County, started Steve Valley on a lifelong study of odonates. Valley's early pursuits, unfortunately, were not systematic—no species or distributional lists were compiled, very little data was recorded, and a collection of specimens was not created. Experiments and observations were conducted to satisfy his curiosity.

In a study of the Williamson–Kennedy collection, Edward Kormondy added Harney County records of *Libellula comanche*, *Erythemis collocata* and *Plathemis subornata* collected by C.L. Hubbs in 1934 (Kormondy 1960).

From 1964 through 1970, Perry Turner studied *Tanypteryx hageni* at Still Creek and several other sites that he discovered in Oregon, as well as sites in Wash-

ington and California (Turner 1970).

In 1977, Dennis Paulson and Rosser Garrison added a few species to the list known from Oregon, but they stated, "Oregon remains relatively *terra incognita*, as indicated by the nine species recorded from Washington and California but not in between" (Paulson & Garrison 1977). Their list included 62 species from Oregon, with *Progomphus borealis* being the only one not confirmed to date. They added 16 new county records in eight counties. Dennis Paulson continues to contribute to the knowledge of Oregon's odonates to this day.

Richard Orr reported several records from a trip to Oregon in 1992 (Orr 1993, Anonymous 1992). The most interesting was of *Aeshna walkeri* from Sherman County near the Columbia River.

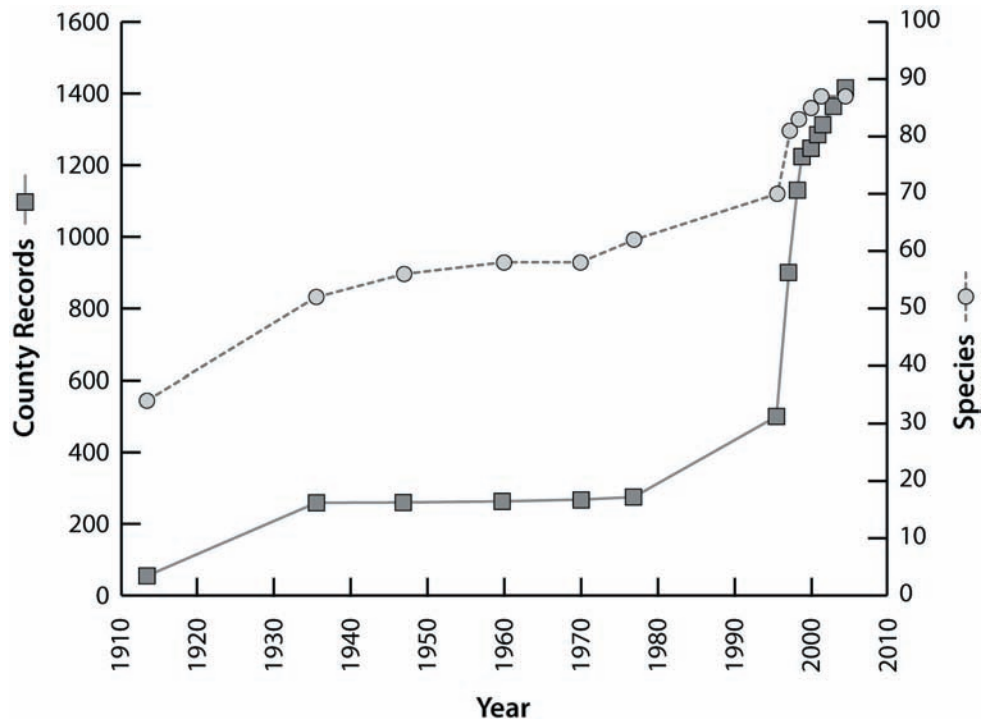


Fig. 2. Recorded species (circles) and county record (squares) trends; 1913–2004.

In 1993, the fourth annual meeting of the Dragonfly Society of America (changed to Dragonfly Society of the Americas at that meeting) was held in Bend, Oregon with 16 people in attendance (Valley 1992, 1993a). The meeting and field trips were reported in the magazine *Nature Conservancy* (Stolzenburg 1994). In preparation for that meeting a preliminary county distributional list was compiled based on collection data and published records (Schuh 1936, Paulson & Garrison 1977, Paulson 1992, Valley 1993b). Collecting records from that meeting added many new records to the list (Valley 1993c).

The *Nature Conservancy* article was brought to the attention of Eric Coombs, an entomologist at the Oregon Department of Agriculture (ODA) and then vice president of the Oregon Entomological Society (OES). Coombs invited Valley to address the membership of OES about Oregon Odonata at the Society's 1995 spring meeting, which subsequently sparked local interest. A collaboration of people interested in Oregon odonates (Coombs, Valley, Paul Hammond at OSU and Terry Morse in Newport) began compiling a computerized county distribution database. Odonates in the insect collections at OSU and ODA were inventoried and cataloged. This collaboration soon became organized as the Oregon Dragonfly & Damselfly Survey (ODDS). By 1996, there were about 70 species recorded for the state. In 1997, Jim Johnson joined ODDS and began adding new county and state records to the database.

During that year, preliminary results of the survey were published by Valley on the World Wide Web. Other interested parties soon began to send data and queries for information after they discovered the web page. Currently 15 to 20 odonatists in the Pacific Northwest are sharing information.

There were 81 species and 1130 county records (113 of them new) listed by the end of 1998. By the end of 1999, there were 85 species and 94 new county records listed. In 2000, 23 county records and one new species were added. Steve Gordon and Cary Kerst began compiling a species list for the Eugene area about this time and have been contributing data to the survey since then. There were 38 new county records and another new species added to the list in 2001, bringing the species count to 87 where it stands today. There are 1415 county records on the list at present (2004) (Fig. 2).

Chris Beatty conducted research correlating specific habitat types with assemblages of odonate species during 2000–2001 for his Master of Science degree at OSU. His study included 27 riverine wetlands in the Willamette Valley. He determined from analysis of the data he collected that the presence of odonate species is an indicator of habitat condition and that species level distribution studies are necessary to understand habitat associations, rather than studies of higher taxonomic levels (i.e. genera and families).

In the fall of 2003, the first Pacific Northwest Odonatists meeting was held in Salem with 14 people in attendance. Topics included: commercial harvests of dragonfly larvae for fishing bait and whether it should or could be regulated; results of various surveys and explorations; and regions that still need to be surveyed and species that are still likely to be discovered. There were also presentations on odonate collecting trips and the state of our knowledge about the distribution of *Tanypteryx hageni*.

Over the course of the past century, scientific interest in the Odonata of Oregon has been sporadic. Each time researchers focused their attention on them, it led to great progress in our knowledge of these fascinating insects and how well adapted they are to the wide range of habitats found in Oregon. We look eagerly forward to continued growth and interest as more people become involved in learning more about the Odonata of Oregon.

#### Ecoregions of Oregon and their Odonates

Oregon has diverse geology, topography, climate, vegetation, and human impact zones that affect the dis-

tribution and abundance of its Odonata (Fig. 4). We briefly discuss these factors as they relate to the state's eight ecoregions that we have identified as they relate to this paper (Fig. 3). For further reading on this topic, we recommend the following references: Dart & Johnson (1981), Loy *et al.* (2001), and Anderson *et al.* (1998).

Several species of odonates are so widespread and ubiquitous throughout Oregon that they seem limited only by the presence of wetlands. These include *Lestes congener*, *L. disjunctus*, *Ischnura cervula*, *I. perparva*, *Aeshna palmata*, *A. umbrosa*, and *Sympetrum pallipes*. Other species are nearly as widespread, but appear to be limited by an upper elevation boundary, at least in northern areas: *Enallagma carunculatum*, *Anax junius*, *Erythemis collocata*, *Libellula forensis*, and *Plathemis lydia*.

**West vs. East:** Although various factors such as proximity to the Pacific Ocean, topography, elevation, and latitude cause variations in local climate and vegetation, much of the biogeography of Oregon can be divided into two regions: western Oregon—west of the Cascade Range crest; and eastern Oregon—east of the crest. Western Oregon can be generalized as relatively

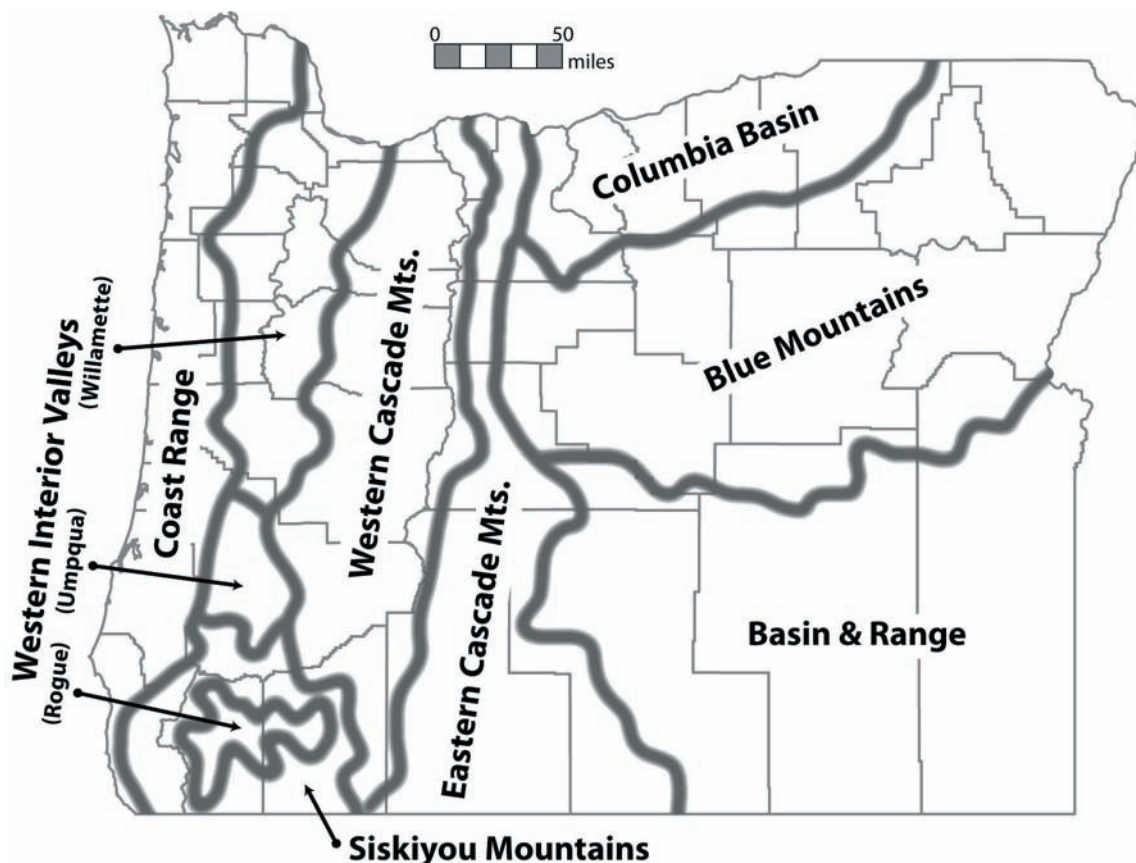


Fig. 3. Oregon ecoregions.

wet and mild, while eastern Oregon is relatively dry with greater extremes of summer/winter temperature.

A number of odonates are distributed along these lines. Widespread odonates such as *Octogomphus specularis*, *Epitheca canis*, *E. spinigera*, *Libellula luctuosa*, and *Ischnura erratica* are mostly found west of the Cascade crest, while *Aeshna walkeri*, *Erpetogomphus compositus*, *Gomphus lynnae*, *Ophiogomphus morrisoni*, *Enallagma anna*, and *Enallagma clausum* are primarily confined to areas east of the crest.

**Coast Range:** The Coast Range is a relatively low, heavily forested north-south range separating the Willamette, Umpqua, and Rogue Valleys from the Pacific Ocean, extending from the Columbia River to its juncture with the Siskiyou Mountains in the southwest corner of the state. The relatively flat coastal lowlands are rather narrow along much of the coast and, in some areas, completely absent where the Coast Range meets the Pacific at steep slopes. Numerous streams gouge steep valleys in the slopes of the range. Most of the Coast Range crest is less than 2000 ft. in elevation, although it is punctuated with several peaks that exceed 3000 ft.—the highest being Mary's Peak at 4097 ft. The western slopes of the Coast Range receive heavy rainfall, averaging 130 to 150 inches annually.

This region is rather unremarkable in terms of its complement of odonates. There are no characteristic species that are found only in this region, or even any which are primarily found here—you will never hear us say, "You *have* to go to the coast to find so-and-so species." The Coast Range, in fact, is a fairly odonate-poor region as it has few wetlands or water bodies, and its streams are often too rocky and fast flowing to harbor anything other than perhaps *Octogomphus specularis*. The coastal lowlands provide better hunting in those areas where numerous wetlands can be accessed, but even here, the diversity of species does not often match most inland regions.

The majority of "mountain species" which are characteristic of the Cascade, Siskiyou, and Blue Mountains are not known to occur in the Coast Range. We assume this is due to its limited elevation and scarcity of lentic habitats. An exception is *Somatochlora semicircularis*, which is common at wet meadows on some of the higher ridges.

If we had to pick one species that seemed to have close affinity with coastal Oregon, it would be *Sympetrum madidum*. Although it is found widely across the state, it seems to occur in particularly high densities at coastal dune wetlands.

**Western Interior Valleys:** This region is comprised of the Willamette, Umpqua, and Rogue River Valleys, which are situated between the Coast Range on the west, and the Cascade Range on the east. The Rogue and Umpqua Valleys are technically provinces of the Siskiyou Mountains ecoregion, but it is odonatologically convenient to group these low elevation areas with the Willamette Valley—technically an ecoregion on its own. Being in the rain shadow of the Coast Range, these areas are relatively dry by western Oregon standards. Average summer temperatures generally increase from north to south—the Umpqua and Rogue Valleys being more Mediterranean in terms of climate and vegetation (and having close affinities with California's Central Valley).

Collectively, these three valleys may be considered a corridor that has allowed a number of primarily southern odonates to extend their ranges northward. Most notable of these are *Libellula saturata* and *L. luctuosa*. The former has been found nearly to the Columbia River, while the latter now occurs well into the Puget Trough of western Washington. *Hetaerina americana* and *Gomphus kurilis* occur north to the central Willamette Valley, while *Argia agrioides*, *Ophiogomphus bison*, and *Enallagma civile* reach their northern limits in the Umpqua Valley. One of the northern outposts of *Argia lugens* is in the Illinois Valley—a sub-drainage of the Rogue Valley.

Species which are widespread east of the Cascades and also abundant in the southern regions of the Western Interior Valleys include *Calopteryx aequabilis*, *Archilestes californica*, *Argia emma*, *A. vivida*, *Macromia magnifica*, and *Sympetrum occidentale*.

**Western Cascade, Eastern Cascade, Siskiyou, and Blue Mountains:** These four regions comprise "the mountains" in Oregon. Although they have geological and ecological characteristics that make each unique, they have strong similarities in their odonate faunas. These mountains reach to relatively high elevations with the Cascades having the highest peak at 11,239 ft. They are generally heavily forested with conifers—the Western Cascades being the most lushly forested (below 7000 ft.) where much Pacific precipitation is intercepted; the other regions have more open forests and are generally drier. The Cascades are rich in lentic habitats, but the Siskiyou and Blues less so.

Widespread species characteristic of "the mountains" include *Coenagrion resolutum*, *Aeshna juncea*, *Somatochlora albicincta*, *S. semicircularis*, *Leucorrhinia glacialis*, *L. hudsonica*, and *S. obtrusum*. Although found

in other regions, *Aeshna interrupta* and *Sympetrum danae* are most abundant in the mountains. The following species have only been found in the Cascades so far: *Nehalennia irene*, *Aeshna canadensis*, *A. sitchensis*, *A. subarctica*, *Somatochlora minor*, and *S. walshii*. This may be because of the Cascade's greater number and variety of glacially related lentic habitats, or it may simply reflect the greater attention that the Cascades have recently received from odonatists. Surveys for these species should be done in the other mountain ranges as well. Though it is widespread in the Cascades, *Tanypteryx hageni* is also closely associated with *Darlingtonia* bogs in the Siskiyou. *Ladona julia* is also only known from the Cascade and Siskiyou Mts.

Two anisopterans are somewhat characteristic of the southern Eastern Cascades region where they reach the northern extent of their ranges: *Aeshna walkeri* (in spite of a few northern records) and *Ophiogomphus morrisoni*. The Klamath Basin, in the Eastern Cascades, is also a stronghold of *Gomphus kurilis*.

**Columbia Basin:** This is an unforested, often highly agricultural, relatively hot and dry region of the Columbia River, east of the Cascades and north of the Blue Mountains. It is also a relatively poor region for odonates, probably because of its limited lentic habitat and few accessible streams. One particular hotspot for lotic species in this region is the John Day River where *Erpetogomphus compositus*, *Gomphus lynnae*, and *Ophiogomphus occidentis* are common.

Two species that are primarily characteristic of western Oregon, but also occur in the Columbia Basin—by way of the Columbia River Gorge, presumably—are *Pachydiplax longipennis* and *Sympetrum illotum*. *Libellula luctuosa* is expected to continue to extend its range into this area as indicated by records from the Washington side of the Columbia River.

**Basin and Range:** This is an arid, largely unforested, high-elevation region (most of it is above 4000 ft.) covering much of the southeastern quadrant of the

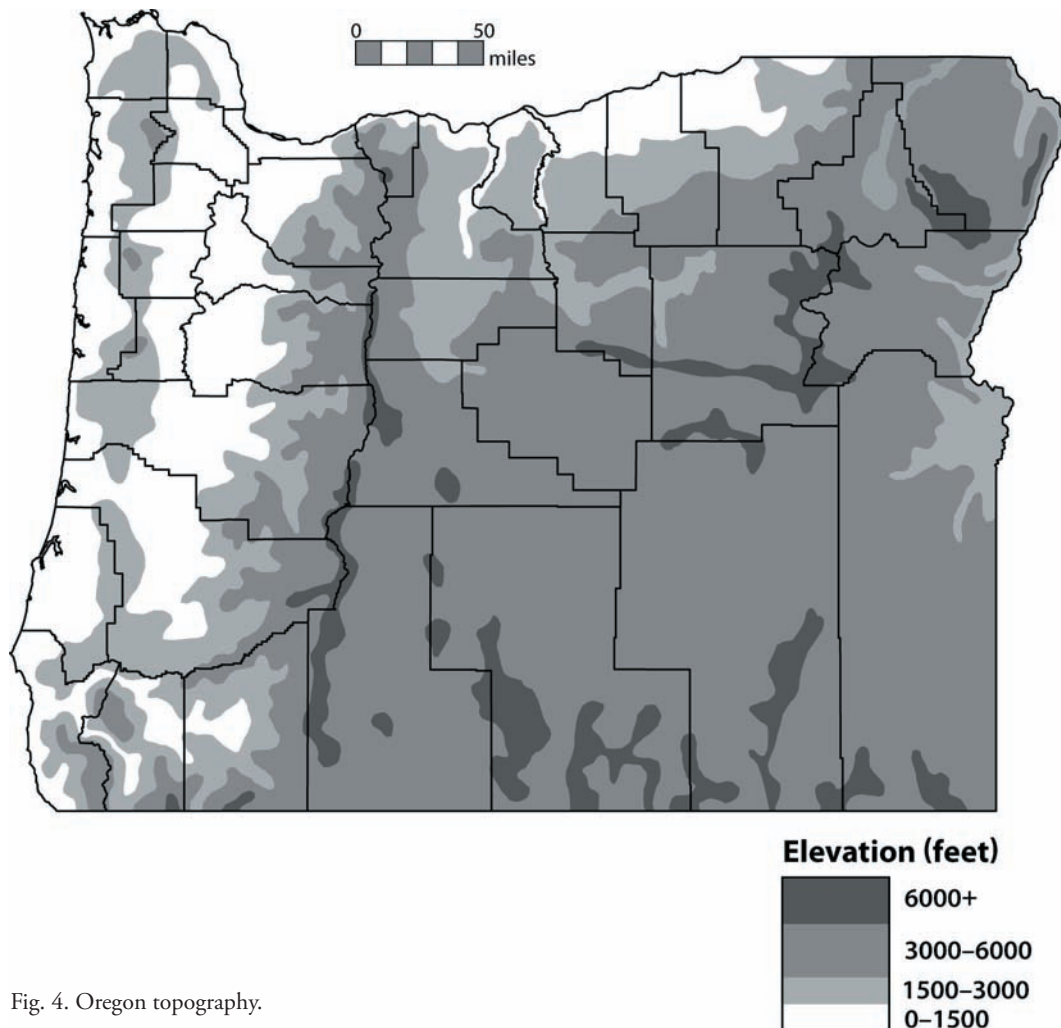


Fig. 4. Oregon topography.

state. The landscape is dominated by shrub steppe with scattered juniper woodlands and grasslands. In spite of being one of the driest areas in the state, it is dotted with a variety of aquatic habitats including alkaline lakes and hot springs which attract a component of southwestern U.S. odonate fauna which can be found nowhere else in Oregon. Technically, this area is composed of two ecoregions—the Northern Basin and Range, which is the majority, and the Central Basin and Range, which is represented in Oregon only by the Alvord Basin—although there is little difference in their odonate faunas.

The species that are strongly associated with alkaline hot springs and lakes are *Enallagma clausum*, *Argia alberta*, *Ischnura denticollis*, *Plathemis subornata*, *Libellula nodisticta*, *L. comanche*, and *L. composita*. The latter two species have the most restricted range out of this group, being limited to the Alvord Basin. *Paltorthemis lineatipes* is also only known from the Alvord Basin, however it is associated with rocky perennial streams.

The only other species that has a range that correlates strongly with the Basin and Range province is the stream species *Enallagma anna*. Other species that are characteristic of the region, but also found in other ecoregions, are *Argia agrioides*, *Enallagma civile*, *Erpetogomphus compositus*, *Gomphus lynnae*, and *Sympetrum internum*.

### Species Accounts and Range Maps

Following the species name and author, the earliest and latest recorded flight dates are given. These dates are not to be construed as the period of time that the species is likely to be found, but rather, in most cases, represent recorded extremes that vary due to weather and observer effort from year-to-year. Next is the range, habitat, and elevation description, not necessarily in that order, with comments on abundance when appropriate. Following this is the list of counties where each species has been recorded to date (see Fig. 1 for abbreviations). If the species has been found in every county, the list of counties is replaced with “All counties.” Lastly, any additional comments deemed appropriate follow the county list.

The range maps are included to represent generalized depictions of each species’ known and presumed range in Oregon (gray shade) based on current records. The reader must also keep in mind that each species can only be expected to be found within their range where their preferred habitat is present. Artistic license was taken in preparation of these maps in order to make them as readable and useful as possible at a reduced

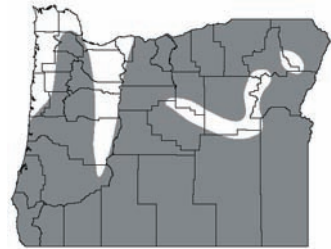
size. Even the ranges of species that are confined to a few streams (e.g. *Gomphus lynnae*) are illustrated with wide gray bands that roughly correspond to those streams. The maps for some widespread species contain “holes” often indicating absence from forested high elevation areas.

Outlying records (populations or individuals) away from the primary range are indicated with black dots (•). Question marks (?) indicate outlying records for which some doubt exists, either because reported specimens are not extant or because of the possibility that specimens were mislabeled. The map for *Tanypteryx hageni* is an exception. In this case, dots were used to indicate every location where the species has been found.

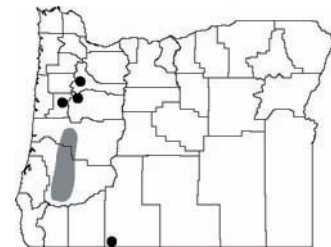
## ZYGOPTERA

### CALOPTERYGIDAE

***Calopteryx aequabilis*** Say. 15 May–14 Sep. Common in southern and central regions up to at least 4600 ft. on small- to medium-sized streams with abundant submerged vegetation and rootlets; more local, and generally not found above 1000 ft. in northern areas; rather scarce in the northern Willamette Valley and Coast Range. BE, CK, CP, CS, CR, DE, DO, GI, GR, HA, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, SH, UM, WL, WS, WN, YA.



***Hetaerina americana*** (Fabricius). 2 May–3 Oct. Common on the South Umpqua R., Douglas Co., and Coast Fork Willamette R., Lane Co., below 1000 ft.; recently found on the Klamath River at 3150 ft. There are historic records from Corvallis, Benton Co., Albany, Linn Co., and Salem, Marion Co. (Schuh 1936, OSU collection) where the species is assumed to be extirpated because of stream channelization and agricultural impacts. Found on medium- to large-sized streams with submerged vegetation and emergent sedges. Thus far unrecorded from the Rogue Valley, although expected to occur there. BE, DO, KL, LA, LN, MR.



## LESTIDAE

***Archilestes californica*** McLachlan. 18 Jun–14 Nov. Locally common on small, sluggish, willow-bordered streams throughout the state in unforested areas up to at least 5400 ft., although in the Willamette Valley and on the central/southern coast, it is primarily limited to low elevation areas (below 500 ft.) Found on some ponds and small lakes, particularly west of the Cascades. Unknown from the north coast and Coast Range. BE, CK, CS, DO, GI, GR, HA, JE, JO, KL, LK, LA, LC, LN, MR, MO, MU, PO, SH, TI, UM, WS, WN, YA.



***Lestes congener*** Hagen. 22 May–17 Nov. Common statewide to at least 5200 ft. at well-vegetated ponds and lakes. BA, BE, CK, CR, DE, DO, GI, HA, HR, JA, JE, JO, KL, LK, LA, LN, ML, MR, MO, MU, PO, UN, WS, WN, WH.

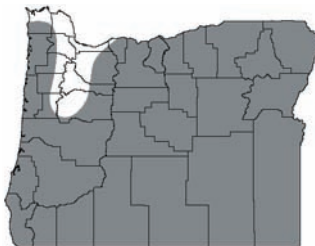


***Lestes disjunctus*** Selys. 30 May–20 Sep. Common statewide at well-vegetated ponds and lakes; recorded up to 7500 ft. Can be locally abundant. BA, CK, CP, CS, CR, CU, DE, DO, GR, HA, HR, JE, JO, KL, LK, LA, LN, MR, PO, UN. This species was recently split into a northern species (*L. disjunctus*) and a southern species (*L. australis*) (Donnelly 2003). Thus far, only the northern species has been recorded in Oregon.

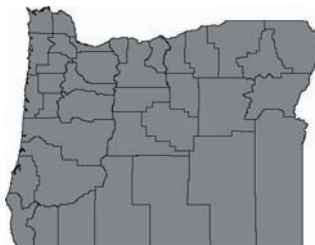


***Lestes dryas*** Kirby. 11 May–3 Nov. Common in the Basin and Range and in the mountains statewide to at least 7500 ft.; largely absent from the northern Willamette Valley and lower Columbia; rather local in distribution in some areas including the coast where it is found in some dune wetlands, and the Coast Range where it is found at some wet meadows on the higher ridges. Found at meadows and ponds (often seasonal) with dense vegetation, particularly sedges. BA, BE, CK, CS, CR, DE, DO, GR, HA, JA, JE, JO, KL, LK,

LA, LC, LN, ML, MU, PO, UN, WL, WS. Specimens matching *L. stultus* Hagen have been collected in Douglas and Josephine Counties (Johnson *et al.* 2002), but due to being morphologically indistinguishable from *L. dryas* and the presence of color intermediates (pers. obs.), we are considering it conspecific with *L. dryas* until evidence suggests otherwise.



***Lestes unguiculatus*** Hagen. 14 Mar–20 Sep. Uncommon to common throughout the state at densely vegetated meadows and ponds (often seasonal) to at least 7500 ft. Generally not encountered in large numbers unlike our other *Lestes*. BA, BE, CK, DE, DO, GI, HA, JA, KL, LK, LN, ML, MR, MU, SH, UN, WS.



## COENAGRIONIDAE

***Amphiagrion abbreviatum*** (Selys). 24 Apr–24 Aug. Common over much of the state at densely vegetated ponds, meadows, and sluggish streams up to at least 7500 ft. More local at lower elevations in the Western Interior Valleys, in the Coast Range, and on the coast. Most often associated with sedges. BA, BE, CK, CP, CR, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MU, PO, SH, UM, UN, WL, WS, WH.



***Argia agrioides*** Calvert. 20 Jun–19 Sep. Locally common on small to large streams in the southern Western Interior Valleys (below 1200 ft.) and on the Owyhee R. and its tributaries, Malheur Co. (3200–4000 ft.); particularly common on the Illinois R., Josephine Co., and



Owyhee R. Also recorded on the Crooked R., Crook Co. (D. Paulson). CR, DO, JO, ML. A Wallowa Co. record of this species reported by Donnelly (2004c) was determined to be erroneous.

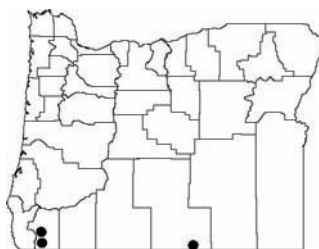
***Argia alberta*** Kennedy. 30 Apr–14 Sep. Local, but common at densely-vegetated wetlands associated with hot springs in the Basin and Range up to about 4600 ft. HA, LK, ML.



***Argia emma*** Kennedy. 22 May–23 Sep. Common to abundant on streams throughout much of the state up to about 5800 ft. Local or absent in the northwestern corner of the state and along the coast. Often found on larger, more sparsely vegetated streams avoided by *A. vivida*. BE, CS, CR, DE, DO, GI, GR, HA, JA, JO, KL, LK, LA, LN, ML, MR, PO, SH, UM, UN, WL, WS, WH.



***Argia lugens*** (Hagen). 4 Aug–17 Oct. Thus far known only from the Illinois River and its tributaries in Josephine Co. (1100–1400 ft.) and Twentymile Creek, south of Adel, Lake Co. (4500 ft.) Found along rocky, sparsely vegetated stretches of these streams. JO, LK.



***Argia nabuana*** Calvert. 8 Aug–15 Sep. Conclusively known only from an unnamed warm spring that drains into Twentymile Creek, south of Adel, Lake Co. A specimen collected near Medford, Jackson Co., determined to be this species and reported by Donnelly (2004c), is now missing. We are forced to consider it inconclusive because of a history of confusion between this species and *A. agrioides*. Reported specimens of this species from the Illinois River, Josephine Co. (Anonymous 1992,



Orr 1993) and included by Donnelly (2004c), were recently determined to be *A. agrioides* (R. Orr, R. Garrison, pers. comm.). LK.

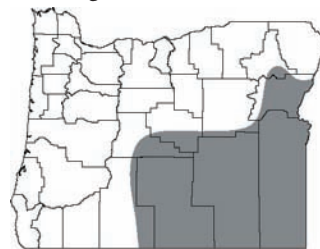
***Argia vivida*** Hagen in Selys. 6 May–7 Oct. Common at small streams, springs, and seeps throughout much of the state up to at least 6300 ft., except in the northwestern corner and along the coast where it may be absent. Tends to prefer smaller and better-vegetated streams than *A. emma*. BA, BE, CK, CS, CR, CU, DE, DO, GI, GR, HA, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, SH, UM, WL, WS, WH.



***Coenagrion resolutum*** (Selys). 18 Jun–28 Aug. Somewhat locally distributed in higher-elevation areas of the Cascade and Blue Mts. in sedge wetlands above 3000 ft. BA, CK, DE, DO, JE, KL, LA, UM.



***Enallagma anna*** Williamson. 7 Jun–5 Oct. Found at small streams in unforested regions of the Basin and Range and low elevation areas of the Blue Mts. north to North Powder R., Union Co.; 3300–5800 ft. Apparently absent from the Columbia Basin. BA, CR, HA, KL, LK, ML, UN.



***Enallagma boreale*** Selys. 1 May–21 Sep. Common in the mountains throughout the state and in unforested areas east of the Cascades up to at least 7500 ft.; not frequently encountered on the western valley floors or coastal areas below 500 ft. Found at a variety of ponds and lakes. Unlike *E. cyathigerum*, generally avoids streams. BA, BE, CK, CO, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR,



MO, MU, PO, SH, TI, UN, WS, WN, YA.

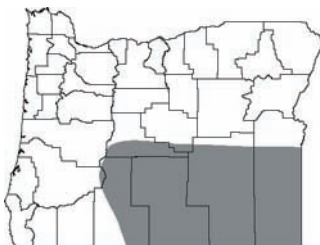
***Enallagma carunculatum*** Morse. 26 Apr–17 Nov. Common throughout the state, though not often found above 2500 ft. in the northern Cascades; occurs to at least 7500 ft. in southern regions. Found at a variety of ponds and lakes as well as sluggish streams. BE, CK, CO, CS, CR, DE, DO, GI, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, SH, TI, UM, UN, WS, WN, WH.



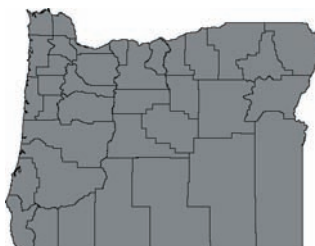
***Enallagma civile*** (Hagen). 26 May–18 Oct. First found in Oregon in 1998 at Kerby, Josephine Co., in the Illinois Valley (Johnson & Paulson 1998); since then it has been found to the north in the Umpqua Valley as well as southeast areas of the Basin and Range up to 4600 ft. Found at ponds, lakes, and sluggish streams. It is especially common at some ponds in the Illinois Valley and at the Three Forks area of the Owyhee R. DO, HA, JA, JO, ML. This species may be extending its range north through Oregon and its tolerance for man-made bodies of water and degraded streams may facilitate this expansion.



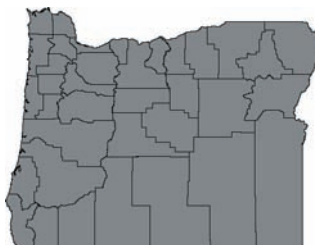
***Enallagma clausum*** Morse. 26 May–25 Aug. Found primarily at alkaline ponds and lakes in the Basin and Range, up to at least 4600 ft., but also can be found at some non-alkaline water bodies in the southern Eastern Cascades (e.g. Davis L., Deschutes Co. and Diamond L., Klamath Co., based on OSU collection). DE, DO, HA, KL, LK, ML. This species occurs locally in eastern Washington (Paulson 1997); therefore, it is likely also occur in the northeastern regions of the state.



***Enallagma cyathigerum*** (Charpentier). 30 May–17 Oct. Common throughout the state up to at least 5700 ft. at ponds, lakes, and sluggish streams. BA, BE, CP, CS, CR, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, SH, UM, UN, WS, WH.



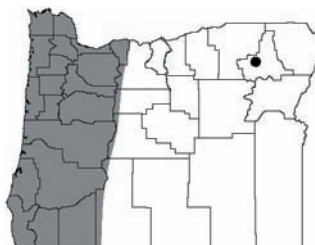
***Ischnura cervula*** Selys. 20 Mar–28 Oct. Found throughout the state up to at least 7300 ft. Abundant at lower elevations; encountered less frequently at higher elevations in forested regions. Found at a variety of ponds, lakes, and slow streams. All counties.



***Ischnura denticollis*** (Burmeister). 30 Apr–13 Oct. Local but common at wetlands associated with hot springs in the Basin and Range, up to at least 4500 ft. One specimen from Canyonville, Douglas Co., (ODA collection) seems unlikely on ecological grounds and may have been mislabeled. BA, DO, HA, LK, ML. Linn and Benton Co. records of this species reported by Donnelly (2004c) were determined to be erroneous (E. Coombs, pers. comm.)



***Ischnura erratica*** Calvert. 23 Apr–20 Aug. Found locally at wooded ponds and lakes (including beaver ponds) and open pools in meadows and bogs from the coast to just east of the Cascade crest (4800 ft.). A single specimen from the Blue Mts., collected 11 Jul 1998 along the Grande Ronde River near Hilgard Junction State Park, Union Co., (J. Johnson, specimen deposited in D. Paulson collection) suggests that populations occur well east of the Cascades. Not often seen in any great numbers with the exception of some beaver ponds. BE, CK, CS, DO, JA, JE, JO, KL, LA, LC, MR, PO, TI, UN, YA.

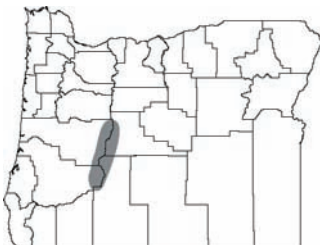


***Ischnura perparva***

McLachlan in Selys. 8 Apr–23 Oct. Common throughout the state at marshy ponds, lakes, and slow streams, up to at least 7300 ft. All counties.



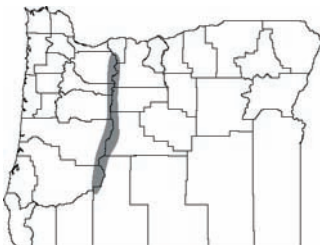
***Nehalennia irene*** (Hagen). 27 Jun–21 Aug. First found in Oregon in 2001 (Johnson *et al.* 2002). Thus far, only known from densely vegetated ponds, sedge wetlands, and bogs near the crest of the central Cascades (Willamette Pass and Diamond Lake areas), above 4500 ft. Likely to occur in other high-elevation areas of the Cascade and Blue Mts. DO, LA, KL.



**ANISOPTERA**

**AESHNIDAE**

***Aeshna canadensis*** Walker. 16 Jul–7 Oct. Locally common at well-vegetated lakes and boggy meadows scattered throughout the Cascade Mts. above 3000 ft. Thus far unrecorded from the Blue Mts., although expected to occur there. CK, DE, JE, KL, LA, LN.

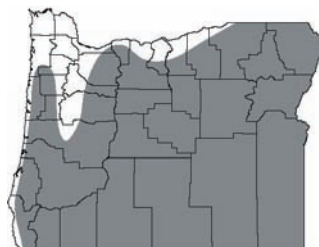


***Aeshna constricta*** Say. 7 Aug. Inclusion of this species is based on a single specimen from Anthony Lake, Baker Co., 7 Aug 1929 (Schuh 1936), however that specimen is not extant and recent surveys at that location have not yielded any specimens. There is some doubt over this record since the species was believed to occur widely in western North America until Walker (1912) demonstrated that western records largely referred to *A. palmata* and *A. umbrosa*. This species is reported as locally common at ponds in eastern Washington (Paulson 1997), there-

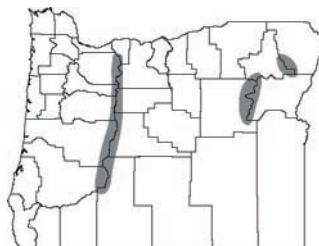


fore its occurrence in eastern Oregon appears likely. However, drought conditions in recent years have likely had an impact on any populations in the region. BA.

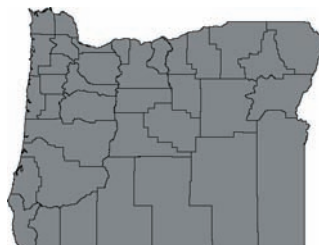
***Aeshna interrupta*** Walker. 30 May–25 Sep. Common on lakes and wetlands throughout the state primarily from about 3000 ft. to at least 7500 ft.; scarce at lower elevations. BA, BE, CK, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, UM, UN, WL, WS, WH, YA. Kennedy (1915) reported the subspecies *A. i. interna* from Baker and Deschutes Cos., however, little attention has been paid to subspecies of *A. interrupta* in Oregon since then. Preliminary analysis of a sample of specimens from across Oregon based on appendage characteristics outlined by T. Donnelly (unpublished) indicates that *A. i. nevadensis* is found west of the Cascade Range crest, while *A. i. interna* is widespread east of the crest. However, a number of specimens from east of the Cascades show intermediate characteristics between the two subspecies, and one from Steens Mt., Harney Co., approaches *A. i. lineata*. Clearly, additional analysis on a series of specimens is necessary to shed light on this issue.



***Aeshna juncea*** (Linnaeus). 16 Jul–7 Oct. Found at scattered locations in the Cascade Mts., but seldom abundant; common at lakes in the Blue Mts.—sometimes at high densities (e.g. Anthony Lake area); prefers densely-vegetated sedge wetlands; 2500 ft. to at least 7000 ft. BA, CK, DE, GR, JE, LN, UN, WL.

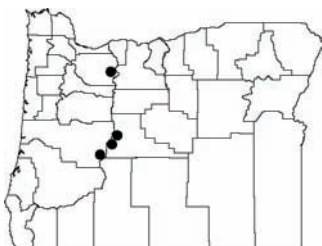


***Aeshna palmata*** Hagen. 21 Jun–13 Nov. One of the most common and widespread *Aeshnas* in the state. Found at almost every type of lentic habitat; infrequently encountered on streams; sea level to at least 7500 ft. All counties.

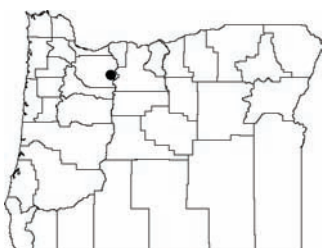


***Aeshna sitchensis*** Hagen. 21 Aug–17 Sep. First found in Oregon at Sparks Lake and Strider Lake, Deschutes

Co., and Little Crater Lake Meadow, Clackamas Co., in 1999 (Johnson *et al.* 2002)—more recently at Gold Lake Bog, Lane Co., in 2004 (Johnson 2004). Found primarily at wet sedge meadows at 3000 to 5500 ft. Thus far unrecorded from the Blue Mts. CK, DE, LA.



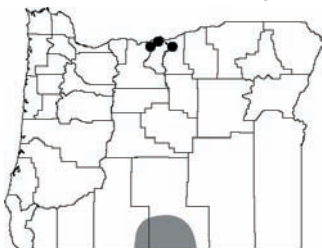
***Aeshna subarctica*** Walker. 28 Aug–7 Oct. Only known from Little Crater Lake Meadow, Clackamas Co., where it was found in 1999 (Johnson *et al.* 2002), and nearby Clackamas Lake where it was found in 2004. Associated with sphagnum wetlands; 3000 to 3500 ft., although likely to occur at higher elevations. Rare. Should be looked for in other areas of the Cascades and in the Blue Mts. CK.



***Aeshna umbrosa*** Walker. 28 May–13 Nov. One of the most common and widespread *Aeshnas* in the state, found on lakes, marshes, and streams; sea level to at least 6000 ft. BA, BE, CK, CO, CS, CR, CU, DE, GR, HA, HR, JE, JO, KL, LK, LA, LC, LN, ML, MR, MU, PO, SH, TI, UM, UN, WL, WS, WN, WH, YA.



***Aeshna walkeri*** Kennedy. 20 Jul–26 Sep. Uncommon on streams in southern Lake Co. and adjacent Klamath Co.; 4500 to almost 6000 ft.; individuals have been collected on the John Day R., Gilliam Co., on the Columbia R. shore at Rufus, Sherman Co., and at the mouth of the Deschutes R., Sherman Co. (Orr 1993, Johnson *et al.* 2002). So far unrecorded from central regions of the state, but expected to be found there. Found on small- to medium-sized rocky streams with pools. GI, KL, LK, SH.



***Anax junius*** (Drury). 11 May–11 Nov. Common throughout most of the state in all lentic habitat types

and some slow streams; sea level to at least 6000 ft., although infrequently encountered above 5000 ft., especially in northern regions. BE, CK, CP, CO, CS, CR, DE, DO, GI, GR, HA, HR, JA, JE, JO, LK, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, UM, UN, WL, WS, WN, WH, YA.



***Rhionaeschna californica*** (Calvert). 15 Apr–9 Sep. Among the earliest odonates on the wing in spring. Found at many types of habitat, but most abundant on lakes and ponds; sea level to at least 7300 ft. BA, BE, CK, CP, CO, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, UM, UN, WS, WN, WH, YA. Formerly a member of the genus *Aeshna*, but recently placed in *Rhionaeschna* by von Ellenrieder (2003).



***Rhionaeschna multicolor*** (Hagen). 25 May–18 Oct. Common at pond and lake habitats throughout the state; recorded from sea level to at least 6000 ft.—less abundant above 4000 ft., especially in the northern mountains. BE, BE, CK, CP, CO, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, TI, UM, UN, WS, WN, WH, YA. Formerly a member of the genus *Aeshna*, but recently placed in *Rhionaeschna* by von Ellenrieder (2003).



#### PETALURIDAE

***Tanypteryx hageni*** (Selys). 24 May–7 Sep. Found at hillside bogs with spring-fed sheet flow throughout Siskiyou and Cascade Mts. (primarily west of the crest); 1000–6300 ft. (Fig. 5). In the Cascades, the larval habitat is usually mossy, while in the Siskiyou habitats are primarily Darlingtonia bogs—always in open, sunny patches of forest. This species has been found at 42 sites in the state, only one of which was in the Coast

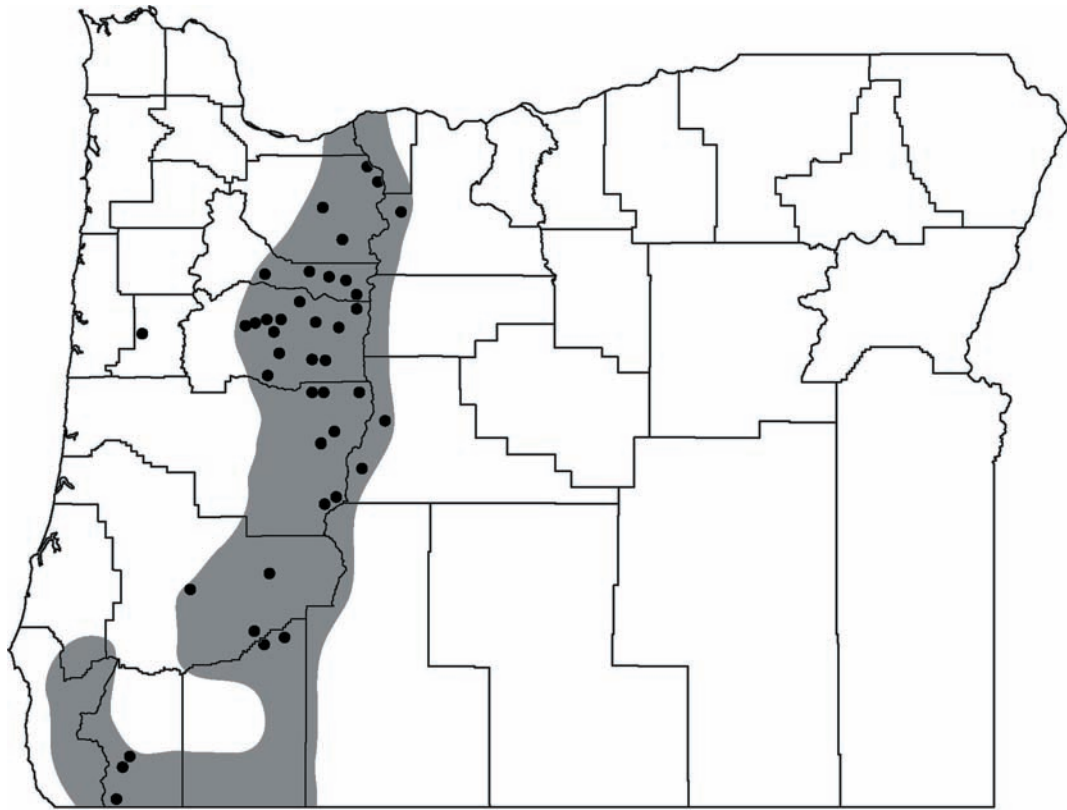
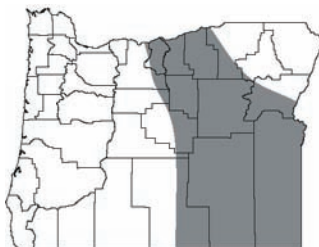


Fig. 5. Known localities of *Tanypteryx hageni* sites (black dots), and presumed range (gray shade).

Range (Mary's Peak, Benton Co.) where the species has not been seen since the 1960s and may be extirpated (P. Hammond, pers. comm.), however additional surveys are required. Likely more widespread than current records indicate, especially in the southern Cascades. BE, CK, DE, DO, JA, JO, LA, LN, MR, MU, WS.

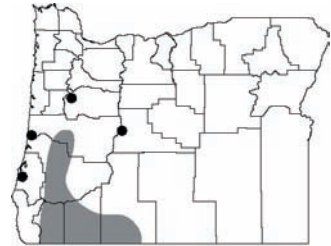
#### GOMPHIDAE

***Erpetogomphus compositus*** Hagen in Selys. 19 Jun–13 Sep. Uncommon to locally common on streams east of the Cascades up to at least 4500 ft.; particularly common on stretches of the John Day, Malheur, and Owyhee Rivers. GI, GR, HA, ML, SH, WH.



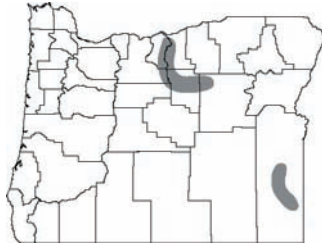
***Gomphus kurilis*** Hagen in Selys. 19 May–21 Jul. Found at a surprising variety of habitats, but very localized in some cases: on the central/southern coast at sand-bottomed lakes; in the Willamette Valley at muddy ponds and slow streams polluted with agricultural run-

off; high in the Cascades at a clear, rock-bottomed alpine lake (Little Cultus Lk., Deschutes Co.); in the Rogue and Umpqua Valleys on large, swift rivers; and in the Klamath Basin on a large, slow, eutrophic river. Most abundant on streams in the Western Interior Valleys north to Lane Co. and in the southern Klamath Basin. Recorded elevations range from sea level to 4800 ft. BE, CS, DE, DO, JA, JO, KL, LA, LN. Kennedy (1917) reported larvae matching *G. donneri* (= *kurilis*) from "Crooked River (Baker County)", however there is no such stream in that county with that name. We assume that either these larvae where found at the Crooked R. in Crook, Deschutes, or Jefferson Cos., or that there once was a "Crooked River" in Baker Co. that has since been renamed.

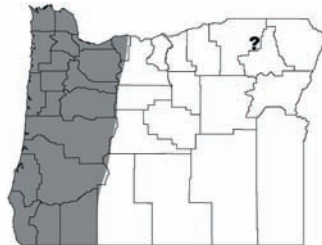


***Gomphus lynnae*** (Paulson). 17 Jun–17 Aug. First discovered in Oregon in 1993 on the John Day River (Valley 1993c). More recently, it has been found to be quite common on the Owyhee River; recorded up to 3400 ft. The only other known population in its entire range is

a small one on the Yakima R. in southeastern Washington where it was originally discovered it in 1971 (Paulson 1983, 1997). Continuing surveys confirm that the Oregon populations occur over long stretches of both rivers. Explorations of other tributaries of the Columbia and Snake Rivers have so far failed to discover additional populations. GI, GR, ML, WH. It is interesting to note that the OSU collection contains a single specimen of this species from Rome, Malheur Co., which was collected in 1952—well before the species was “discovered” (Johnson 2002).



***Octogomphus specularis*** (Hagen in Selys). 29 May–26 Aug. Usually found at rushing mountain streams from the Cascades westward (local on east slope) up to 4800 ft., but also on some slower-flowing streams, even in urban areas, at lower elevations; also found in *Darlingtonia* bogs in the Siskiyou Mts., although it is unclear if the species breeds at these bogs or if they are wanderers from nearby streams. Particularly easy to find at the outflow of Gold L., Lane Co. Larvae have been collected in small roadside trickles alongside *Cordulegaster dorsalis*. There is one specimen record from the Blue Mts. (Meacham, Umatilla Co.); however, the possibility that it was mislabeled must be considered (ODA collection). BE, CS, DO, JA, JE, JO, LA, LN, MR, UM, WS.

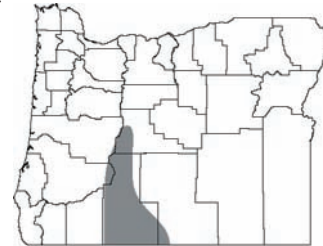


***Ophiogomphus bison*** Selys. 12 Jun–28 Jun. Found on streams in the Rogue and Umpqua Valleys, especially the Illinois and South Umpqua Rivers, but also on some smaller foothill streams; 500–3400 ft. CS, DO, JA, JO.

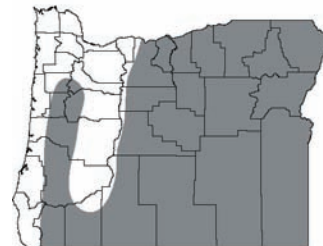


***Ophiogomphus morrisoni*** Selys. 12 Jun–23 Sep. Found on small- to medium-sized streams, primarily on the east slope of the southern Cascade Mts. and in the Klamath Basin; 4200–4800 ft. Habitats vary from clear, cold mountain streams near the Cascades crest

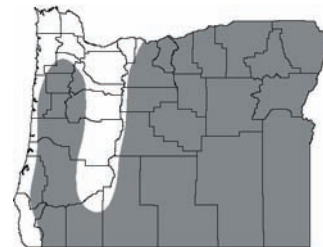
to the sluggish, warm, agriculturally-polluted Sprague River. Discovered in 2004, on Salt Creek, Lane Co., where it flows out of Gold Lake (Johnson 2004)—the first report of it occurring on a stream flowing into the Willamette drainage. DE, DO, KL, LK, LA.



***Ophiogomphus occidentis*** Hagen. 11 Jun–13 Aug. A widespread species found on many different stream habitats up to at least 4300 ft. Occasionally found in the Willamette Valley, but predominately occurs east of the Cascades and on some streams in southwest Oregon. Often found on larger streams, which are rarely inhabited by the equally widespread *O. severus*. BA, BE, CR, DO, GI, GR, JA, KL, LA, LN, ML, MR, MO, SH, UM, UN, WL, WH.



***Ophiogomphus severus*** Hagen. 15 May–15 Aug. A widespread species, common on smaller, rocky streams east of the Cascades up to at least 6000 ft. Found infrequently west of the Cascades—primarily in the Rogue, Umpqua, and southern Willamette Valleys. Often found on small streams that are avoided by the equally widespread *O. occidentis*. BA, BE, CS, CR, DO, GR, HA, JA, JE, KL, LK, LC, LN, ML, MO, UM, UN, WH, YA.



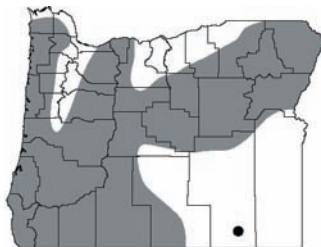
***Stylurus olivaceus*** (Selys). 3 Aug–24 Sep. First discovered in Oregon in 1997 near the mouth of the Sandy R.—a tributary of the Columbia near Portland (Johnson 1998). It has since been found to be common on the lower stretches of other tributaries of the lower Columbia and in the Columbia itself from near sea level to as far upstream as Hood River Co. The species has been observed emerging from the Columbia near its estuary where it mixes with ocean water (Andrew Emlen, pers.



comm.) Exuviae have been found amongst high-water debris along the Columbia R. in Hood River Co. (J. Johnson, pers. obs.) Since this species ranges through much of the interior of western North America, it is expected to occur in drainage systems east of the Cascades, but years of searching have only recently turned up a single male on Crooked Creek, Malheur Co., in 2002 (J. Johnson). CK, CO, HR, ML, MU.

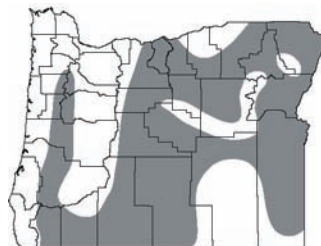
#### CORDULEGASTRIDAE

*Cordulegaster dorsalis* Hagen in Selys. 1 Jun–20 Sep. Common on small streams throughout the state in forested regions from sea level to at least 7000 ft. Found on very small trickles to more substantial streams (~50 ft. wide). Absent or at best very scarce in the lower elevations of the Western Interior Valleys (below 500 ft), the Columbia Basin, and unforested regions of the Basin and Range. An exception is a population on Cottonwood Creek, Harney Co.—a stream flowing out of the Pueblo Mts. into the Alvord Basin. BA, BE, CK, CS, CR, DO, GR, HA, JA, JE, JO, KL, LK, LA, LN, MR, WS, WH.



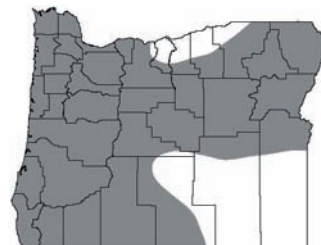
#### MACROMIIDAE

*Macromia magnifica* McLachlan in Selys. 12 Jun–3 Aug. Locally common on low-gradient streams throughout much of the state, up to at least 4000 ft. Most abundant on larger streams such as the Owyhee, John Day, Sprague, and South Umpqua, but found on some smaller streams as well. Scarce in the northern Willamette Valley—scattered records in this area may be of wandering individuals; unreported from the coast. BE, CK, CR, DO, GI, GR, KL, LA, LN, ML, MU, UM, WH.

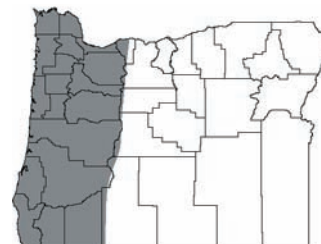


#### CORDULIIDAE

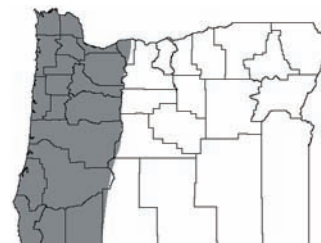
*Cordulia shurtleffii* Scudder. 12 May–28 Aug. Common at ponds and lakes throughout the state, largely in forested regions up to at least 7400 ft. BA, CK, CP, CS, CR, DE, DO, GR, HR, JA, JE, KL, LK, LA, LC, LN, MR, UM, UN, WL, WH.



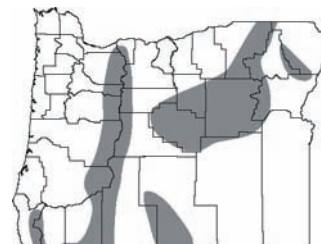
*Epitheca canis* (McLachlan). 5 May–28 Jul. Primarily found at ponds (including beaver ponds) and slow streams west of the Cascade crest, and some locations on the east slope of the southern Cascades; scarce in the northwestern corner of the state; sea level to at least 4500 ft. Often found sharing the same sites as *E. spinigera*, although more often associated with streams than that species. BE, CS, DE, DO, JA, JO, KL, LA, LN, MR, PO, YA.



*Epitheca spinigera* (Selys). 5 May–3 Jul. Ponds and lakes west of the Cascade crest; sea level to at least 4500 ft. Often found sharing the same sites as *E. canis*, although typically avoids streams. BE, CP, CS, DE, JA, JO, LA, LN, MR, MU, PO, WN.

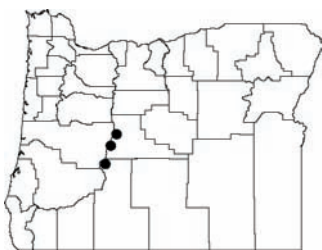


*Somatochlora albicincta* (Burmeister). 21 Jun–14 Sep. Common at mountain lakes with open surface water in the Cascade, Blue, and Siskiyou Mts.; 3500 to 7200 ft. Often found at sparsely-vegetated lakes which are avoided by other members of the genus. BA, CK, CR, CU, DE, GR, HA, HR, JE, KL, LA, LN, MR, UM, UN, WL, WH.

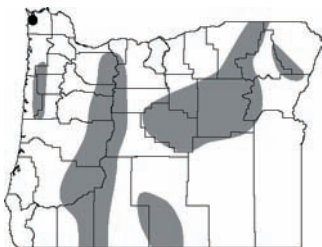


*Somatochlora minor* Calvert in Harvey. 27 Jun–26 Jul. Known from only a few higher elevation streams in the central Cascades: Crescent Cr., Klamath Co.

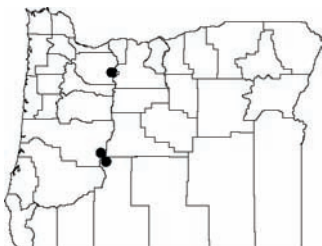
(4600 ft.) (Johnson *et al.* 2002); Todd L. (6000 ft.) and Irish and Talor Lakes (5500 ft.), Deschutes Co. Common on Crescent Creek—scarce at the Deschutes Co. sites. DE, KL.



***Somatochlora semicircularis*** (Selys). 19 Jun–22 Sep. Common at bogs, fens, and wet meadows throughout the mountains (including the Coast Range) primarily above 2800 ft. A low-elevation population was found near sea level at Gearhart Bog, Clatsop Co. (Johnson *et al.* 2002). BA, CK, CP, CR, DE, DO, GR, HA, HR, JE, KL, LK, LA, LN, MR, PO, UN, WL, WS, WH.



***Somatochlora walshii*** (Scudder). 6 Jul–22 Sep. First found in Oregon in 1998 at Little Crater Lake Meadow, Clackamas Co. (Johnson 1998). Since then found at three additional sites: sedge wetlands along Crescent Cr., Klamath Co. (Johnson *et al.* 2002); Gold Lake Bog, Lane Co. (Johnson 2004); and Clackamas L., Clackamas Co. Prefers densely-vegetated sedge wetlands; 3200–4900 ft. CK, KL, LA.



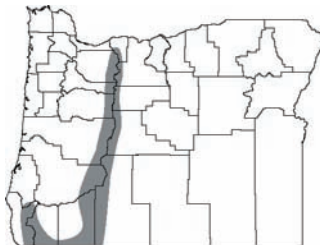
#### LIBELLULIDAE

***Erythemis collocata*** (Hagen). 30 Apr–1 Oct. Common at a wide range of ponds and lakes—primarily in unforested regions; generally below 1000 ft. in northern and western regions; up to at least 4900 ft. in the Basin and Range; scarce in forested regions of the mountains. Often found at eutrophic wetlands, as well as wetlands associated with alkaline hot springs in the Basin and Range. BA, BE, CK, CP, CO, CS, CR, DO, GI, GR, HA,

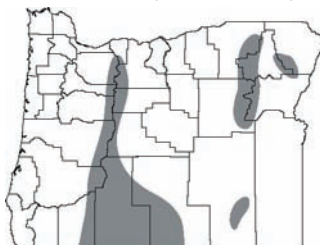


HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, UM, UN, WS, WN, WH.

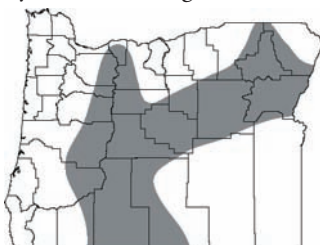
***Ladona julia*** (Uhler). 25 Jun–10 Aug. Locally common at lakes scattered through the Cascade and Siskiyou Mts.; 2500–5000 ft. These are usually muddy, with abundant dead trees floating along the shore. Thus far unrecorded from the Blue Mts. DE, JE, JO, KL, LA, LN.



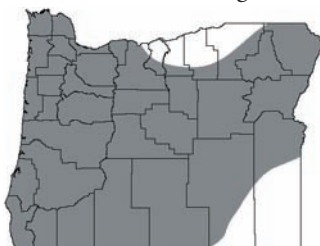
***Leucorrhinia glacialis*** Hagen. 4 Jun–20 Aug. Found throughout the mountains (excluding Coast Range), although often locally, in forested regions; 4000–7200 ft. Ponds and small lakes with floating and emergent vegetation. DE, DO, GR, HA, JE, LK, LA, LN.



***Leucorrhinia hudsonica*** (Selys). 12 May–14 Sep. Common throughout the mountains except for the Coast Range, particularly in forested regions at well-vegetated ponds, bogs, and wet meadows; 3000–6600 ft. BA, CK, CR, DE, DO, GR, HA, HR, JE, KL, LK, LA, LN, MR, PO, UM, UN, WL, WS, WN, WH, YA.

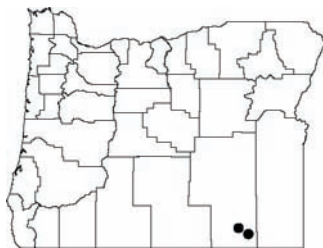


***Leucorrhinia intacta*** (Hagen). 1 May–15 Aug. Common statewide at well-vegetated ponds and lakes. Found from the coast up to at least 7200 ft., although more abundant at lower to mid-elevations. BA, BE, CK, CP, CO, CS, CR, CU, DE, DO, GR, HA, HR, JA, JE, JO, KL, LK, LA, LN, MR, PO, UN, WN, WH.

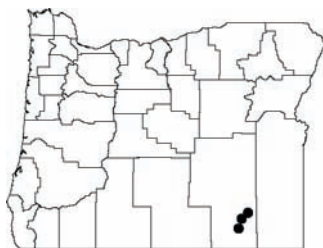


***Libellula comanche*** Calvert. 26 May–14 Sep. So far only known from Borax Lake and Twin Springs, Harney Co. (Kormondy 1960, Johnson *et al.* 2002) where

it is fairly common; 4000–4600 ft. HA.



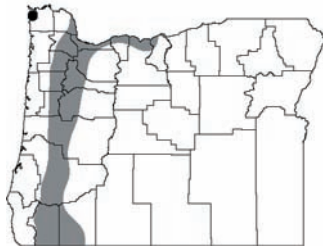
***Libellula composita*** (Hagen). 17 Jun–24 Aug. Found only at alkaline lakes and hot springs in the Alvord Basin, Harney Co. (Mickey Hot Spring, Alvord Hot Spring, Borax L.); 4000 ft. HA.



***Libellula forensis*** Hagen. 1 May–23 Oct. Common at a wide range of ponds, lakes, marshes, and sluggish streams across the state; primarily below 1000 ft. in northern and western regions—up to 6000 ft. or more in south-central and southeastern areas. All Counties.

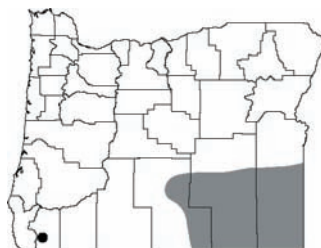


***Libellula luctuosa*** Burmeister. 6 Jun–24 Sep. Found in the Western Interior Valleys below 1000 ft. at ponds and lakes. First discovered in Oregon in 1991 in the central Willamette Valley (S. Valley, pers. obs.). Since then it has spread northward into the Puget Trough and Columbia Basin of Washington (Paulson 1997, Donnelly 2004b). This species may extend its range down the lower Columbia R. to the coast as suggested by one record from Sunset Beach, Clatsop Co. (M. Patterson), as well as up the Columbia R. into the Columbia Basin. CK, CO, CP, CS, DO, JA, JO, LA, LN, MR, MU, PO, WN, YA.



***Libellula nodisticta*** Hagen. 24 May–24 Aug. Found at densely vegetated springs and seeps (warm and cold) in the Basin and Range; 4000–5000 ft. Recently found in the Siskiyou Mts. in Josephine Co. at hillside *Darlingtonia* bogs. HA, JO, LK, ML. A speci-

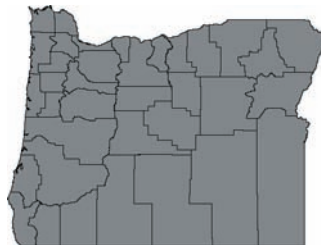
men apparently from Portland, Multnomah Co., in the OSU collection is considered highly unlikely on ecological grounds and is assumed to be mislabeled.



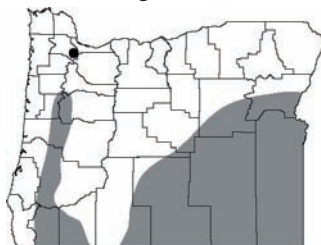
***Libellula pulchella*** Drury. 30 May–20 Sep. Common at ponds, lakes, and sluggish streams throughout the state; primarily below 1500 ft. in northern and western areas—up to 7000 ft. in the southern Cascades and Basin and Range. Encountered least often in the northern Willamette Valley and on the coast. BA, BE, CK, CO, CS, CR, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, UM, UN, WL, WS, WN, WH, YA.



***Libellula quadrimaculata*** Linnaeus. 12 May–18 Sep. Found throughout the state at lakes, marshes and bogs, although scarce at lower elevations of the western interior valleys, in the Columbia Basin, and unforested areas of the Basin and Range; sea level to 7000 ft. BA, BE, CK, CP, CO, CR, CU, DE, DO, GR, HA, HR, JE, JO, KL, LK, LA, LC, LN, ML, MR, MU, PO, UN, WL, WS, WH, YA.



***Libellula saturata*** Uhler. 6 Jun–25 Sep. West of the Cascades, common at ponds, lakes, and sluggish streams up to about 1500 ft. in the Rogue and Umpqua Valleys; more local in the Willamette Valley—recorded north to Tualatin NWR, Washington Co. (M. Smyth); unknown from the coast. East of the Cascades, locally common at some sluggish streams and non-alkaline warm springs in the Basin and Range and Blue Mts., north to Blue Mountain Hot Spring, Grant Co.; 3300 to 4600 ft; particularly common in the Three Forks area of Owyhee River. BA, DO, GR, HA, JA, JO, LK, LA,

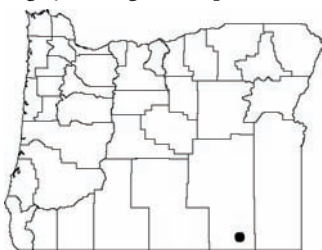


LN, ML, WN.

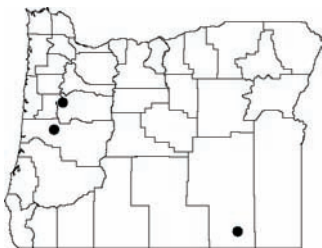
***Pachydiplax longipennis*** (Burmeister). 14 May–21 Sep. Common at ponds and small lakes primarily below 1000 ft. west of the Cascades and in the Columbia Basin. There are scattered records from throughout the state east of the Cascades away from the Columbia Basin, but the species appears to be rare or, at best, local in these areas. BA, BE, CK, CP, CO, CS, CR, DE, DO, GI, GR, HA, HR, JA, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, TI, UM, WS, WN, WH, YA.



***Paltothemis lineatipes*** Karsch. 16 Jun–26 Aug. Known only from the lower, largely unvegetated portion of Cottonwood Creek in Harney Co., 4300 ft., where it was discovered in 2001 (Johnson *et al.* 2002). HA.



***Pantala flavescens*** (Fabricius). 7 Jun–16 Aug. Four individuals have been collected from three locations across the state: Freeway Lakes, Linn Co. 27 Jul 1990 (S. Valley); Fields, Harney Co., on 7 Jun 1992 (D. Paulson); and near Eugene, Lane Co., on 16 Aug 2004 (S. Valley)—presumably wanderers from the southwest; the species is not known to breed anywhere in the state. HA, LN, LA



***Pantala hymenaea*** (Say). 25 May–26 Aug. Presumed wanderers from the southwestern U.S. are seen annually at scattered locations across the state (mostly in unforested areas), primarily during late May through mid-June and again in August; breeding status unknown, although they are observed ovipositing on occasion (J. Johnson, pers. obs.). Observations of the



species flying along coastal dunes are not infrequent. CK, CP, CO, CS, CU, HA, JO, LA, LC, LN, MR, MU, WN.

***Plathemis lydia*** (Drury). 1 May–30 Oct. Common at ponds and lakes throughout the state; generally found below 1000 ft. in northern regions—up to at least 5000 ft. in the southern Cascades and Basin and Range, although rather scarce at such high elevations. BA, BE, CK, CP, CO, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, UM, UN, WL, WS, WN, WH, YA.



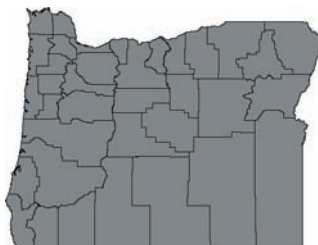
***Plathemis subornata*** (Hagen). 19 May–24 Aug. Found only at wetlands associated with alkaline hot springs in the Basin and Range; 4000–5000 ft. HA, LK, ML.



***Sympetrum corruptum*** (Hagen). 15 Feb–23 Oct. Breeds at eutrophic, often sparsely vegetated ponds and lakes throughout the state, but may be seen anywhere during spring and post-dispersal movements. Recorded to at least 7300 ft. Mature early spring adults are presumed to be migrants from south of the state. Large numbers are occasionally observed flying south at coastal locations during August and September, although the nature of these migrations/movements remain unresolved. All counties.

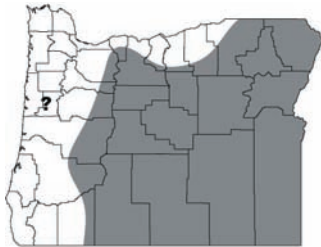


***Sympetrum costiferum*** (Hagen). 3 Jul–3 Oct. Found widely across the state at vegetated ponds and lakes, although apparently absent from the higher elevations of the northern Cascades and the Coast Range; found up to at least

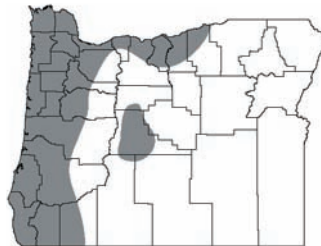


6100 ft. in the southern Cascades and Basin and Range. BA, CS, DE, DO, GR, HA, JE, KL, LK, LA, ML, MR, TI, UN, WS, WN.

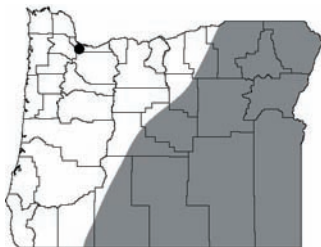
*Sympetrum danae* (Sulzer). 25 Jun–3 Oct. Common at ponds and lakes with dense emergent vegetation and wet meadows in the mountains throughout the state and lower elevations east of the Cascades; 3000–7500 ft. There is one record from Benton Co.—presumably in the Coast Range—however the source of that record is no longer known, and the status in that region remains uncertain. BA, BE, CK, CR, DE, DO, HA, JA, JE, JO, KL, LK, LA, LN, ML, MU, UM, UN.



*Sympetrum illotum* (Hagen). 26 Mar–20 Oct. Common throughout lowlands west of the Cascades below 1500 ft.; more local east of the Cascades, but infrequently encountered away from the Columbia Basin. BE, CK, CP, CS, CR, CU, DE, DO, GI, GR, HR, JA, JO, KL, LK, LA, LC, LN, MR, MU, PO, SH, TI, WL, WS, WN, WH, YA.



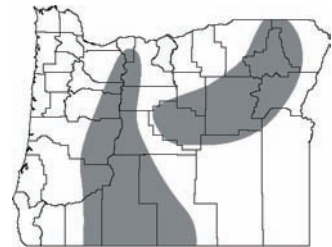
*Sympetrum internum* Montgomery. 8 Jul–17 Sep. Locally distributed east of the Cascades at densely vegetated ponds and meadows (often seasonally wet); 2500–5800 ft. Not typically found in forested areas unlike the very similar *S. obtrusum*. Possibly extirpated from many areas due to drought conditions in recent years. A few historic specimens from the northern Willamette Valley may be of wandering individuals (OSU collection). BA, CR, DE, HA, JA, LK, ML, MU, UN.



*Sympetrum madidum* (Hagen). 14 May–17 Sep. Found throughout the state at shallow, often seasonally wet ponds up to at least 4500 ft. Locally abundant at some coastal dune wetlands. BA, BE, CK, CP, CS, CU, DE, DO, HA, JA, JO, KL, LK, LA, LC, LN, MR, MU, PO, UN.



*Sympetrum obtrusum* (Hagen). 14 Jul–7 Oct. Locally common at well-vegetated ponds, lakes and wet meadows in the mountains throughout the state; 3200–6200 ft. Unlike the similar *S. internum*, often found in forested areas. BA, BE, CK, DE, DO, GR, HA, KL, LK, LA, LN, UN.



*Sympetrum occidentale* Bartenev. 27 Jun–3 Oct. Common at densely vegetated ponds and wet meadows east of the Cascades, in the Western Interior Valleys north to the central Willamette Valley, and in the mountains to at least 7500 ft. Scattered records from the northern Willamette Valley and coast may be of wandering individuals (OSU collection; Mike Patterson, pers. obs.) BA, CK, CO, CP, CR, DE, HA, JA, JE, KL, LK, LA, ML, MR, MO, SH, UM, UN.

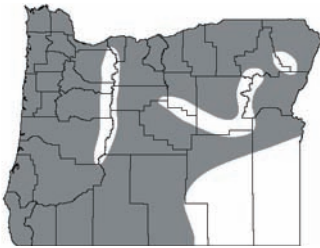


*Sympetrum pallipes* (Hagen). 6 Jun–22 Nov. Common across the state from the coast to at least 7500 ft. in the mountains. Can be locally very abundant. BA, BE, CK, CP, CO, CS, CR, CU, DE, DO, GI, GR, HA, HR, JA, JE, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, SH, TI, UM, UN, WS, WN, YA.

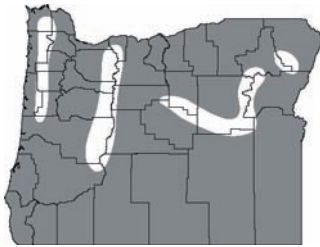


*Sympetrum vicinum* (Hagen). 4 Aug–14 Nov. Common at lower elevations below 3000 ft. throughout the

state; found locally at higher elevations, particularly in the southern Cascades, to at least 5000 ft.; well-vegetated ponds and lakes. BA, BE, CK, CP, CS, CR, HA, HR, JA, JO, KL, LA, LC, MR, PO, TI, UN, WS, WN.



***Tramea lacerata*** Hagen. 16 Jun–24 Sep. Locally common at ponds and small lakes throughout most of the state, primarily in unforested regions; sea level to 5000 ft. BE, CK, CP, CS, CR, CU, DE, DO, GI, HA, JA, JO, KL, LK, LA, LC, LN, ML, MR, MO, MU, PO, UM, WS, WN, YA.



### Expected Species

We expect that additional species of Odonata may be found in Oregon. The following five species appear particularly likely based on records in neighboring states and similar habitat in Oregon. Perhaps as a result of continued global warming, more southern species may extend their ranges northward into Oregon.

***Archilestes grandis*** (Rambur). This species has been collected at Arcata and near Willow Creek, Humboldt Co., and Ruth, Trinity Co., California (T. Manolis, pers. comm.). It should be sought at streams in southwestern Oregon, especially Curry and Josephine Cos. This species coexists with *A. californica* at a number of sites in California, although *A. grandis* appears to be more restricted to flowing water (Manolis 2003).

***Lestes forcipatus*** Rambur. This species has been sporadically collected at several locations in southwestern Washington (Wahkiakum, Clark, and Skamania Cos.)—at low-elevation sites near the Columbia R. (less than one mile from the river in places) and at Forlorn Lakes, Skamania Co., in the southern Washington Cascades (3700 ft.), 14 miles from the Columbia R. (J. Johnson, pers. obs.). This species should be sought in Oregon at sites that harbor sizable populations of *Lestes disjunctus* in the northern Willamette Valley and northern Cascade Mts.

***Enallagma praevarum*** (Hagen). This species has been recorded approximately 30 miles from the Oregon border near Cedarville, Modoc Co., California (T. Manolis, pers. comm.). It should be sought in south-central Oregon, particularly southern Lake and Klamath Cos., at streams with side pools and high-water ponds.

***Aeshna tuberculifera*** Walker. This species occurs within 14 miles of the Columbia R. in the southern Washington Cascades at South Prairie, Skamania Co., Washington (J. Davis, J. Johnson, pers. obs.). This species is expected to occur in the northern Oregon Cascades at lakes bordered with dense emergent vegetation and bogs.

***Progomphus borealis*** McLachlan in Selys. The type locality for this species was simply reported as “Oregon” (Selys 1873) and based on this, it has been reported as occurring in Oregon ever since (Essig 1929, Needham & Westfall 1955, Paulson & Dunkle 1999, Needham *et al.* 2000). However, the exact location and year that Lord Walsingham, the collector, obtained the type specimen was not provided. It is quite possible that Oregon was not even a state, but rather a territory at the time including the present-day states of Washington and Idaho, as well as portions of Montana and Wyoming. Without further information regarding the type locality of *Progomphus borealis*, we are forced to assume that it was not within the current boundaries of the state. In spite of this, we do consider it likely to occur in the south-central and southeastern regions of Oregon based on its occurrence in Owyhee Co., Idaho, and at locations in northern California (Donnelly 2004a).

***Leucorrhinia proxima*** Calvert. This species is known from both north and south of Oregon. It is common in the mountains across northern Washington and has been recorded at South Prairie, Skamania Co. only 14 miles from the Columbia R. (D. Paulson, pers. comm.), and it is known from one location in the northern Sierra Nevada of California—Willow L., Plumas Co. (Manolis 2003). This species is expected among populations of *Leucorrhinia glacialis* at relatively high elevation wetlands in the Cascade and Blue Mts. It may have particular habitat requirements at this latitude that remain unresolved.

### Acknowledgements

We especially thank Eric Coombs who has been an equal partner in the cataloging and curation of specimens in the OSU collection, provided many specimens and records, and with whom we have shared many

productive and enjoyable collecting trips. Eric also provided valuable comments on this paper. We also extend special thanks to Dennis Paulson who could be said to be the first modern-day odonatist to systematically record and collect odonates in Oregon, and who has provided a great deal of information over the years which has proven valuable for this paper. We also thank Paul Hammond, Cary Kerst, Steve Gordon, Steve Berliner, Joe Engler, David Nunnallee, Mike Patterson, Dana Ross, Ron Lyons, John Davis, Jeff Dillon, Maurita Smyth, Bob Hamilton, Range Bayer, Terry Morse, Norm Anderson, Molly Hukari, Tracy Anderson, and Chris Beatty who provided us with data and many of whom shared time with us in the field.

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