

INSECTS

antlions

The presence of an antlion is identified by a funnel shaped hole in the sand. The larvae rest at the tip of the funnel. Any wandering insect that slides into the funnel will activate a hair trigger between the antlion's jaw which will shut with force to impale the wanderer.

cicadas

Known best by the high-pitched continuous call of the mating male. Nymphs spend life, several years, underground; the tunnels access plant roots. In the year they become adult, there is a hover period subsurface, a soft adult within an exoskeleton. The emergence from the soil is near sunset. The exoskeleton is shed and left behind on whatever the insect climbs upon. The adult wings are flexed to dry to allow the cicada to fly by midnight as it is a delectable treat for predators.



daddy longlegs

The interesting fact about this arthropod is the slender legs will break off much like a lizard's tail when it is necessary to escape. Daddy longlegs' mouth parts are not fanged like spiders, but like scorpions with chewing mouth parts. The scientific name *Opilio* means shepherd because the legs are likened to the stilts shepherds used to get aloft to count their sheep.

shrimp

Fairy shrimp and tadpole shrimp feed on microorganisms in the mud. The life cycle is completed in a few weeks about the time the water source dries up. The eggs endure the heat and are perhaps spread from the mud on the feet of birds. Tadpole shrimp resemble trilobites. Fairy shrimp are almost transparent, swim upside down, and the males have a large additional antennae to clasp the female to mate.

creosote woolly gall

This bright reddish brown intrusion looks like a parasitic plant growth not an accumulation of an insect. A tiny fly deposits an egg in a terminal bud, which hatches a red grub. The plant grows the gall around this feeding grub. By residing in the creosote the grub is protected from disturbance by herbivores because the creosote produces defensive chemicals to divert chomping.



Riparian Ecology

Richard Valdez taught a zesty five day condensed edition of riparian ecology. I had to secure permission to reprint the suggested reading list from Valdez course after writing 'Elements of Leadership' in Volume 5 Issue 3 about the richness of subjects also to be found in the bibliography. I've determined Valdez is an assured teacher and surmise these readings will be pertinent to those of us perpetuating our study of the Colorado Plateau.

For the first time I heard that the Colorado Squaw fish had a name change in the past year. Native Americans expressed concern about the utilization of "squaw." So listen up when someone mentions the Colorado Pike Minnow. You do know the fish.

The coolest element about this course was relating to Dr. Valdez's illustrations about water levels in the course of the last decade. I don't run into many who have remained around the river that long and have had similar observations about the phenomenon of hundred year floods, dam restitution, relationship of non-native growth and the entrenched meander. The terminology sustained me. I'm in the habit of basic-sizing concepts for laymen, children, foreign speaking entities, and entry level guides that terminology is oft foregone. Let me share with you some of my favorite riparian ecology vocabulary.

Aquatic lives are growing or living in or on the water. Xeric pertains, not only to a terrestrial zone, but, specifically, dry lands. In between these areas is a habitat that is moderately moist, the mesic region, which is often the riparian.

In Grand County, land was purchased to set aside a unique and vital edge of the river, the riparian known as the Matheson Wetlands, managed by The Nature Conservancy. Federal regulation, section 404 of the Clean Water Act, specifies that the Army Corps of Engineers is responsible for issuing permits to discharge dredge or fill material into the United States waters, including wetlands. Allochthonous organic matter enrich wetlands when spring run-off rises over the banks, sweeping up debris upstream and redistributing it. This is an instance of the ecology of a lotic (fluvial/flowing) system. On another perspective, lentic (adfluvial/lake) systems, autochthonous organic matter grows from within, like the growth of algae. Photosynthesis must be able to penetrate the water to spur growth.

Where the river is shallow or thin enough for light to penetrate for photosynthetic production and the nutrients are present, it is possible for a flowing water way to also be autochthonous.

A person can't study riparian ecology without considering geomorphology: how an area is shaped by the surrounding geology. Wetlands are a result of geomorphology and give way to a dense and diverse biomass. The razorback sucker reproduction is affected by changes of the historic reckoning of flows into wetlands. Other species have adapted to the narrow canyons that tumble columnar collapse creating a debris flow. This action feeds particles into the river. The grains bear an incipient motion, sulsatating downstream into suspension. The thalweg is the current of velocity and how the energy is

channeled. Where a constriction exists from the peeling of canyon walls into the river, ponding will occur.



Humpback chub

The thalweg is the flow through the constriction into the expansion zone. Here there is a recurrent channel, it runs between shore and a forming sandbar, accelerating towards the upstream end creating a backwater, nursery to many fish. Scour channels are located at the end of sandbars, that deep edge downstream. Chute channels can be thought of as the highwater route, it is often abandoned. Another nursery area is flooded bottomland.

Neat facts about fish:

The razorback hump is a fusion of three bones; humpback chub has a hump of fat and muscle.

Cutthroat trout are native species to the Colorado River. They have pharyngeal teeth. These teeth pull food into the gut like a hinged claw action, they are also binge feeders.

Bonytail has the least known about it and most endangered in North America. In the 1950s - 60s, sportsmen were catching them. Signs of decrease predate the Flaming Gorge Dam, perhaps they were more susceptible to the predication of non-native species and suffer biological extinction. There are so few that they can not find each other. There are now 70 species in the main stem of the Colorado River, 34 of them are predators, when there originally was only one predator, the Colorado Pike Minnow. Life strategies, phonology, of fish are responsible for the unusual adaptations seen in the native species. Some species rely on rheophylic communities, the life that occupies the interstitial voids in a stream system, as in, cobbles. Sand bottoms are ordinarily sterile and life depends on other islands of productivity from the dragging overhanging plants along the shore to alluvial fans blowing in substrate to backwater conditions and flood bottoms.

SUGGESTED READING:

Valdez recommends the following reading:

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- Jensen, S. and W.S. Platts. 1987. Processes influencing riparian ecosystems. Pages 228-232 In: Mutz, K.M. and L.C. Lee (tech. coord.) Wetland and riparian ecosystems of the American West. Proceedings of the Eighth Annual Meeting of the Society of Wetland Scientists, May 26-29, 1987, Seattle, WA.
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- Kennett, R. and O. Tory. 1996. Diet of two freshwater turtles, *Chelodina rugosa* and *Elseya dentata* (Testudines: Chelidae) from the wet-dry tropics of northern Australia. Copeia 1996:409-419.
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- Reisner, M. 1986. Cadillac Desert: the American west and its disappearing water. Penquin Books, New York. 582 pp.
- Roper, B.B., J.J. Dose, and J.E. Williams. 1997. Stream restoration: is fisheries biology enough? Fisheries 22:6-11.