

FIELD KEY TO ADULT CALIFORNIA DRAGONFLIES (ODONATA)

- version 03.11 - Last update: Nov '03 [female pond damsels]

This key has not had extensive field testing. Although it should work fine for all common species, it undoubtedly will need tweaking for some of the rarer species. Please help by using this key whenever possible and emailing me [Kathy Biggs - bigsnest@sonic.net] and letting me know what works and where improvements are needed.

Based upon Dennis Paulson's Key to WA Dragonflies (with permission) and put together by Kathy Biggs in the years 2000-2003

INTRODUCTION:

This key has been prepared to provide identification of live adult dragonflies, members of the order Odonata, which occur in California. A 10x (or higher) hand lens or magnifying glass is essential to see some of these characteristics, although a pair of binoculars can be effective if you reverse them. A small millimeter ruler is also necessary, as some species are distinguished by size.

An insect net is also essential, as many species will have to be learned by keying them out in the hand. Many details, although clearly visible at close range, cannot be seen at a distance, and they must be noted to proceed through the key. Once the species are learned in the hand, many of them can then be easily recognized in the field.

Each number in the key contains a pair of statements, each of which describes distinguishing characteristics. Read each statement before deciding whether to accept or reject either one, and be aware that some of the statements list more than one characteristic. Each statement will lead either to a species name or to another number.

Measurements listed refer to total length including the appendages unless otherwise indicated. When two or more species are listed together, they are very difficult to distinguish in the field but differ in structural characteristics that are explained and illustrated in such books as *Dragonflies and Damselflies of California* by Tim Manolis, *Dragonflies of North America*, by Needham, Westfall and May, *The Odonata of Canada and Alaska*, by Edmund Walker, *Damselflies of North America*, by Minter Westfall and Mike May, and also *Dragonflies through Binoculars*, by Sid Dunkle.

Male and female dragonflies and damselflies can be told apart this way: males have a bump containing their accessory genitalia under the second abdominal segment which females lack. Females typically have a broader abdomen than males, and female damselflies and females of the Darner dragonfly family have a prominent ovipositor under the last segments. Male dragonflies have 3 appendages at the abdomen tip while male damselflies have 4; both female dragonflies and damselflies have only 2 appendages. Females are typically less colorful than males and are more often found away from water. Some key couplets refer to only one sex.

The key works for some teneral (newly emerged) dragonflies, but at this stage in their development coloration is usually not sufficiently developed to be diagnostic. Teneral dragonflies often have very shiny wings and are still 'soft' and should not be handled. Even with adult dragonflies, color pattern rather than color hue is usually more important. The definitive coloration of adults is acquired slowly with maturation, and dragonflies that are not yet mature may not have obtained their full coloration. Some adults become pruinose, with a blue or whitish powdery bloom that covers parts of the body. Such dragonflies may become sexually mature before this bloom completely covers the body.

It is helpful to familiarize yourself with basic dragonfly anatomy: as is true of all insects they have 3 main body parts - first the head, then the thorax and lastly the abdomen which has 10 segments (#10 is at the terminal end where the appendages attach). All dragonflies and damselflies have a rectangular (ptero)stigma near the tip of each wing on the leading edge. The stigma is ignored when wing coloration is mentioned in the key unless directly referred to. All measurements refer to total body length including appendages.

Photographs and drawings from *Common Dragonflies of California* by Kathy Biggs and its companion website, *Dragonflies and Damselflies of California*, and/or the book *Dragonflies and Damselflies of California* by Tim Manolis, and the book *Dragonflies of Washington* by Dennis Paulson along with his *Northwest Dragonflies* website will be helpful in making many final determinations to species. Also useful is the book *Dragonflies Through Binoculars* by Sid Dunkle which covers all the dragonflies (but none of the damselflies) of the continental USA.

All dragonflies emerge with barely any color. Many young males are colored much the same as females at first until they 'color-up' at maturity; therefore they progress through a series of color changes as they age. This should be kept in mind while attempting identifications. Learning the dragonflies is a wonderful challenge. I will be willing to help in any way I can.

Begin by keying the dragonfly in the KEY TO SUB-ORDER, from Sub-Order go to KEY TO FAMILIES and then to the appropriate family page and key it to species.

KEY TO SUB-ORDER

- 1a. Small, slender match-stick sized bodies; eyes farther apart than their own diameter (hammer-headed appearance); wings held together tightly either over or alongside abdomen (mostly open but not flat in one family); weak fliers
 **ZYGOPTERA (Damselflies)**.....2
- 1b. Larger, bodies heavier; eyes close together (touching in all species except those with clubtail shaped abdomens and one black and yellow species); wings held wide open, flat, or sometimes slightly downward and forward; strong fliers
 **ANISOPTERA (Dragonflies)**4

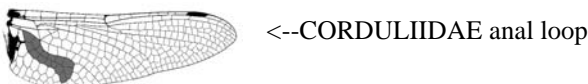
KEY TO FAMILIES

ZYGOPTERA - Damselflies:

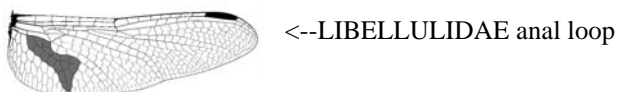
- 2a. Wings held open when perched (closed in hand, may be closed in teneral); stigma long, equal to eye diameter
 **LESTIDAE (Spreadwing Damselflies)**
- 2b. Wings held closed over or tightly alongside abdomen (partially open in some individuals or in hand); length of stigma less than diameter of eye 3
- 3a. Large (>=38mm); body metallic green with wide black wing tips, or body dark with red at wing base
 **CALOPTERYGIDAE (Broad-winged Damselflies)**
- 3b. Smaller (<38 mm except for two large species); variously colored; with clear wings (except for the small rectangular stigma near the end) **COENAGRIONIDAE (Pond Damsels)**

ANISOPTERA - Dragonflies:

- 4a. Eyes completely separated..... 5
- 4b. Eyes just touching or broadly contiguous..... 6
- 5a. Thorax black with numerous yellow spots, not stripes **PETALURIDAE (Petail)**
- 5b. Thorax colored otherwise **GOMPHIDAE (Clubtails)**
- 6a. Large (>70mm); eyes barely touching; thorax black with two yellow stripes; yellow spots on abdomen - largest spot not the last one **CORDULEGASTRIDAE (Spiketails)**
- 6b. Not that combination of characters; if large and with pale stripes on thorax, then eyes broadly contiguous 7
- 7a. Larger (>55mm); abdomen spotted or otherwise marked with paler color..... 8
- 7b. Smaller (<55 mm), abdomen entirely black in species longer than 50 mm..... 9
- 8a. Each abdominal segment with a single central yellow spot, with the last spot the largest; conspicuous single stripe on each side of thorax..... **MACROMIIDAE (Cruisers)**
- 8b. Each abdominal segment with multiple spots or none; thorax with two side stripes or solid green..... **AESHNIDAE (Darners)**
- 9a. Abdomen almost entirely black and eyes bright green or turquoise..... **CORDULIIDAE (Emeralds)**
- 9b. Abdomen variously colored; if entirely black, then eyes not green; if eyes green, then body not black..... 10
- 10a. Prevailing color brown; thorax densely covered with long, whitish hairs; wings with small spot at base and no markings at mid-length; anal loop of hind wing short and rounded (see illustration below) **CORDULIIDAE (Emeralds)**



- 10b. Colored otherwise; thorax with no more than sparse, short hairs; anal loop of hind wing longer and pointed at tip (see illustration below) **LIBELLULIDAE (Skimmers)**



ZYGOPTERA (DAMSELFLIES)

CALOPTERYGIDAE (Broad-winged Damselflies)

- 1a. Wing with red or orange at base 2
- 1b. Wing with at least outer 1/3 black; body metallic blue/green..... 3
- 2a. Wing with red at base; bump under segment 2..... *Hetaerina americana* (American Rubyspot), male
- 2b. Wings orangish-red at base; no bump under segment 2; end of abdomen enlarged due to ovipositor
..... *Hetaerina americana* (American Rubyspot), female
- 3a. Wing with outer 1/3 black; bump under segment 2..... *Calopteryx aequabilis* (River Jewelwing), male
- 3b. Wing with outer 1/3 black; no bump under segment 2; pale stigma; abdomen tip pale
..... *Calopteryx aequabilis* (River Jewelwing), female

LESTIDAE (Spreadwings) - males only unless indicated

[note: even seasoned experts need to have Lestes species in hand to be certain of identification]

- 1a. Larger (>45mm); contrasting white or yellow stripe on side of thorax 2
- 1b. Smaller (<45mm); no contrasting yellow or white stripe on side of thorax 3
- 2a. Contrasting broken white stripe on side of thorax; pale stigma; parallel lower abdominal appendages
..... *Archilestes californica* (California Spreadwing) - male & female
- 2b. Conspicuous continuous pale yellow stripe on side of thorax; dark stigma; divergent lower abdominal appendages; toothlike lobe on upper appendages *Archilestes grandis* (Great Spreadwing) - male & female
- 3a. Body stocky; males lower appendages expanded at end & ~80% length of upper appendages; female's ovipositor longer than segment 7 4
- 3b. Not so marked..... 5
- 4a. Thorax metallic green above, without longitudinal stripes; abdomen less than 30mm
..... *Lestes dryas* (Emerald Spreadwing) - male; some females
- 4b. Thorax black or bronzy on top (can show pale green longitudinal striping); four black spots (2 on either side) in the pale undersurface of the thorax; abdomen at least 30mm *Lestes stultus* (Black Spreadwing) - male & female
- 5a. Male's lower appendages short, only 50% length of uppers; four black spots (2 on either side) in the pale undersurface of the thorax..... *Lestes congener* (Spotted Spreadwing) - male & female
- 5b. Not so 6
- 6a. Male's lower appendages curved outward toward tips (lyre-shaped); rear of head partly pale, stigma light to medium brown, pale at ends; male superior appendages pale at base *Lestes unguiculatus* (Lyre-tipped Spreadwing)
- 6b. Male's lower appendages straight throughout; rear of head entirely dark, stigma usually uniformly dark; mature male has pruinose blue-gray thorax *Lestes disjunctus* (Common Spreadwing)

COENAGRIONIDAE (Pond Damsels)

[This key is untested for female Pond Damsels, esp. those found in southern CA and desert areas. Please use with caution.]

- 1a. Mostly red colored, including mid-abdominal segments..... 2
- 1b. Not red or reddish, or if so black on mid-abdominal segments 3
- 2a. Abdomen all red/orange with no black; thorax all red/orange (male & female can show a small amount of black on top of thorax)
..... *Telebasis salva* (Desert Firetail)
- 2b. Abdomen dark red colored with black tip and the black thorax (male) or pinkish reddish to brown where male is red or with no pattern (female); thorax somewhat hairy *Amphiagrion abbreviatum* (Western Red Damsel)
- 3a. Males (genitalia visible under 2nd abdominal segment, 4 appendages at tip of abdomen) & some male-colored females 4
- 3b. Females (no genitalia under 2nd abdominal segment, 2 appendages and ovipositor at tip of abdomen; mostly brown, gray and/or black *but may be almost as blue as males) & immature males 33
*if as blue as males, follow key for males

4a.	Abdomen and thorax with clearly delineated black and blue colored markings.....	5
4b.	Thorax &/or abdomen with a powdery bluish coloring (can be pale or sooty blue); fairly large size (>37mm).....	16
5a.	Abdomen mostly dark on top of segments 3-7 with some blue on 8 &/or 9 which is not contiguous top to bottom	6
5b.	Most of abdomen patterned, alternately dark with 1-2 colors; blue 'tail tip' appears to surround the end segments	13
6a.	Top of thorax entirely metallic green	<i>Nehalennia irene</i> (Sedge Sprite)
6b.	Top of thorax otherwise.....	7
7a.	Top of thorax dark with 2 blue !! marks (the dot and stem can sometimes be merged); larger (>30mm)	<i>Zoniagrion exclamationis</i> (Exclamation Damsel)
7b.	Top of thorax solid black or with dots or stripes	8
8a.	Top of thorax solid	9
8b.	Top of thorax with dots or stripes.....	10
9a.	Appendages bent down.....	<i>Ischnura denticollis</i> (Black-fronted Forktail)
9b.	Appendages upward pointing; you are in coastal SF Bay region	<i>Ischnura gemina</i> (San Francisco Forktail)
10a.	4 colored dots on top of thorax; blue at 'tail tip' touches top to bottom on the sides of segments 8& 9	<i>Ischnura cervula</i> (Pacific Forktail)
10b.	Stripes on top of thorax; segments 8 & 9 blue above	11
11a.	Underside of abdominal segments 3-7 not yellow.....	12
11b.	Underside of abdominal segments 3-7 yellow.....	14
12a.	Noticeably larger than other forktails (>30mm); blue on 'tail' floats on top of segments; lower appendages noticeably longer	<i>Ischnura erratica</i> (Swift Forktail)
12b.	Smaller (<=25mm); thin pale rings at each abdominal segment; blue on 'tail' interrupted on sides by thick black dashes on segments 8 & 9; forked lower appendages	<i>Ischnura perparva</i> (Western Forktail)
13a.	Abdomen patterned alternately dark and red &/or yellow.....	14
13b.	Abdomen patterned alternately dark with mostly blue or violet.....	17
14a.	Abdomen patterned yellow and dark with no blue on top; smaller (<=27mm); thorax dark and green; pale stigma	<i>Ischnura hastata</i> (Citrine Forktail)
14b.	Abdomen patterned: greenish-blue on segments 1-3, yellow-orange on underside of segments 3-7, with blue 'tail'; larger (>=27mm).....	15
15a.	Teardrop shaped spots back of eyes connected by thin line; side stripe wide and not parallel sided; faint patterning shows top of abdomen; middle abdominal segment with spoon-shaped black area; lower appendages upward bending	<i>Ischnura barberi</i> (Desert Forktail)
15b.	Tiny round spots back of eyes not connected; side stripe very thin and parallel sided; middle abdominal segment with even sided black area; lower appendages not upturned.....	<i>Ischnura ramburii</i> (Rambur's Forktail)
16a.	Larger (>40mm); thorax and/or abdomen sooty blue colored; no blue or contrasting pale area at abdomen 'tip'	<i>Argia lugens</i> (Sooty Dancer)
16b.	Smaller (<40mm); abdomen tip and thorax all light powdery blue (can be more pervasive); you are in southern CA	<i>Argia moesta</i> (Powdered Dancer)
17a.	Thorax side stripe pinched or divided into a sideways Y (the Y can be broken).....	18
17b.	Not as above	24
18a.	Thorax side stripe pinched but not divided.....	19
18b.	Thorax side stripe divided into a sideways Y (the Y can be broken)	20
19a.	Pale color mostly blue (when cold violet); top of thorax with urn shaped black stripe	<i>Argia vivida</i> (Vivid Dancer)
19b.	Pale color mostly violet (immatures bluish); black line on top of thorax very narrow.....	<i>Argia emma</i> (Emma's Dancer)
20a.	No lavender coloring	21
20b.	Some lavender coloring; found in southern California.....	23
21a.	Side stripe forming the sideways Y thick; middle abdominal segments dark from above	<i>Argia alberta</i> (Paiute Dancer)
21b.	Side stripe forming the sideways Y thin; middle abdominal segments mostly pale (often blue) from above	22

[must be held in hand and examined with 10X hand lens]

22a. Distance between lower appendages when seen from above greater than the width of each individual appendage *Argia agroides* (California Dancer)

22b. Distance between lower appendages when seen from above less than the width of each individual appendage *Argia nahuana* (Aztec Dancer)

23a. Blue/lavender rings on abdomen segments 3-5(6) extensive *Argia hinei* (Lavender Dancer)

23b. Blue/lavender color on abdomen very narrow rings *Argia immunda* (Kiowa Dancer)

24a. Abdomen mostly black with thin blue rings *Argia sedula* (Blue-ringed Dancer)

24b. Not so 25

25a. Middle abdominal segments at least 50% black from above 26

25b. Middle abdominal segments mostly blue from above 31

26a. Segments 6 & 7 entirely black above; black marking on second abdominal segment U-shaped; thorax green tinged.....

26b. Not so 27

27a. Upper appendages just a little bit longer than lower, found east of Sierra Nevada (or in eastern Siskiyou Co.) at an alkali lake *Enallagma clausum* (Alkali Bluet)

27b. Not found as above 28

[must be held in hand and examined with 10X hand lens from side]

28a. Male's upper appendages with a pale 'button' on end 29

28b. Male's upper appendages forked and without a 'button' on end 30

[must be held in hand and examined with 10X hand lens]

29a. Male's 3rd abdominal segment =or>50% black; 'button' on end of upper appendages *Enallagma carunculatum* (Tule Bluet)

29b. Male's 3rd abdominal segment <50% black; 'button' on underside of tip of upper appendages *Enallagma civile* (Familiar Bluet)

[must be held in hand and examined with 10X hand lens from side]

30a. Male's upper and lower appendages about the same length; upper appendages forked with lower fork pointed rearward *Enallagma praevarum* (Arroyo Bluet)*

30b. Male's upper appendages slightly forked with the top fork extending well beyond lower appendages and angled downward *Enallagma anna* (River Bluet)*

[*only the Arroyo Bluet occurs in the valley and coastal areas and south of Inyo Co, while both occur in the Sierras and Great Basin]

[must be held in hand and examined with 10X hand lens from side]

31a. Lower appendages longer, projecting well beyond superiors *Enallagma cyathigerum* (Northern Bluet) or *Enallagma boreale* (Boreal Bluet)

[must use hand lens on upper appendages to determine, see link at CA Web site]

31b. Upper appendages longer or about same length 32

32a. Dark side stripe with a thin blue line thru center *Enallagma basidens* (Double-striped Bluet)

32b. Not so *Enallagma civile* (Familiar Bluet)

FEMALES: (no bump under 2nd abdominal segment, abdomen expanded at tip due to ovipositor (often very difficult to ID)
[This section may need tweaking and may not work well for all desert species - use with caution]

33a. All light or dark pruinose 34

33b. Not so marked 35

34a. All dark pruinose; pale stigma *Ischnura cervula* (Pacific Forktail)

34b. All light pruinose; dark stigma *Ischnura perparva* (Western Forktail)

35a. Top of abdomen solid colored (or with color only near tip and very beginning near thorax) 36

35b. Abdomen patterned alternately with dark and pale markings 46

36a. Thorax sides solidly colored with tan/orange/red; thorax top with thick dark stripe 37

36b. Noticeable thoracic side stripes 38

37a. Medium sized, (>27mm) *Ischnura ramburii* (Rambur's Forktail)

37b. Small (<25mm) *Ischnura hastata* (Citrine Forktail)

38a.	Green thoracic stripes; large (>30 mm)	39
38b.	Stripes otherwise	40
39a.	Found in northern CA; large(>=30 mm)	<i>Ischnura erratica</i> (Swift Forktail)
39b.	Found in southern CA; small (<28mm)	<i>Ischnura barberi</i> (Desert Forktail) or <i>Ischnura ramburii</i> (Rambur's Forktail)
40a.	Pale stigma	41
40b.	Stigma dark	42
41a.	Orange color only behind eyes	immature <i>Ischnura cervula</i> (Pacific Forktail)
41b.	No orange color behind eyes	43
42a.	You are in SF Bay region or mid-coastal area	<i>Ischnura denticollis</i> (Black-fronted Forktail) or <i>Ischnura gemina</i> (San Francisco Forktail)
42b.	You are in interior of state	<i>Ischnura denticollis</i> (Black-fronted Forktail), <i>Ischnura barberi</i> (Desert Forktail) or <i>Ischnura ramburii</i> (Rambur's Forktail)
43a.	Blue tops of segments 7 and 8; !! marks on top of thorax (which may have dot merged with stem; (>=30 mm)	<i>Zoniagrion exclamationis</i> (Exclamation Damsel)
43b.	Not so	44
44a.	(<=40mm)	45
44b.	(>=40mm)	48
45a.	Orange on base of abdomen extending to segment 3	immature <i>Ischnura perparva</i> (Western Forktail)
45b.	Not so	46
46a.	'Day glow' orange color of thorax top with thick black top stripe; legs and tip of abdomen orange	immature <i>Ischnura ramburii</i> (Rambur's Forktail)
46b.	Not so	47
47a.	Segment 8 of abdomen black above	immature <i>Ischnura erratica</i> (Swift Forktail)
47b.	Segment 8 of abdomen pale above	immature <i>Ischnura cervula</i> (Pacific Forktail)
48a.	Side stripe on thorax pinched in middle or side stripe forms a sideways Y	49
48b.	Side stripe on thorax not pinched in middle; does not form a sideways Y	54
49a.	Side stripe on side of thorax pinched in middle	50
49b.	Side stripe on thorax not pinched in middle or side stripe forms a sideways Y	51
50a.	Black stripe on top of thorax very thin, no wider than side stripes; straight sided	<i>Argia emma</i> (Emma's Dancer)
50b.	Black stripe on top of thorax much wider than side stripes; urn shaped	<i>Argia vivida</i> (Vivid Dancer)
51a.	Side stripe on side of thorax forms a sideways Y	<i>Argia alberta</i> (Paiute Dancer), <i>Argia agroides</i> (California Dancer), <i>Argia hinei</i> (Lavender Dancer), <i>Argia immunda</i> (Kiowa Dancer), <i>Argia nahuana</i> (Aztec Dancer), <i>Argia sedula</i> (Blue-ringed Dancer)
51b.	Side stripe on side of thorax does not form a sideways Y	52
52a.	Larger (<=40mm)	53
52b.	Smaller (<=39mm)	54
53a.	Larger (>=40mm); intricately marked thorax	<i>Argia lugens</i> (Sooty Dancer)
53b.	Smaller (<=40mm); very thin dark stripe top of thorax	<i>Argia moesta</i> (Powdered Dancer)
54a.	Segments 7 and 8 of abdomen with conspicuous pale ring at end	<i>Coenagrion resolutum</i> (Taiga Bluet)
54b.	Not so	55
55a.	Segment 8 of abdomen entirely black above	<i>Enallagma carunculatum</i> (Tule Bluet), <i>Enallagma basidens</i> (Double-striped Bluet), <i>Enallagma civile</i> (Familiar Bluet), or (east of Sierra) <i>Enallagma anna</i> (River Bluet)
55b.	Segment 8 of abdomen entirely or partially pale above	<i>Enallagma boreale</i> (Boreal Bluet), <i>Enallagma cyathigerum</i> , (Northern Bluet), or <i>Enallagma praevarum</i> (Arroyo Bluet), or (east of Sierra) <i>Enallagma clausum</i> (Alkali Bluet)

ANISOPTERA (DRAGONFLIES)

PETALURIDAE (Petaltails)

One species; black & yellow; thorax black with numerous yellow spots, not stripes; eyes widely separated

.....*Tanypteryx hageni* (Black Petaltail)

CORDULEGASTRIDAE (Spiketails)

One species; black & yellow; 2 thoracic yellow stripes; eyes barely touch.....*Cordulegaster dorsalis* (Pacific Spiketail)

MACROMIIDAE (River Cruisers)

One species; black & yellow; 1 thoracic yellow stripe; eyes touch each other.....*Macromia magnifica* (Western River Cruiser)

GOMPHIDAE (Clubtails) - mature males only unless indicated

- 1a. Abdomen almost entirely black and quite thin; appendages deeply forked; urn shaped patch top of thorax
..... *Octogomphus specularis* (Grappletail)
- 1b. Abdomen with conspicuous pale markings 2
- 2a. Thorax distinctly green or gray; male's lower appendages pointed 3
- 2b. Thorax yellowish to gray-greenish; male's lower appendages forked 9
- 3a. Pale rings on abdomen; sides & top of thorax intricately striped with black..... 4
- 3b. Sides of thorax almost entirely green or gray 5
- 4a. White stripe between pairs of stripes on side of thorax; abdominal pale rings yellowish
..... *Erpetogomphus compositus* (White-belted Ringtail)
- 4b. No white between pairs of stripes on side of thorax; abdominal pale rings whitish; found in so. CA
..... *Erpetogomphus lampropeltis* (Serpent Ringtail)
- 5a. Sides of thorax gray; claspers large and distinctly pale..... *Progomphus borealis* (Gray Sanddragon)
- 5b. Sides not gray 6
- 6a. No, or almost no dark line separating top and side of thorax; spots back 'corner' of thorax; coloring very pale through-out
..... *Ophiogomphus severus* (Pale Snaketail)
- 6b. 1-2 dark stripes where front and sides of thorax meet, with or without internal thin green line..... 7
- 7a. One wide black line where top & side of thorax meet (can show a partial, thin line in middle); line not wavy; thorax bright green;
yellow abdominal top spots arrow-head shaped & occur on all segments..... *Ophiogomphus bison* (Bison Snaketail)
- 7b. Two black lines line where top & side of thorax meet 8
- 8a. Black line where top & side of thorax meet is wavy with thin green internal line
..... *Ophiogomphus occidentis* (Sinuous Snaketail)
- 8b. Two black lines where top & side of thorax meet are separated by green color that is continuous with top thoracic stripe
..... *Ophiogomphus morrisoni* (Great Basin Snaketail)
- 9a. Gray-green thorax with wide stripe where top & side of thorax meet; black diagonal slash separating 2 thoracic pale side patches,
green or yellow triangular marks on top abdominal segments (green markings can be yellow in immature & female); no spots top
of segments (9 &) 10; legs & appendages all black..... *Gomphus kurilis* (Pacific Clubtail), male
- 9b. No wide dark stripe side of thorax; hang perch 10
- 10a. Sides of thorax appear solid gray-green (olive) colored; without conspicuous stripes behind front edge of fore wing; horseshoe like
pale mark top of thorax; more dark than yellow atop clubbed 'tail tip'..... *Stylurus olivaceus* (Olive Clubtail)
- 10b. Sides of thorax not solid gray-green (olive) colored 11
- 11a. Smaller (<56 mm); sides of thorax nearly all pale yellow-green; yellow 'club'..... *Stylurus intricatus* (Brimstone Clubtail)
- 11b. Larger (>=56 mm); sides of thorax gray-green with dark thin stripes; end of abdomen yellow/rust/reddish colored
.....*Stylurus plagiatus* (Russet-tipped Clubtail)

AESHNIDAE (Darners)

[Even seasoned experts cannot 100% identify most Aeshna without having them in hand. It is necessary to net them and examine them. With experience you can get a 'feel' for which species you are seeing, but in hand is required for any identifications that are county or flight season records]

1a.	Thorax entirely green	2
1b.	Thorax dark with pale stripes on sides	3
2a.	Smaller (<80 mm)	<i>Anax junius</i> (Common Green Darner)
2b.	Larger (>=90 mm); abdomen droops slightly in flight	<i>Anax walsinghami</i> (Giant Darner)
3a.	Males (3 appendages at tip)	4
3b.	Females (2 appendages at tip)	11
4a.	Upper appendages forked in side view; bright blue face, eyes, stripes ...	<i>Rhinoaeschna</i> (<i>Aeshna</i>) <i>multicolor</i> (Blue-eyed Darner)
4b.	Upper appendages simple or paddle-shaped (not forked) and with or without a spine at tip	5
5a.	Upper appendages simple, paddle shaped without a spine	6
5b.	Upper appendages simple, paddle shaped with a distinct spine at tip	9
6a.	Small for family, smaller (<61 mm)	<i>Rhinoaeschna</i> (<i>Aeshna</i>) <i>californica</i> (California Darner)
6b.	Size normal, larger (>=61 mm)	7
7a.	Both side thoracic stripes quite narrow and straight or reduced to pairs of dashes	<i>Aeshna interrupta</i> (Variable Darner)
7b.	Front side thoracic stripe wide and indented in middle	8
8a.	Paired blue spots on underside of abdomen	<i>Aeshna canadensis</i> (Canada Darner)
8b.	No blue spots on underside of abdomen [rare- please contact Kathy Biggs at bignest@sonic.net]	<i>Oplonaeschna armata</i> (Rifle Darner)
9a.	Paired blue spots on underside of abdomen; no blue spots on top of 10th abdominal segment; spots on other segments small (15-20% length of each segment)	<i>Aeshna umbrosa</i> (Shadow Darner)
9b.	No blue spots on underside of abdomen	10
10a.	Greenish face and stripes; stigma dark brown; paired blue spots top of segment 10; spots segment 9 fused; typically found at lakes and ponds	<i>Aeshna palmata</i> (Paddle-tailed Darner)
10b.	Very pale face with white side stripes; jet black stigma; no spots on top of segment 10 (or VERY tiny spots at extreme rear of segment); typically found along streams and rivers	<i>Aeshna walkeri</i> (Walker's Darner)

FEMALES:

11a.	Small but obvious tubercle (bump) under the first abdominal segment shows in close examination of side view	12
11b.	No tubercle under the first abdominal segment	13
12a.	(>=61 mm); horizontal facial stripe between the eyes light brown	<i>Rhinoaeschna</i> (<i>Aeshna</i>) <i>multicolor</i> (Blue-eyed Darner)
12b.	(<61 mm); horizontal facial stripe between the eyes black	<i>Rhinoaeschna</i> (<i>Aeshna</i>) <i>californica</i> (California Darner)
13a.	Light spots on underside of abdomen	15
13b.	Underside of abdomen dark with no blue spots	15
14a.	Side thoracic stripes straight	<i>Aeshna umbrosa</i> (Shadow Darner)
14b.	Front side thoracic stripe deeply indented	<i>Aeshna canadensis</i> (Canada Darner)
15a.	Front side stripe deeply indented [rare- please contact Kathy Biggs at bignest@sonic.net]	<i>Oplonaeschna armata</i> (Rifle Darner)
15b.	Not so	16
16a.	Stigma black (or very dark brown); cerci widest at 2/3 - 3/4 their length; only large sized spots (no smaller ones) on segments 8-10 on top of abdomen	<i>Aeshna walkeri</i> (Walker's Darner)
16b.	Stigma brown; cerci widest at mid-point; colored spots on top of abdomen variously sized	15
17a.	Side stripes reduced to broken lines or very thin; ovipositor valves 2-2.5 mm	<i>Aeshna interrupta</i> (Variable Darner) (See drawings #46-49 at Darner key at Royal British Museum, British Columbia for illustration of this couplet)
17b.	Side stripes not broken nor very thin; ovipositor valves 3-3.5	<i>Aeshna palmata</i> (Paddle-tailed Darner)

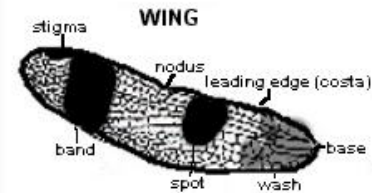
CORDULIIDAE (Emeralds)

- 1a. Abdomen with yellowish sides; thorax brown with pale hairs 2
 1b. Abdomen entirely black; thorax largely or partly metallic dark green, with or without yellow spots 3
- [must be examined in hand]
- 2a. Face from above mostly pale; male superior appendages sharply angled near end; female appendages about 2mm long *Epitheca canis* (Beaverpond Baskettail)
 2b. Face from above mostly dark; male superior appendages not angled; female appendages about 3mm long *Epitheca spinigera* (Spiny Baskettail)
- 3a. A very fine white ring at base of each abdominal segment *Somatochlora albicincta* (Ringed Emerald)
 3b. No white rings on middle abdominal segments (may be white ring on basal segment) 4
- 4a. Male appendages slightly flared; smaller (≤ 49 mm); thorax with no indication of yellow on sides; female appendages ≤ 2 mm long *Cordulia shurtleffii* (American Emerald)
 4b. Male superior appendages inward curved forming a semicircle (); larger (≥ 50 mm); female with vulvar lamina smaller, shorter than abdominal segment 9 *Somatochlora semicircularis* (Mountain Emerald)

LIBELLULIDAE (Skimmers)

[warning: may not work for all female Meadowhawks]

- 1a. Wings entirely orange *Perithemis intensa* (Mexican Amberwing) male
 (female has orangeish bands on wings)
 1b. Wings otherwise 2
- 2a. At least one pair of wings conspicuously patterned with fairly large areas of black, white, brown, yellow, orange or red 3
 2b. Wings clear, or with reddish or yellowish tinged areas, or small dark spots which are either poorly defined, fairly inconspicuous and/or only near the base of wings 9
- 3a. Wings with one large area of color extending from basal area 4
 3b. Wings more patterned, with color spot/band at &/or beyond midlength as well 7
- 4a. Top & bottom of abdomen, thorax, face and eyes solid red or red- orange 5
 4b. Body otherwise 7
- 5a. Red color approximately the same amount on both wings 6
 5b. Red color on hind wings only 14
- 6a. Red on wings extends to nodus; body orange-red *Libellula saturata* (Flame Skimmer), male (or male colored female)
 6b. Red on wings only close to thorax, not extending to nodus; body bright red *Libellula croceipennis* (Neon Skimmer), male
- 7a. Color on wings reddish, yellowish or light brown 8
 7b. Color on wings (but not necessarily veins) black or dark brown 12
- 8a. Abdomen top intricately patterned with black on red background; face and eyes red; larger (> 45 mm) *Paltothemis lineatipes* (Red Rock Skimmer), male
 8b. Abdomen yellow to red on top, black below; face and thorax brownish; smaller (≤ 40 mm) *Sympetrum occidentale* (Western Meadowhawk), male or female
- 9a. Wings with small black spot at base and nodus only 10
 9b. Not so marked 23
- 10a. Nodal spot smaller than stigma; body tapered somewhat to a point; thorax hairy; amber streaks in wing *Libellula quadrimaculata* (Four-spotted Skimmer), male or female
 10b. Body fairly parallel sided 11
- 11a. Nodal spot larger than stigma; dark face; dark front wing vein *Libellula nodisticta* (Hoary Skimmer), male or female
 11b. Nodal spot smaller than stigma (sometimes missing); pale face; pale costa (leading vein of wing) *Libellula composita* (Bleached Skimmer), male or female



12a.	Both wings with extensive dark basal coloration extending as far as nodus (female can also have a dark spot at wing tip)	<i>Libellula luctuosa</i> (Widow Skimmer), male or female	
12b.	Marked otherwise		13
13a.	Only hind wings with extensive coloration on basal area.....		14
13b.	Dark marking on all wings		16
14a.	Basal hind wing coloration brownish red; body red	<i>Tramea onusta</i> (Red Saddlebags), male or female (female brown-red)	
14b.	Basal hind wing coloration black/dark brown; body black.....		15
15a.	Large (>=50mm); hind wing covered with saddle-like shaped mark	<i>Tramea lacerata</i> (Black Saddlebags), male or female (female browner)	
15b.	Smaller (<=50mm); hind wing with basal coloration not saddle shaped and covering only half of area; much smaller area of dark on base of front wing	<i>Macrodiplax balteata</i> (Marl Pennant), male or female	
16a.	Each wing with band that is 1/3 width of wing, or 2 narrow zigzag black bands beginning beyond the midlength and each extending from leading to trailing edge of wing.....		17
16b.	Each wing with a spot or narrow band at midlength, extending no more than 1/4 length of wing.....		19
17a.	Middle 1/3 of wing a wide black band		18
17b.	Two narrow zigzag black bands in middle third of wing (can show some dark coloring between the bands)	<i>Libellula subornata</i> (Desert Whitetail), female (if male, also showing white pruinosity on wings)	
18a.	White pruinosity on wing confined to close to base.....	<i>Libellula lydia</i> (Common Whitetail), male	
18b.	White wing pruinosity extensive, to the black band; you are in a desert areas.....	<i>Libellula subornata</i> (Desert Whitetail), male	
19a.	Wings with only a tiny spot of color at nodus; amber wash at base	<i>Libellula compositus</i> (Bleached Skimmer)	
19b.	Wings not so		20
20a.	Two black areas on each wing; outer mark resembles a #8 and extends from leading to trailing edge of wing	<i>Libellula forensis</i> (Eight-spotted Skimmer), male or female	
20b.	Three black spots on each wing; outer mark does not extend from front to back of wing edge.....		21
21a.	White spots between each black wing spot	<i>Libellula pulchella</i> (Twelve-spotted Skimmer), male	
21b.	No white spots on wings.....		22
22a.	Abdomen top dark in center with yellow dashes (---) on side that are all in a horizontal line; larger (>=45mm);	<i>Libellula pulchella</i> (Twelve-spotted Skimmer), female	
22b.	Abdomen dark in center with row of slightly slanted yellow (or whitish) dashes (///) on side of abdomen that is interrupted, not continuous; smaller (<=42mm).....	<i>Libellula lydia</i> (Common Whitetail), female	
23a.	Body entirely or partially blue or white (with powdery pruinose bloom)		24
23b.	Body with no blue.....		28
24a.	Face green; often perched on floating vegetation or the ground.....	<i>Erythemis collocata</i> (Western Pondhawk), male	
24b.	Face not green.....		25
25a.	Eyes and face brown; white pruinosity restricted to front of thorax and base of abdomen	<i>Libellula julia</i> (Chalk-fronted Corporal), male	
25b.	Body blue.....		26
26a.	Bi-colored (mostly white) stigma	<i>Libellula comanche</i> (Comanche Skimmer), male	
26b.	Stigma solid colored		27
27a.	Face white with a black 'nose'-like spot; pink/buff colored area under abdominal segments 1-2	<i>Pachydiplax longipennis</i> (Blue Dasher), male	
27b.	Pale face; body a bleached blue; pale costal vein (front edge of wing).....	<i>Libellula composita</i> (Bleached Skimmer), male	
28a.	Body bright green	<i>Erythemis collocata</i> (Western Pondhawk), female or immature male	
28b.	Body not green or if green then olive green/brownish green		29
29a.	Two paired pale spots near end of club shaped abdomen..	<i>Brechmorhoga mendax</i> (Pale-faced Clubskimmer), male or female	
29b.	Not so marked.....		30

30a.	Body entirely brown; hind wing with conspicuous dark spot at base.....	31
30b.	Not so marked.....	34
31a.	Dark area at base of wings triangular	32
31b.	Dark area at base of wings not triangular	33
32a.	Brown spot at nodus (midlength) on wing.....	<i>Libellula quadrimaculata</i> (Four-spotted Skimmer), male or female
32b.	No brown spot at nodus (midlength) on wing	<i>Libellula julia</i> (Chalk-fronted Corporal), female
33a.	Dark spot at base of wing semicircular; no spot at wing nodus.....	<i>Pantala hymenaea</i> (Spot-winged Glider), male or female
33b.	Not so marked.....	34
34a.	Abd. - rectangular buff marks on dark background; face white...	<i>Pachydiplax longipennis</i> (Blue Dasher), female or young male
34b.	Abdomen not as above	35
35a.	Body mostly black, dark brown or patterned earth-tones (can be marked with yellow, white or red)	36
35b.	Body mostly pale, yellow, red or rose/purple	50
36a.	Front of thorax paler than sides, separated from them by darker line.....	<i>Libellula julia</i> (Chalk-fronted Corporal), female
36b.	Thorax not as described.....	37
37a.	Face entirely or partially dark; no orange coloring	<i>Sympetrum danae</i> (Black Meadowhawk), male or female
37b.	Not so	38
38a.	Face conspicuously white, or at least entirely pale.....	39
38b.	Not so	40
39a.	Abdomen with yellow dot only on 7th segment	<i>Leucorrhinia intacta</i> (Dot-tailed Whiteface), male or female
39b.	Abdomen with patterning, spots or stripe	40
40a.	Abd.- intricate batik-like patterning in tan, light brown and dark brown ...	<i>Paltothermis lineatipes</i> (Red Rock Skimmer), female
40b.	Not so	41
41a.	Thorax, eyes, abdomen bright red with small white spot outside of thorax (may be partly obscured by red).....	42
41b.	Not so	43
42a.	Bright white spots of sides of thorax; small dark areas base of wings; reddish legs	<i>Sympetrum illotum</i> (Cardinal Meadowhawk), immature male or female
42b.	White stripes or spots side of thorax; leading edge of wing yellow; no dark basally on wing; jet black legs	<i>Sympetrum madidum</i> (Red-veined Meadowhawk), immature male or female
43a.	Continuous pale streak down abdomen top; pale stigma.....	<i>Libellula comanche</i> (Comanche Skimmer), im. male or female
43b.	Not so	44
44a.	Dark streak down abdomen top; pale stigma.....	<i>Pantala flavescens</i> (Wandering Glider), male or female
44b.	Not so	45
45a.	Red or yellow spots on middle abdominal segments.....	46
45b.	Red only on beginning of abdomen (may be very fine line on middle segments).....	49
46a.	Male.....	47
46b.	Female	48
47a.	Pale spot on segment 7 as wide as long.....	<i>Leucorrhinia intacta</i> (Dot-tailed Whiteface)
47b.	Pale spot on segment 7 longer than wide.....	<i>Leucorrhinia hudsonica</i> (Hudsonian Whiteface)
48a.	Pale spot on segment 7 as wide as long	<i>Leucorrhinia intacta</i> (Dot-tailed Whiteface)
48b.	Pale spot on segment 7 longer than wide.....	<i>Leucorrhinia glacialis</i> (Crimson-ringed Whiteface), <i>L. hudsonica</i> (Hudsonian Whiteface), <i>L. proxima</i> (Red-waisted Whiteface); structural characters necessary
49a.	Lower appendages about half length of uppers	<i>Leucorrhinia glacialis</i> (Crimson-ringed Whiteface), male
49b.	Lower appendage about two-thirds length of uppers.....	<i>Leucorrhinia proxima</i> (Red-waisted Whiteface), male
50a.	Body rose/purple	<i>Orthemis ferruginea</i> (Roseate Skimmer), male
50b.	Not so colored.....	46

51a.	Entirely pale with unmarked abdomen	52
51b.	Not so colored	54
52a.	Leading edges of wings with streak of orange from base to tip.....	<i>Libellula saturata</i> (Flame Skimmer), female
52b.	Not so	53
53a.	Wings with orange stigma and only small orange area on wings, close to base	<i>Libellula croceipennis</i> (Neon Skimmer), female
53b.	Wings with no orange or red	<i>Orthemis ferruginea</i> (Roseate Skimmer), female
54a.	Bright red (male); 2 white spots on side of thorax; inconspicuous dark markings at base of each wing (visible at close range); legs pale	<i>Sympetrum illotum</i> (Cardinal Meadowhawk), male or female
54b.	No dark markings at wing base (may be yellow tinged).....	55
55a.	Larger (>=45mm); entirely yellow to orange	<i>Pantala flavescens</i> (Wandering Glider), male
55b.	Smaller (<=45mm); variously colored, often with conspicuous black markings	56
56a.	Front edge of wing golden on veins or membrane, contrasts with rest of wing (can have pale costa [leading vein]).....	57
56b.	Front edge of wing same color as remainder.....	59
57a.	Sides of thorax plain (rarely marked with darker markings); black edging to yellow stigma	<i>Sympetrum costiferum</i> (Saffron-winged Meadowhawk), male or female
57b.	Sides of thorax with two pale spots (may be almost obscured by red pigment in mature males).....	58
58a.	Stigma all dark; if light spots on abdomen, they are partly obscured by red	<i>Sympetrum madidum</i> (Red-veined Meadowhawk), male
58b.	Stigma bicolored; abdomen with light "porthole" shaped spots low on side	<i>Sympetrum corruptum</i> (Variegated Meadowhawk), male or female
59a.	Well-defined pale stripes on each side of thorax	60
59b.	Sides of thorax plain, or with spots, or with complex pattern of black and yellow	61
60a.	Abdomen with conspicuous white "porthole" shaped markings	<i>Sympetrum corruptum</i> (Variegated Meadowhawk), male or female
60b.	Abdomen without "porthole" shaped white markings on sides of abdomen	<i>Sympetrum pallipes</i> (Striped Meadowhawk), male or female
61a.	Two well-defined yellow spots low on each side of thorax; stigma bicolored	<i>Sympetrum corruptum</i> (Variegated Meadowhawk), male or female
61b.	No well-defined yellow spots on thorax; stigma one color	62
62a.	Abdomen with no black.....	63
62b.	Abdomen marked low on sides with black.....	64
63a.	Pale legs; (<35mm); female's abd. end with 'spout'	<i>Sympetrum vicinum</i> (Yellow-legged Meadowhawk), male or female
63b.	Black legs; (>35mm); ski-tipped appendages.....	<i>Brachymesia furcata</i> (Red-tailed Pennant), male or female
64a.	Sides of thorax with complex pattern of yellow and black.....	<i>Sympetrum danae</i> (Black Meadowhawk), female
64b.	Sides of thorax plain or with faint pattern	65
65a.	Face and wing veins reddish.....	<i>Sympetrum internum</i> (Cherry-faced Meadowhawk), male or female
65b.	Face whitish; wing veins dark	66
66a.	Pale stripes top and sides of thorax; area on thorax between wing bases with 4 'velvet-like' red dots (yellow in females and immatures)	<i>Sympetrum pallipes</i> (Striped Meadowhawk), male or female
66b.	Pale stripes only on sides of thorax; area between wing bases on thorax all red	<i>Sympetrum obtrusum</i> (White-faced Meadowhawk), male or female

END

This information is provided by Kathy Biggs and was originally based on Dennis Paulson's WA Key to Dragonflies at Slater Museum of Natural History. Contact: bigsnest@sonic.net

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