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## Earth Almanac: July/August 2008

By Ted Williams

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Erwin and Peggy Bauer

### **Ancient Beavers**

As summer wanes, mountain beavers start weaning their young. If you live in the Northwest, you may glimpse them at dusk as they venture from their elaborate burrows for the night's foraging. But you don't have to restrict your search to mountains, and don't look for anything remotely resembling those paddle-tailed dam builders that abound in river systems across the continent. The mountain beaver, with no living family relative, is about the size, shape, and color of a muskrat. And like so many other burrowing rodents, it is richly bewhiskered and has small ears, eyes, and tail. The most primitive of all rodents, it traces its ancestry to the early Tertiary Period, some 40 million years ago, when mammals had just started to assert themselves in global ecosystems. That early form may have even given rise to the entire line of chipmunks and squirrels. Mountain beavers construct elaborate burrows with bathrooms, bedrooms, pantries (stocked with vegetation that they have allowed to dry on the surface), and as many as 30 exit/entrance holes. Droppings are stored and re-ingested once, making for more efficient metabolism of woody forage.

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Altrendo Nature/Getty Images

## Doing the Wave

In high summer, robin-size shorebirds called sanderlings sweep down from their high Arctic breeding grounds, fanning out over the world's beaches. Few, if any, shorebirds have greater ranges or migrate farther. The round-trip route for sanderlings trading between the Arctic and southern Argentina, for instance, is 20,000 miles. From a distance it can be easy to mistake sanderlings for dunlins or red knots. But in flight they show more white on dark wings than any other sandpiper, and their foraging behavior is distinctive. Watch them as they chase the retracting tongues of waves, frantically probe for invertebrates with their black, broad-based bills, then dash back to high ground just ahead of the next breaker. On many beaches mole crabs account for the major part of their diet. Horseshoe crab eggs are also important, particularly when migrants require a fast energy boost. The collecting of horseshoe crabs for eel-pot bait has been hurtful to sanderlings and other shorebirds, but it has recently come under tighter control, and last March New Jersey imposed a moratorium.

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David McNew/Getty Images

## Mosquito Killers?

Most everywhere in the nation save northern states, stout, big-eyed, guppy-sized gambusia (a.k.a. "mosquito fish") are hovering near the surfaces of ponds and dawdling streams that are often too brackish or polluted for other fish. Look for them as they snap up insect larvae or as females protect fry they deliver live from eggs that hatch inside their bodies and which were fertilized by spermatophores injected by males. Gambusia are prolific, delivering about 50 fry in a single brood after a gestation period of barely more than three weeks. With just one spermatophore a female can produce six broods, and females born early in the season can breed when they're barely more than six weeks old. Both the eastern species (native to mid-Atlantic and southern states) and the western species (native to the central and lower Mississippi River system and Gulf Coast drainages) have been introduced around the world as alleged mosquito control. The diet of gambusia includes all manner of invertebrates, as well as the eggs and young of fish and amphibians. Calling them "mosquito fish" because they sometimes eat mosquito larvae makes as much sense as calling coyotes "frog dogs" because they sometimes eat frogs. Almost everywhere outside their natural range, gambusia have become worse pests than the mosquitoes they invariably fail to control. They facilitate algae blooms by denuding a water body of herbivorous zooplankton, and they limit or wipe out native species. In the Southwest, for example, they have depressed the threatened Chiricahua leopard frog, helped to extirpate many pupfish populations, and contributed to the elimination of the Gila topminnow from almost all of its range.

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Alan James/Minden Pictures

## Jaws of Life

Save for dimpling mackerel and the tide trails of lobster-pot buoys, the summer sea is still. Suddenly a dorsal fin cleaves the surface, then another and another. Clearly they belong to sharks, huge sharks. You start noticing the diagnostic features of great whites—the tail lobes almost equal in length, the stabilizer keels on the caudal peduncle, the lighter-colored underside—and you can't get the famous line from *Jaws* out of your head: "You're gonna need a bigger boat!" The cavernous, gaping mouth heading for you is at once startling and reassuring. Not even great whites can open that wide. These are basking sharks, the sole member of the family *Cetorhinidae* and the planet's second biggest fish after the whale shark. Basking sharks, which can weigh 8,000 pounds and approach 30 feet in length, patrol the world's temperate oceans, lazily filtering plankton through their gill rakers. Look closer and you'll see the physical characteristics of this species—tiny, vestigial teeth, long gill slits that almost encircle the head,

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and a snout reminiscent of an elephant seal. For centuries basking sharks were commercially plundered for their oil-rich livers, which account for a quarter of their body weight. Today exploitation continues, but for shark-fin soup. The giant shark is listed on the International Union for Conservation of Nature's list of endangered species.

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Dorling Kindersley/Getty Images

## Respecting Elders

Along fertile river banks and forest edges in the eastern half of the nation, American elders are draped with clusters of shiny, blue-black berries. Humans find them bitter, but dozens of bird and mammal species feast on them, particularly after the first frost. The name *elder* derives from the Anglo-Saxon *aeld*, which means "fire" or "to kindle a fire"—this from the traditional use of the dried pith for tinder and the hollowed twigs to blow the embers aflame. Elders are fast-growing shrubs that can approach tree size and frequently form dense thickets, especially where seeds have been spread by bird droppings. When the berries are cooked, it destroys their bitter taste, rendering ingredients for delicious jams, pies, syrups, and wines. The strong-smelling leaves, crushed and rubbed on skin or placed under a hat, are said to make an effective insect repellent.

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Darlyne A. Murawski/National Geographic Image Collection

## Exquisite Moths

Sit by a meadow or garden on a summer morning and with the ascending sun will come a drowsy magic. Perhaps you'll hear it first—a hum against the background music of cicadas and bees. There's a blur of fairylike wings. A hummingbird! But no, it's much too small. And yet there's the flared tail and the body that seems feathered. The creature hovers, then darts to another flower. Everything about it seems birdlike save the head, with its long antennae. Suddenly a nectar-sucking proboscis unfurls, and you realize you are looking at an insect. It is the hummingbird clearwing moth, a species of sphinx moth that occurs almost everywhere in the nation. The wings of newly emerged adults are plum red to brownish black, but after the first flight the scales drop off, leaving translucent centers. Eggs usually hatch in about a week. Young caterpillars are yellow and green with gray or darker green stripes.

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Chris Schnepf/University of Idaho, Bugwood.com

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## Summer Snow

From British Columbia to Alberta and south to California and Wyoming, moist, forested mountains and foothills are draped in a new blanket of white. It consists of the profuse, saucer-shaped blooms of beargrass, which tend to appear in five- to seven-year cycles and in large clumps atop stalks that may be five feet high. While the plant resembles bunchgrass, it's actually a perennial herb related to lilies. Extremely frost tolerant, it remains green through harsh northern winters. The name beargrass may derive from the strong, bearlike odor of its blossoms or the fact that grizzlies use it to line their winter dens. Because it is relished by elk it is also called "elk grass." Other names include fire lily (it usually sprouts from tough rhizomes in the wake of a moderate forest fires within a year) and Indian basket (western tribes wove its leaves into baskets, clothes, and even watertight vessels). Look for beargrass in cool forests of spruce, fir, larch, and whitebark pine.

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Tom Vezo/Minden Pictures

## Hotels on High

The August sun is bright and hot. With so much summer fun left, the last thing you want to think about is winter—unless, that is, you're a purple martin. Uttering musical chirps and raspy twitters, these large, loud swallows hawk dragonflies and, as the day ends, swirl like coal smoke around trees, rising, settling, finally roosting. Within hours they'll strike out for Bolivia, Paraguay, and Brazil. You're apt to encounter purple martins almost anywhere in the contiguous states. And while they're not as common as a century ago, they're recovering in some areas of the East thanks to multi-unit "purple martin hotels" erected by bird lovers. The eastern subspecies has been conditioned to artificial nest sites for centuries, first by Indians, who hung out gourds for them. Now it's almost entirely dependent on nest boxes. Hotels with two dozen or fewer rooms work better than bigger ones. Rooms should be at least six inches on a side, and it's important to provide good ventilation and drainage. A coat of white paint will help cool nests by reflecting sunlight. Be sure to place the hotels in the open and mount them on high metal poles. And to discourage house sparrows and starlings plug entrance holes until martins show up.

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