

WHY FISH NEED TREES AND OTHER STORIES ABOUT CONNECTIONS.....

Topanga Canyon Docent Training
Presented by Rosi Dagit

October 2005

Start with definitions:

Ecology – interrelationship between organisms and their environment

All species require food, shelter, water, suitable climate, opportunities for successful reproduction and recruitment, diversity of ages, sizes, for population stability.

Bio-diversity – refers to the diversity of species in a given ecosystem

Umwelt – the perspective and experiences of the world unique to each species

All species have a sense of place, spatial orientation, sense of time and growth, responses to the world.

Oaks as a Keystone species:

18 species of oaks in CA, numerous hybrids

3 common species in SMMts:

Quercus agrifolia Coast Live Oak

Quercus lobata Valley Oak

Quercus berberidifolia Scrub Oak

Physical elements: size, tough wood, wide canopy, widespread root system

Contribute to temperature moderation, erosion control, slope stabilization

Provides both horizontal and vertical habitat, spatial distribution, and seasonal variation

Chemical elements: tannins, sap

Since so many critters eat various parts of the oak, the tannins are a needed defense to

Reduce and control the nibblers

Biological elements:

Produce food for many species, from fungi to mammals

 Directly eaten: acorns, leaves, roots, twigs, branches, heartwood, sap, pollen

 Mast availability influence population cycles of many mice, voles, badgers, deer, owls, jays, etc.

 Indirect source: host of mistletoe, galls, numerous insects

Provide shelter: young trees provide nest locations, older trees more complex structural diversity, availability of nesting cavities in both living and dead wood

Oaks affect lives of many animals, and these animals in turn affect the life cycle of the oaks.

Pavlik, et al. 1991 compiled a list of species that require oaks in order to survive:

Close to 1,400 species of native flowering plants

Close to 200 disease causing fungi and an uncounted additional number of beneficials

Over 5,000 species of insects

80 species of reptiles and amphibians

Over 100 species of birds, oak woodlands are in the top 3 habitats for bird richness

60 species of mammals

What about fish?

Three species of native fishes in the SMMts:

Southern Steelhead Trout	<i>Onchorhynchus mykiss</i>
Tidewater Goby	<i>Eucyclogobius newberryi</i>
Arroyo Chub	<i>Gila orcutti</i>

Why do fish need trees?

The story of the steelhead trout and trees in Topanga.....

Food: abundance of macro-inverts and algae related to physical environment (substrate, sedimentation, water quality, water quantity, instream habitat distribution)

Shelter: role of canopy cover, streambank stabilization, small and large woody debris, substrate, undercuts

Reproduction: temporal and spatial habitat needs, gravel, refugia, migratory access, flow

Age diversity: habitat characteristics and size distribution

Protection from predators: refugia, depth, access limitations

Oaks are critical riparian species, along with sycamores, alders, bay, willow.

Other connections.....

The story of the CA oak moth.....

Found only in CA and AZ, love to eat the leaves of oaks!

Adult pale brown wings, about an inch wide outspread

Larvae initially is white with black spots, grows to about 1 inch long, green with yellow and black stripes. Does not spin a cocoon,,,,,1/2 inch pupa hangs on leaves and trunks.

Up to 3 generations a year! Lives from 15 weeks in summer to 29 weeks in winter.

Main food for western bluebirds, Nuttall's woodpeckers, white-footed mice....

The story of the western pond turtle.....

Used to be found from Canada to Baja in coastal regions up to 5,000 feet

Now endangered in Washington and Oregon, CA species of Special Concern

fewer than 10 populations over 100 individuals between Ventura and Mexico remaining

Live up to 30 years and can travel over 2 miles

Spends spring and summer in ponds and pools. Aestivates under leaf litter rest of year

Scrub oaks and laurel sumac preferred sheltering areas

Mate in spring, lay eggs in summer, young hatch out following spring

Eaten by ravens, raccoons, coyotes, bobcats, herons.....

The story of Scrub jays and oaks.....

Jays and oaks have worldwide overlapping distribution

Some say one cannot live without the other, appears they evolved together

Jays rely on oaks for insect larvae in spring, nesting sites, acorns in rest of year

Can move and store 4,500 acorns a season, store in crop and disperse for over 1 mile

Tests each acorn by shaking, discards those with weevils,

Like to cache on edges in good soil with good light, perfect for germination

Predators of jays: hawks, coyotes,

The story of the woodrats (aka packrats).....

Nocturnal resident in oak woodlands with dense brush

Oak twigs and branches part of large nest structures, sometimes in oak trees

Nests occupied for up to 20 years by succeeding generations, shared by many other species like salamanders, lizards, mice, snails, slugs

Live for 2-3 years

Leaves and acorns major foods, also flowers, nuts, seeds and fungi

Lots of acorns = lots of woodrat babies

Cache acorns for winter food – close to 20 pounds in one cache in San Gabriels

Communicate by tail –rattling, wide range of whirring and rapping sounds produced by hitting the tail on different things

Predators; everyone!

Some other examples of oak connected species:

Tarantulas

Lorquins admiral

Arboreal salamandar

CA Newt

Western Toad

CA Tree Frog

Pacific Tree Frog

Garter snake

Ringneck snake

Acorn woodpecker

Badger

Mexican freetail bat

Big brown bat

Coyote

Mountain lion

Grizzly

For more info:

CA Oak Foundation. 2002. The Oak Woodland Bird Conservation Plan.

Keator, Glenn. 1998. The Life on An Oak: An intimate Portrait. Heyday Books

Logan, William. 2005. Oak: The frame of Civilization. W.W. Norton company

Pavlik, et al. 1991. Oaks of California. Cachuma Press

Handouts:

Biological Resources of Topanga