

FIELD IDENTIFICATION GUIDE

Zigzag Darner (*Aeshna sitchensis*) & Subarctic Darner (*Aeshna subarctica*)

Prepared by the Xerces Society for the USFS/BLM Interagency Special Status Sensitive Species Program, August 2019.
Mount Hood, Willamette, and Deschutes National Forests



FAMILY AESHNIDAE: DARNERS

Dragonflies (suborder: Anisoptera) and damselflies (suborder: Zygoptera) are within the order Odonata, collectively known as odonates. Darners are members of the Aeshnidae family, which include some of Oregon's largest dragonflies. Oregon is home to 13 of North America's 42 species of darners. Darners are recognized by their large bodies, large eyes (which touch each other at the top of the head), long abdomens with various patterns of pale spots, and a thorax which typically has two lateral stripes. Darners can be found around many types of aquatic habitats, including lakes, streams, bogs, fens, and ponds, where males are often patrolling in search of females. Once paired, a male and female can be seen attached in a wheel position as they fly around before landing on vegetation. Females have sharp ovipositors that they use to insert their eggs within vegetation or soil. When ovipositing, female darners can often be seen around aquatic habitats hanging on emergent vegetation or partially submerged logs; these are common oviposition sites.

Dragonflies are generally not difficult to identify when perched at close range or in the hand, but darners are often on the move (as they hunt and capture prey on the wing) and are more challenging to identify in flight. In Oregon, the family consists of three genera: (1) *Anax* (1 species) green darners, which includes the common green darter with an unmarked green thorax; (2) *Aeshna* (10 species), mosaic darners, typically with blue or green stripes on the thorax and blue or green spots on a dark abdomen; (3) *Rhionaeschna* (2 species), Neotropical darners, similar to mosaic darners, they have a mosaic of blue and green patterns; but distinctive from mosaic darners, they have a tubercle under abdominal segment 1.

Target Species

Subarctic darter (*Aeshna subarctica*) and Zigzag darter (*Aeshna sitchensis*).

Potential Look-alike Species

Potential look-alike species in the range of the two target species include: blue-eyed darter (*Rhionaeschna multicolor*), California darter (*Rhionaeschna californica*), black-tipped darter (*Aeshna tuberculifera*), Canada darter (*Aeshna canadensis*), paddle-tailed darter (*Aeshna palmata*), sedge darter (*Aeshna juncea*), shadow darter (*Aeshna umbrosa*), and variable darter (*Aeshna interrupta*).

Anatomy

A basic knowledge of dragonfly anatomy is necessary to aid in identification. Dragonflies have a head, thorax, and abdomen. An insect thorax has three parts, each with a pair of legs. The wings are attached to the top of the thorax and the legs to the bottom. The first section of the thorax is the prothorax, a small neck-like section that bears the first pair of legs. The prothorax is separated from

the other two thoracic sections, which are fused into a synthorax. The synthorax bears the middle and hind legs and the two pairs of wings. For many species, including darners, the shape and color of thoracic markings can be useful for identification. The genera *Aeshna* and *Rhionaeschna* have a T-spot on the top of the head, which can be diagnostic (see inset).

The abdomen has 10 segments, numbered from front to rear. Segment 1 (S1) is very small. The sexes can be distinguished by the shape of the abdomen. In males the reproductive apparatus is visible as a distinct bulge, with structures called hamules projecting below S2 and plainly visible from the side. They are more visible in some species than others, but a close look should distinguish them. Females lack the projecting structures and instead have a generally wider abdomen, enlarged to carry eggs.

The appendages at the tip of the abdomen include two pointed cerci in both sexes, and a broad epiproct in males, below and shorter than the cerci. In males, these structures are used to clasp the female behind the head during mating and when in tandem—the length and shape of these structures can be used to distinguish between some species, including darners. There is often sexual dimorphism within species; however some females appear similar to males and some species may occur in more than one color form (i.e., they are polymorphic: the female andromorph [appears similar to male of the species] and the female heteromorph [appears different than male of the species]) within one sex and age class.

References

Foltz Jordan, S. 2011. Species Fact Sheet for *Aeshna sitchensis* (Zigzag Darner). Unpublished Report, Interagency Special Status Species Program (USDI Bureau of Land Management and USDA Forest Service), Portland, OR. 20 pp.

Foltz Jordan, S. 2011. Species Fact Sheet for *Aeshna subarctica* (Subarctic Darner). Unpublished Report, Interagency Special Status Species Program (USDI Bureau of Land Management and USDA Forest Service), Portland, OR. 24 pp.

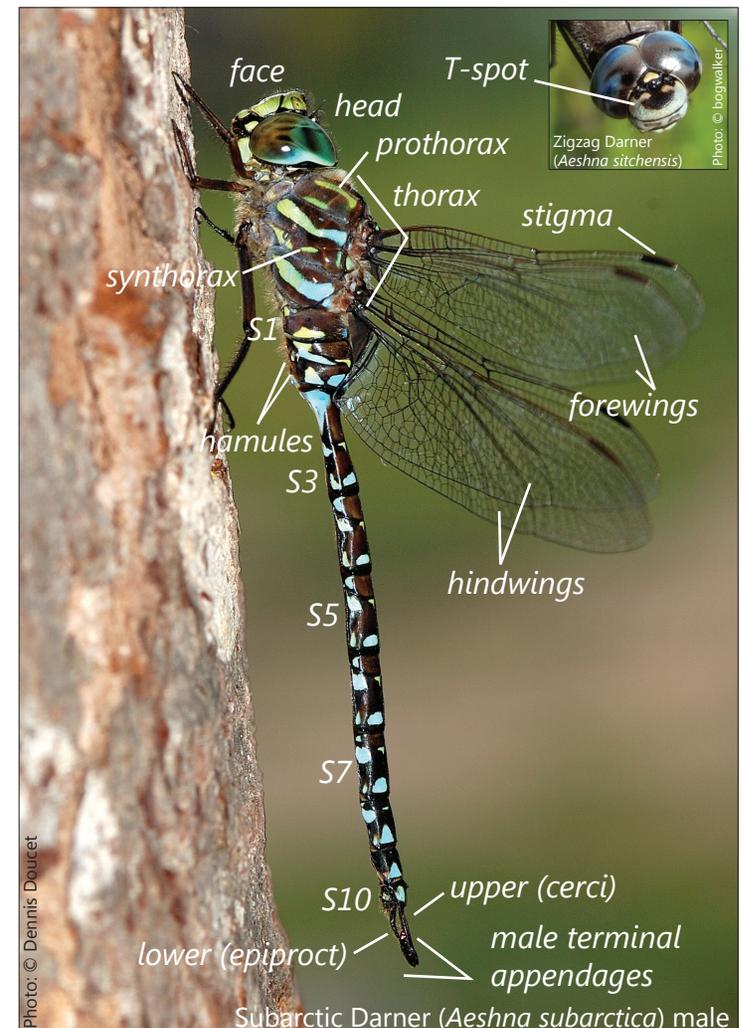
Johnson, J. and S. Valley. 2005. The Odonata of Oregon. Bulletin of American Odonatology 8(4): 101-122.

Johnson, J. and S. Valley. 2012. Update of the Odonata of Oregon. Bulletin of American Odonatology 11(2): 39-47.

Kerst, C. and S. S. Gordon. 2011. *Dragonflies and Damselflies of Oregon*. Oregon State University Press. 304 pp.

Paulson, D. 2009. *Dragonflies and Damselflies of the West*. Princeton University Press. 536 pp.

Anatomy of a male dragonfly from side view.



Subarctic Darner (*Aeshna subarctica*)

General Description

Medium-sized darner with characteristic thoracic stripes that are notched; tapering to a constriction in the middle. There is a short, thin streak between thoracic stripes. Abdomen with large paired blue spots on the top of the segments (including S10), and pale, inconspicuous spots below middle abdominal segments. The face is yellow-green with a black line. The eyes are blue-green. Females and males are similar in patterning.

Males: eyes green; less bluish than other mosaic darners. Lateral thoracic stripes transition from yellow-green below to blue near the top of the thorax

Females: can be polymorphic; some appear similar to the male with blue patterning, others appear different with yellow or green. Face is yellow-green with a black line, and the eyes are duller compared to males.



Photo: © Dennis Doucet

Subarctic Darner (*Aeshna subarctica*) male

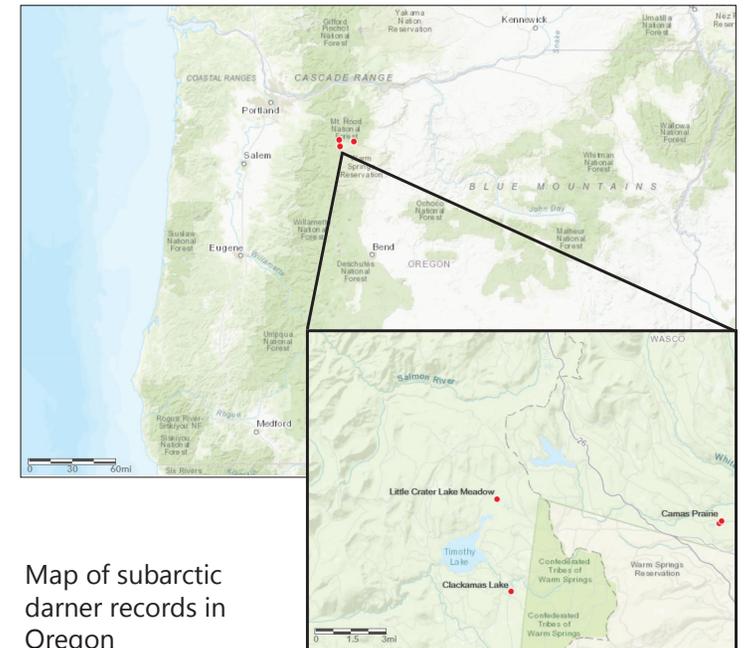
Distribution

Circumpolar distribution; in NA Northern US (including Alaska) and Canada. In Oregon, this species is known from Wasco and Clackamas counties. It has been documented from Camas Prairie (MTH), Little Crater Lake (MTH), and Clackamas Lake (MTH) at 3,000 to 3,500 feet of elevation. Considered rare in Oregon.

Oregon Flight Period

Late June to early October.

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



Map of subarctic darner records in Oregon

Habitat

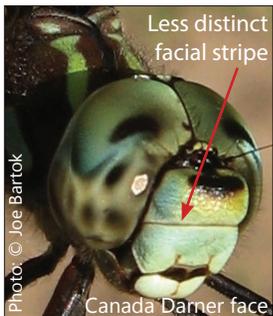
Typically found in fens and bogs with abundant sphagnum and other mosses; Camas Prairie in the MHF appears to be excellent habitat, with well-vegetated pools.

Life History

Males fly low over pools, or floating sphagnum (or other mosses) beds; they fly back and forth, hovering in one spot and moving on to another. Females have been observed ovipositing near the edge of open water, in mosses and sedges at water surface. Also seen flying in darner assemblages in forest clearings.

Look-alikes

Range overlaps with very similar sedge darner; it can be distinguished by narrower thoracic stripes with slight notch in front and extension to the rear. Females have longer cerci (6-7 mm) than those of sedge darner (4-5 mm), and a shorter ovipositor (only reaches end of S9, but extends further in sedge). Both sexes of the subarctic can be distinguished from Canada darner by the presence of the distinct black face stripe (see face close-up below) and the less distinct notch on first thoracic stripe (see photo below of Canada darner for comparison). Additionally, variable darner may have similar looking lateral stripes, therefore it is important to carefully assess other key features.



Subarctic Darner (*Aeshna subarctica*)



Zigzag Darner (*Aeshna sitchensis*)

General Description

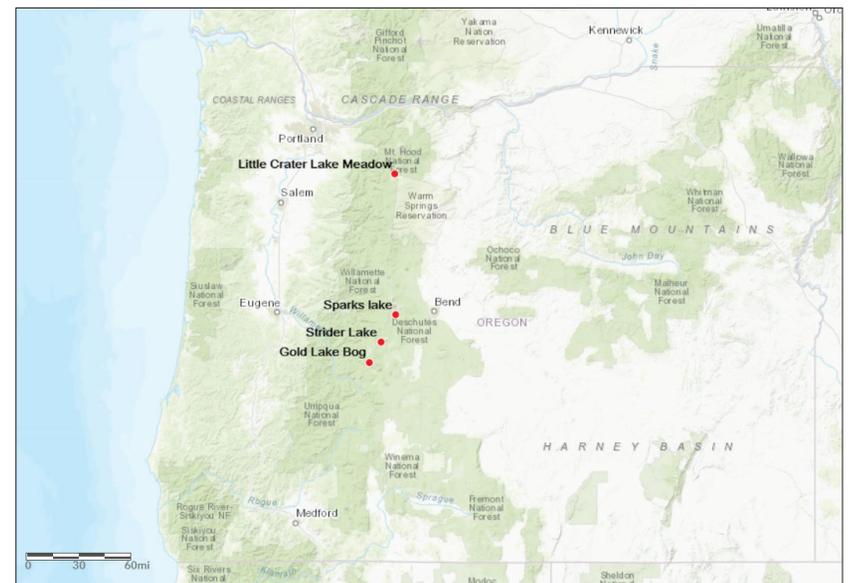
This species is small (up to 65 mm long) compared to most other darners, except the California darner. Common name refers to the zig-zag pattern of the narrow, lateral thoracic stripes that are strongly notched; this feature is unique among Oregon darners. The lateral thoracic stripes are often broken and sometimes have a streak or spot in between. The lateral thoracic stripe is blue to yellow-green from top to bottom. Frontal stripes (on top of the thorax) are reduced or lacking. Top of each abdominal segment has paired blue spots, including S10; the abdominal spots of males are a vibrant blue. Face is yellow-green with a horizontal black line; the facial line widens at each end, which is a unique character. **Base of T-spot is unique for this species, with the ends convex up toward the cross bar.** Female is polymorphic, the heteromorph has brown eyes with blue highlights, yellow thoracic stripes and yellow to white spots on the abdomen. The andromorph appears similar to male with blue eyes and blue markings.

Distribution

Northern US and across Canada into Alaska. Rare in Oregon, found only at a few sites in Clackamas, Lane, and Deschutes Counties from 3,000 to 5,500 feet of elevation. Found at Gold Lake Bog (WIL), Sparks Lake (DES), Strider Lake (DES), and Little Crater Lake (MTH).



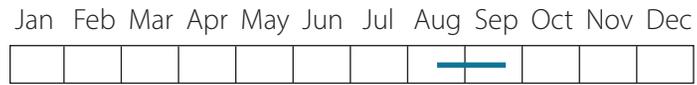
Zigzag Darner (*Aeshna sitchensis*) male



Map of zigzag darner records in Oregon

Oregon Flight Period

Late August to late September.



Habitat

Bogs, fens, and wet meadows with seasonal and permanent pools. Generally shallow, cool-water pool habitat with little open water and low sedges and moss; often near shrublands or woodlands.

Life History

Females oviposit in beds of moss, algal mats, and mud near the edge of open water or in vegetation. Nymphs may survive dry periods in seasonal wetlands. Males patrol habitat with low (knee height), alternating flights; may perch more than other mosaic darners. Males sometimes fly above tall sedges similar to the sedge darner, but usually at small, shallow pools. May feed at or away from aquatic habitat. **Unlike most darners, which perch vertically, this species often perches horizontally on the ground, logs, rocks, or other substrates.**

Look-alikes

Range overlaps with similar California darner, which is similar in size. The flight season for California is earlier, and it has different habitat preferences and behaviors. The zigzag darner tends to fly over mountain meadows and perches on the ground or tree trunks; California flies over water and perches on vegetation. As an early emerging species, the California darner is less common as other OR darners are just emerging.



LOOK-ALIKE DARNERS

There are several potential look-alike species in the range of the two target species; these include: blue-eyed darner (*Rhionaeschna multicolor*), California darner (*Rhionaeschna californica*), Black-tipped darner (*Aeshna tuberculifera*), Canada darner (*Aeshna canadensis*), paddle-tailed darner (*Aeshna palmata*), sedge darner (*Aeshna juncea*), shadow darner (*Aeshna umbrosa*), and variable darner (*Aeshna interrupta*).

Blue-eyed Darner (*Rhionaeschna multicolor*)

Description: Vibrant blue dragonfly with bright blue eyes; face lacks black facial line, which is instead brown. Only darner with forked upper appendages. Side thoracic stripes are blue, straight, and fairly broad. Underside of abdomen without spots. Females polymorphic (either blue as males, or yellowish green). Heteromorph with brownish green eyes. Tubercle under S1.

Distribution: In US from Midwest to west coast; southern BC in Canada.

Habitat: Common, even in urban areas, where it can be found at ponds, lakes, and slow moving aquatic habitats. Occurs up to 6,000 ft of elevation; however, uncommon above 4,000 ft.

Life History: Females oviposit in open water in emergent vegetation (floating woody branches or emergent vegetation) above or below water level. Males patrol a few feet over water, sometimes hovering.

Flight Period: Mid-May to Mid-October



California Darner (*Rhionaeschna californica*)

Description: One of the smaller Oregon darners; can be distinguished on the wing from some of the other larger darners since its small size is noticeable in flight. Thoracic side stripes are bordered in black, and narrow and straight. The anterior thoracic side stripe is narrow at the top. Without blue spots under the abdomen. Eyes blue above and brown below. Face has a black line and is bluish-white. T-spot on the head has a stem that is very thick. Females polymorphic; either patterned as male with blue markings, or with yellow-green markings. Heteromorph has brown eyes and yellow-green face with a black line. Tubercle under S1.

Distribution: Occurs widely across western US and into Canada.

Habitat: Common dragonfly at ponds, lakes, and slow moving streams up to 7,300 feet in elevation.

Life History: Has one of the earliest flight seasons among OR darners. Females oviposit in floating or emergent vegetation. Males patrol near water surface close to shore. Uncommon by mid-summer when other darners are beginning to emerge.

Flight Period: Mid-April to early September



Black-tipped Darner (*Aeshna tuberculifera*)

Description: Thoracic side stripes are a noticeable bright blue (may be green on lower end), and mainly straight and broad. The top of the anterior thoracic side stripe has an extension to the rear. Eyes are dull blue. The face is green and lacks a black line. S10 is black and lacks a spot on top, giving the black-tipped darner its name. No blue spots under the abdomen. Only OR darner lacking blue spot on top of S10 and having simple (not paddle-shaped) appendages. The simple upper appendages have a small tubercle on the underside, seen in side view. Females polymorphic; either patterned similar to male with blue markings and green side thoracic stripes, or patterned with yellow-green markings.

Distribution: Occurs in NA from the east coast south to North Carolina, to the Midwest, into Canada and OR and WA.

Habitat: Lakes and ponds in forested regions, often with associated bog vegetation.

Life History: Males fly along shores of lakes or over marshes; females oviposit at water level and sometimes above on emergent or floating plants and mud.

Flight Period: Late July to early September



Canada Darner (*Aeshna canadensis*)

Description: Broad blue stripes on side of thorax and blue stripes on the shoulder of the prothorax. Top half of front thoracic side stripe is deeply indented or notched at the front. Yellow spot between thoracic side stripes. Facial stripe not prominent. Cerci simple; gently curving up to the back like a ski. Similar to subarctic darner; however, note the color of the facial stripe, shape of thoracic stripes, and shape of the cerci. Female polymorphic.

Distribution: In Oregon it is a mountain species, found in the Cascades above 3,000 ft. Found at Gold Lake Bog (WIL) and Camas Prairie (MTH); Subarctic found at Camas Prairie; Zigzag found at Gold Lake Bog and nearby Little Crater lake (MTH). At Gold Lake Bog this species favors small and shallow pools compared to the lake itself.

Habitat: Mountain streams, lakes, boggy ponds, and wet prairies.

Life History: Females oviposit in moss mats and sedges along the edges open water. Males fly slow, a couple feet over water near shoreline.

Flight Period: Late June to early October



Black-tipped Darner andromorph



Black-tipped Darner male



Canada Darner male



Canada Darner mating wheel



Canada Darner heteromorph

Paddle-tailed Darner (*Aeshna palmata*)

Description: One of Oregon's typical blue and black mosaic darners. The yellow-green to blue side thoracic stripes are straight to slightly wavy; pale spot between stripes. The posterior side thoracic stripe is broad near the upperside. Thoracic frontal stripes present, and usually narrow. Face has a black line and is yellow-green. The blue eyes are not as vibrant as in the blue-eyed darner. No blue spots on the underside of the abdomen. Male appendages are paddle-shaped and have a sharp spine. Female polymorphic; andromorph resembles male with blue eyes and blue in markings, heteromorph has brown eyes and yellow markings.

Distribution: A common and abundant western species found from Alaska to California, and east to Nebraska.

Habitat: One of the most abundant darners in OR and even common in urban areas at lakes, ponds, and slow moving streams, including small streams, and all types of still water habitats.

Flight Period: Late June to mid-November



Sedge Darner (*Aeshna juncea*)

Description: Stripes on the side of the thorax are straight and wide, and distinctly bordered in black. The stripes are yellow-green (often yellow near bottom transitioning to blue near top); anterior stripe is wider near the bottom and tapers near the top, posterior stripe is wide at the top and tapers to become more narrow toward bottom. Side stripes have a long streak in between; and sometimes a short streak in front of anterior stripe. Frontal stripes on top of thorax are conspicuous. Middle abdominal segments sometimes have pale spots on underside. Face yellow-green with black line. Eyes dull blue to green. Female either with yellow-green markings and green tinged eyes, or similar to male with bluish eyes and blue markings. Species similar to subarctic darner, which it occurs with; ID can be difficult, however, careful look at thoracic side stripes should distinguish them.

Distribution: Circumpolar; northern species in NA; across northern US and into Canada to the Arctic Ocean. Not very common in OR, except Blue Mountains. Found at Gold Lake Bog.

Habitat: Sedge-lined mountain lakes, marshes, and wetlands with emergent vegetation and mossy fens from 2,500-7,500 ft of elevation.

Flight Period: Mid-July to early October



Shadow Darner (*Aeshna umbrosa*)

Description: A dark darner; abdominal spots are reduced compared to other mosaic darners, making them appear darker. Straight, narrow side thoracic stripes are yellow-green near bottom and blue near top. Thoracic frontal stripes transition from yellow-green at the bottom to blue at the top; each stripe has an extension rearward. Male eyes are turquoise. Females polymorphic; may be similar to males with blue abdominal markings, greenish to yellow thoracic stripes, and blue-tinged eyes, or appear different with brown eyes and yellow patterning. Similar to paddle-tailed, male has a paddle shaped upper appendage with a trailing spike.

Distribution: Widely distributed across NA; found throughout OR up to 6,000 ft of elevation. Can be seen in urban areas.

Habitat: Often seen patrolling shaded areas (hence name) around shorelines of lakes, slow streams, and ponds.

Flight Period: Late May to mid-December



Variable Darner (*Aeshna interrupta*)

Description: Side thoracic stripes can be variable and interrupted; from barely visible to partial stripes or spots to a full stripe that has a constriction midway, or stripes without constriction. Thoracic stripes are blue. Paired spots on top of abdomen are blue, including on S10; however they may also lack spots on S10. No spots occur under abdomen. Eyes fairly blue; face pale yellow-green with black line. T-spot cross-arm and stem are very thick; stem wide near base. Females have two color forms; one similar to male with blue patterning or with yellow-green patterning instead. In flight may be distinguished by the darker thorax since it often lacks the bright patterning of lateral stripes. Female patterning either as males with blue markings or yellow-green.

Distribution: Occurs across much of NA. Common throughout OR, especially in the mountains; rare in low elevations including Willamette Valley and northern areas along Columbia River.

Habitat: Still waters, including lakes and ponds usually above 3000 ft in elevation.

Flight Period: Late May to early October



IDENTIFICATION CHART FOR OREGON DARNERS

Species (size)	Face	Head (top view) T-spot	Thoracic Stripes (side view)	Appendages ♂ (side view); Abdomen Notes	Distribution; habitat; behavior	Flight Period
Blue-eyed Darner (<i>Rhionaeschna multicolor</i>) Short 62-69 mm	No black facial line—often light brown; Bright blue eyes	Very thin, straight crossbar 	Bright blue; broad and straight 	Forked (2-pronged at tip) diagnostic; S10 spot on top; no spots under abdomen 	MTH, WIL, & DES; widespread, common throughout OR even in urban areas; up to 6,000 ft; ponds, lakes, & slow-moving waters	Mid-May to Mid-October
California Darner (<i>Rhionaeschna californica</i>) Very short 57-60 mm	Thin black line on face	Very thick; stem widens at base 	Narrow and pale blue 	Simple, leaf like; S10 blue spot on top; no spots under abdomen 	MTH, WIL, & DES; common in urban areas & found in Cascades up to 7,300 ft. Ponds, lakes, slow moving streams across OR	Mid-April to early September
Black-tipped Darner (<i>Aeshna tuberculifera</i>) Very long 71-78mm	No distinct black facial line	Ends of crossbar pointed down 		Simple; tubercle on underside of cerci, near base; no spot on S10 	MTH, WIL; found in Cascades at lakes and ponds often with associated bog vegetation. Also documented in NE OR.	Late July to early September
Canada Darner (<i>Aeshna canadensis</i>) Long 66-73mm	No black or brown facial line	Widens at base 	Front stripe deeply notched in middle; rear "shoe"-shaped 	Simple cerci; S10 spot on top; paired spots beneath abdomen 	MTH, WIL, & DES; Cascade mtn. species above 3,000 ft; lakes, bogs, streams, wet prairies; females oviposit in moss, sedges	Late June to early October
Paddle-tailed Darner (<i>Aeshna palmata</i>) Long 64-77 mm	Black facial line	Narrow stem & straight-edged crossbar 	Usually straight, extended 	Paddle-shaped, long spike; S10 spot on top; no spots under abdomen 	MTH, WIL, & DES; common; one of most abundant darners, even in urban areas; frequents ponds, lakes, & all still waters up to 7,300 ft	Late June to mid-November
Sedge Darner (<i>Aeshna juncea</i>) Medium 66-71 mm	Thick black facial line	Crossbar with blurred front edge 	Straight, broad, bordered in black 	Narrow, pointed; S10 spot on top; paired spots under abdomen 	MTH, WIL, & DES; not common; Cascades species in OR; frequents sedge-lined shores of mountain lakes & wetlands from 2,500-7,500 ft.	Mid-July to early October
Shadow Darner (<i>Aeshna umbrosa</i>) Long 65-73 mm	Black or brown facial line	Short stem & straight-edged crossbar 	Straight-sided; both with rear extension 	Paddle-shaped, long spike; S10 no spot; spots below abdomen 	MTH, WIL, & DES; common throughout OR up to 6,000 ft; mountains and urban areas; patrols shaded banks of streams, lakes, & ponds	Late May to mid-December
Subarctic Darner (<i>Aeshna subarctica</i>) Short 63-69 mm	Black facial line	Narrow, straight stem 	Both bent in middle; front stripe rearward extension 	Petal-shaped, hairy, tip pointed down; S10 spot on top; paired spots under abdomen 	MTH (3 localities); rare; fens & bogs w/sphagnum & other mosses; 3,000-3,500 ft; males fly waist height; females oviposit in mosses, sedges usually at edge of water	Late June to early October
Variable Darner (<i>Aeshna interrupta</i>) Medium 66-71 mm	Black facial line	Stem & crossbar, angled, thick; wide at base 	Dashes; very thin or broken 	Simple, upturned lobe; S10 spot on top; no spots under abdomen 	MTH, WIL, & DES; common at still waters above 3,000 ft; rare in lowlands; most often encountered darners in the mountains	Late May to early October
Zigzag Darner (<i>Aeshna sitchensis</i>) Short 55-68 mm	Black facial line	Base convex upward; diagnostic 	Front thin, "zigzag"; rear "T-bone"-shaped; diagnostic 	Petal-shaped; S10 spot on top, no spots under abdomen 	MTH, WIL, & DES; rare, up to 3-5,000 ft; oviposit in algal beds, moss, mud, vegetation	Late August to late September