



# BEAUTY IS A BEAST

The loveliest insect of the lake is one badass predator. Revealing the dragonfly's true colours

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Issuing an all-points bulletin for cottage country: aerial assassin on the fly. Considered four-winged and dangerous. Under investigation by the U.S. Air Force. Notable features: stick-like physique, bulbous eyes. Frequents cottage docks. Goes by the alias "Great White Shark of the Sky." A.k.a. Dragonfly.

Yes, folks, the ethereal little insect we love to laud, entrancer and romancer that darts across our cottaging consciousness onto countless tea towels and coffee mugs, is a cold-blooded flying and killing machine. Superbly engineered for this singular agenda, it is ancient, ruthless, rapacious, and awesome. Enter the dragon's den and see for yourself. >>



# THE ART OF A LONELY HUNTER

## 1. THE FABULOUSLY FLEXIBLE FOUR

The dragonfly's two sets of wings can do what most conventional fliers' can't: each wing, controlled by its own flight muscles, moves independently, when the dragonfly so chooses, allowing amazing manoeuvrability. When turning, the wings move out of phase with each other; when flying forward, the front wings flap up and the back wings down; when picking up speed, they beat in unison; when gliding, they "lock" into horizontal position. No wonder this flying ace is the envy of the aerospace industry (see "A-List Aerialist," p. 74).

### Fair-weather friend

Like cottagers, dragonflies are rather listless on cool, grey days, retreating to leafy hangouts in the trees until the sun comes out to warm their bodies and spirits.

## 2. MY, WHAT BIG EYES YOU HAVE

The better to hunt you with, my dear. Compound eyes, each with 15,000 ommatidia, or single eyes, engulf the head and see in virtually all directions (ever tried sneaking up on a dragonfly?). With colour vision that outstrips our own, dragonflies can detect ultraviolet light, meaning that their eyes are acutely tuned to the light of blue sky and are very sensitive to tiny prey moving across it.

## 3. THESE LEGS AREN'T MEANT FOR WALKING

Six spiny limbs cup to form a little basket under the head, grabbing and trapping prey, and then relaying the prisoner into the fearsome mandibles. Essentially a feeding structure, the legs are so far forward on the dragonfly's body, they are good only for clinging to surfaces.

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### Drop-dead colourless

The dragonfly's striking jewel tones—created by pigmentation and light refracting off tissue structures in the body—usually vanish soon after death, leaving only a drab shadow of its former self.

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## 4. STEADY AS SHE GOES

The dragonfly would turn head over heels without the aid of its long, skinny abdomen, or tail, acting as a stabilizer in flight. The 10-segmented tail also houses the insect's reproductive parts and is capable of coital contortions worthy of *The Kama Sutra* (see "Hooking Up at the Lake," p. 76).

## 5. IF JAWS HAD WINGS

The dragonfly's scientific order, Odonata, means "toothed one," an apt, if understated, reference to the razor-sharp mandibles that shred its victims. Most dragonflies catch and eat while flying (handy when you're a busy serial killer), while some perch and ambush. Mosquitoes, midges, blackflies, and horseflies (even other dragonflies) are all on the menu of the toothy terror, which snags its targets with up to 97 per cent accuracy. On a good day, it will rid the world of 50 to hundreds of small insects.

## 6. DOING THE LOCOMOTION

In all insects, the legs and wings emerge from the thorax. But the dragonfly's locomotive hub is skewed to crowd the legs closer to the head (for easier capture of airborne prey) and push the wing bases back (for better balance when flying). The thorax is almost entirely composed of muscle, powering the dragonfly's prodigious aero-feats.>>

### Move over, monarch

Butterflies aren't the only insect to migrate great distances. Many dragonflies do too. Over a few generations and many months, the wandering glider travels across the Indian Ocean and back, a record-setting marathon of 16,000 km.





# COPYCATS AND COUSINS

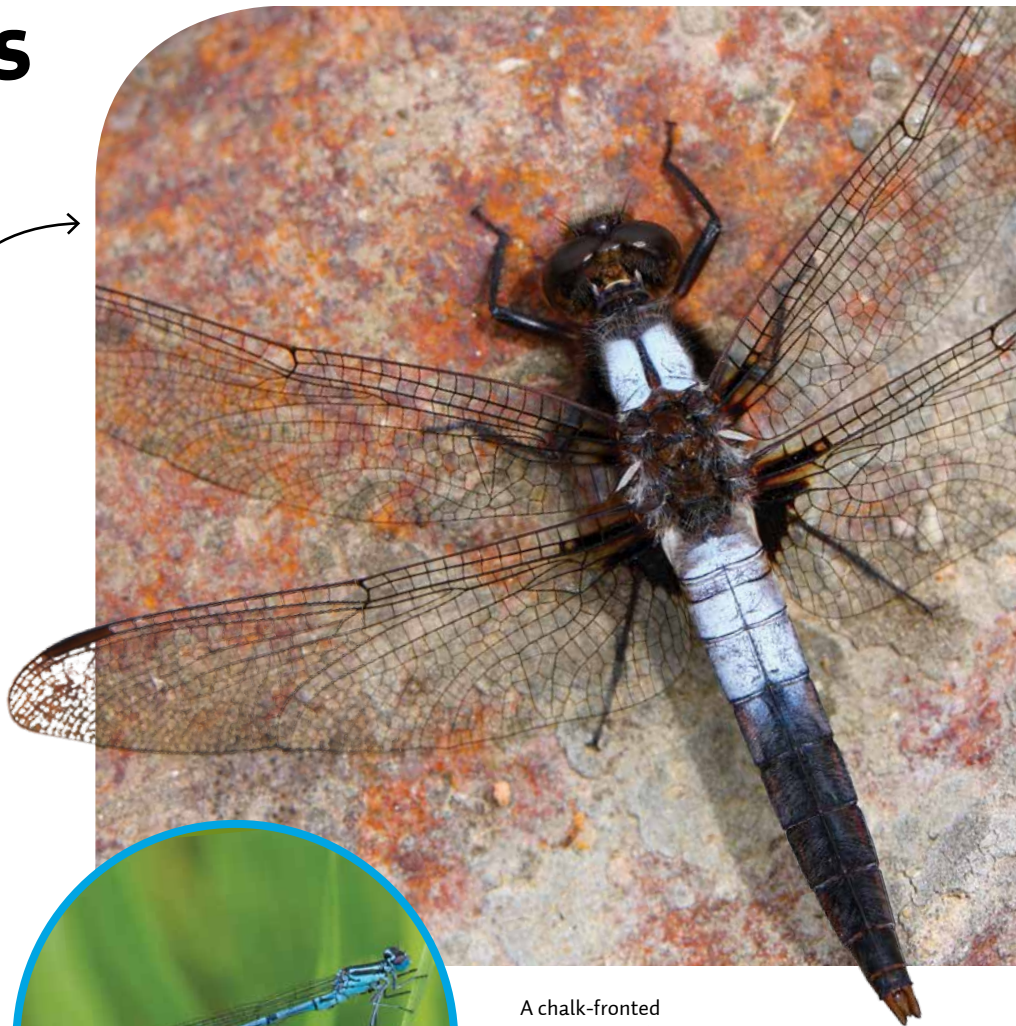
## A-LIST AERIALIST

Dazzlingly acrobatic, dragonflies are among the best fliers on the planet. "They are superbly adapted to flight," says Dennis Paulson, an expert on North American dragonflies and the director emeritus of the Slater Museum of Natural History at the University of Puget Sound in Tacoma, Wash. They can turn on a dime, climb straight up so high you lose sight of them, slowly cruise, then double, triple, even quadruple their speed. Flying full steam ahead, says Paulson, the dragonfly clocks in at 60 km/h—more than 100 body lengths per second.

Zigging here and zagging there, the dragonfly rather resembles a minuscule UFO—unparalleled flying object, of course. Which is why, for decades, the U.S. Air Force has been feverishly researching its flight mechanics, recently inventing a dragonfly-like drone for "reconnaissance objectives." It's just a matter of time before covert operatives concoct the ultimate aircraft—one that's able to flap its wings and dispatch its foes with the dexterity of a dragonspy.

## DRAGON OR DAMSEL? ID TIPS FOR ODOPHILES

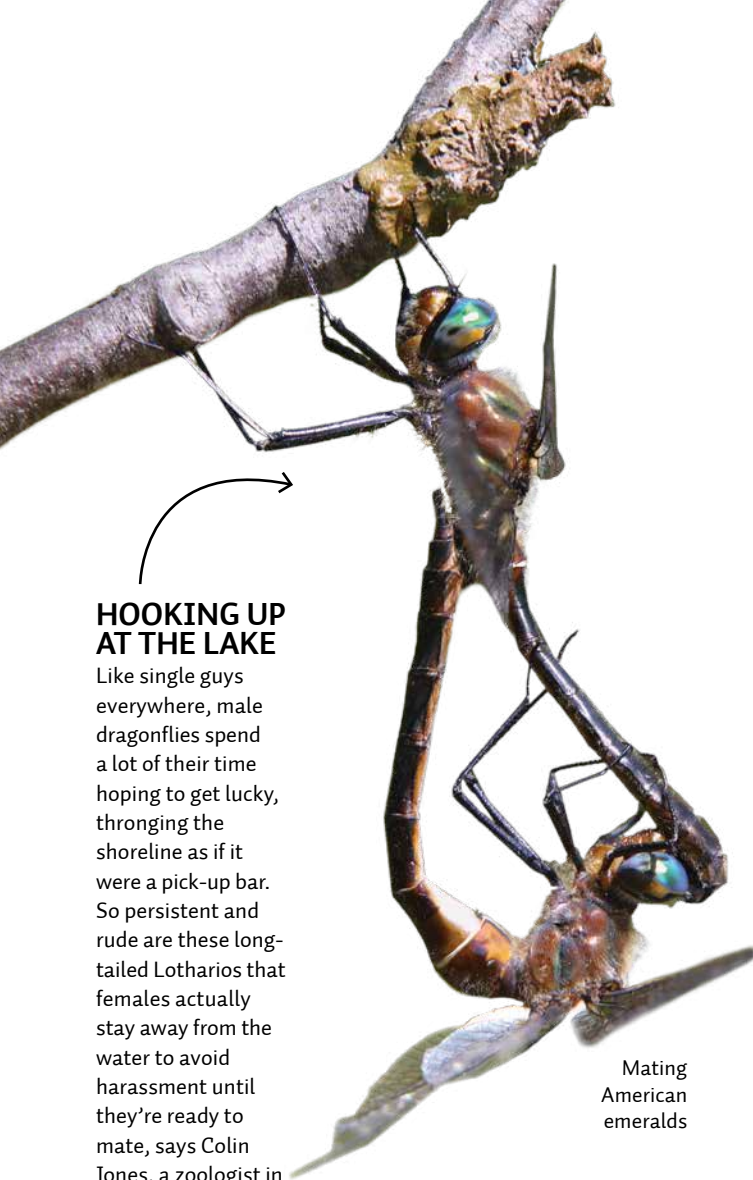
Sharing the same insect order with the dragonfly, the damselfly, as its name suggests, is daintier than its bigger, more robust relative. But fans of "odonates" will best distinguish the two suborders by their wing position at rest: dragonflies hold their wings outstretched, perpendicular to the body, while most damselflies fold theirs upright over the abdomen (just to confuse matters, the exception is a group of damsels called the spreadwings). Damsels flit, lacking the powerful thrust of dragons, but they can perform all the same fancy flight moves and are decidedly non-vegetarian. >>



A chalk-fronted corporal (above). At left, a damselfly (a bluet), with wings folded back.



Dragonflies dart sideways and down, back and forth, and can hover and brake.



## HOOKING UP AT THE LAKE

Like single guys everywhere, male dragonflies spend a lot of their time hoping to get lucky, thronging the shoreline as if it were a pick-up bar. So persistent and rude are these long-tailed Lotharios that females actually stay away from the water to avoid harassment until they're ready to mate, says Colin Jones, a zoologist in Peterborough, Ont., and the vice-president for Canada of the Dragonfly Society of the Americas. The sex act involves some nifty acrobatics, where the male grabs the female by the back of the head with a clasping sex organ at the tip of his abdomen, and she curves her abdomen up to join a second set of sex organs at the base of his abdomen, forming a romantic heart-shaped loop. The "wheel position" is often performed aloft, with the male flying and fornicating at the same time (do not attempt at home).

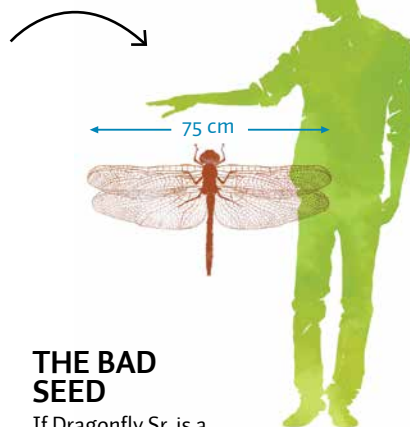
Mating American emeralds

**AmbuShhh!!**  
With wings that beat too slowly to vibrate, dragonflies don't buzz like bees, letting them silently advance on prey. But you will hear a rustle as they pass, the sound of wings brushing each other as they change mode.

## PROUDLY PALEO

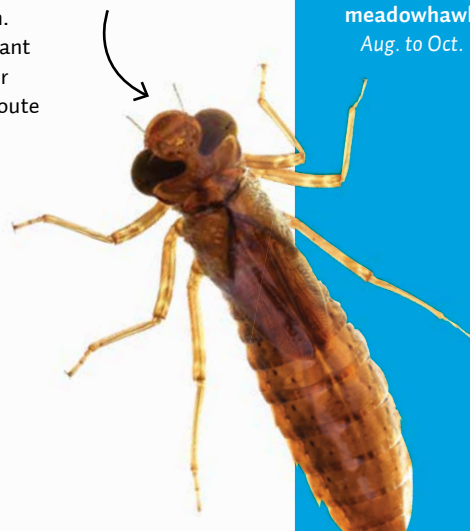
The 300-million-year-old dragonfly is often saddled with the pejorative "primitive" simply because it is "paleopterous," or ancient-winged, still bearing its ancestral features, says Rob Cannings, an Odonatae specialist and the curator emeritus of entomology at the Royal BC Museum in Victoria. Whereas more recently evolved insects, such as bees and flies, can beat their wings extremely fast and fold them flat over their backs (allowing them to crawl into restricted places), the dragonfly cannot. But so what? says Cannings. It flies circles around these more "advanced" critters and, in fact, eats them for lunch. Like another proficient prehistoric predator, the great white shark, the dragonfly evolved early and excelled.

In the bragging rights department, one of the biggest insects ever was a dragonfly-like precursor with a giant 75 cm wingspan. You wouldn't want that hitting your windshield en route to the cottage.



## THE BAD SEED

If Dragonfly Sr. is a classy assassin, Junior is a tiny thug, with a very different MO from its mature self. The terrifying larva lurks underwater its entire life—from one to five years, far longer than the fleeting weeks an adult gets to fly—and has a face and personality only a mother dragonfly could love. Half its head is masked by a huge, hinged lower lip that, shades of *Alien* (aquatic version), unfolds and flings out with lightning speed to snatch and dispatch its victims. Relentlessly voracious, laying waste to lake insects, minnows, and tadpoles, the juvenile delinquent eventually morphs into a grown-up and begins a whole new reign of terror as a dragon in the sky.



## 10 DRAGONFLIES TO LOOK FOR THIS SUMMER

**Springtime darter**  
late May to late June

**American emerald**  
mid-May to mid-July

**Chalk-fronted corporal**  
late May to late July

**Four-spotted skimmer**  
May to Aug.

**Swift river cruiser**  
June to Aug.

**Prince baskettail**  
June to Aug.

**Dragonhunter**  
mid-June to late Aug.

**Black-shouldered spinyleg**  
mid-June to mid-Sept.

**Canada darter**  
July to Sept.

**Autumn meadowhawk**  
Aug. to Oct.