JEPSON PRAIRIE PRESERVE

Handbook

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INVERTEBRATES

Basically, invertebrates are animals which have no backbone. The invertebrates come in all shapes, sizes and colors. Some are obviously without skeletal structure, while others, such as beetles, have an exoskeleton or outer shell. Invertebrates are everywhere and occupy every conceivable niche in every conceivable biological system; they fly, crawl, tunnel through the earth and swim. Some invertebrates are beneficial to humans, such as garden worms which aereate the soil. Other are definitely not, but may play a vital role in the web of life, such as the black gnats which swarm on the Preserve in mid-May.

The discussions which follow deal with selected invertebrates which are either common and easily observed or special to the Preserve.

Delta Green Ground Beetle

This state-listed endangered species was first described in 1878 from a single specimen. Unfortunately the collector did not note the location from which it was collected. The beetle was rediscovered in 1974 by a UC Davis student. The rediscovery included beetle sitings in two locations, Jepson Prairie Preserve's Olcott Lake and a similar playa-type pool on nearby private property. In 1976, the pool on private property was plowed. The only known habitat for the delta green ground beetle is Jepson Prairie Preserve.

This tiny green beetle, with its striking metallic green coloration and diurnal, predatory habits, resembles a tiger beetle much more than its close relative, the ground beetle. It uses its large, pointed mandibles to pierce soft-bodied prey such as midge larvae. The delta green ground beetle probably forages on damp, open ground in the late morning and early afternoon when temperatures are fairly high and the winds minimal. The beetles emerge and lay their eggs in early February, perhaps considerably earlier. Apparently they aestivate through the summer and fall. The larvae, collected for the first time in 1982, take 35-45 days to become adults.

Solitary Bees

Many of the early spring flowers characteristic of the Jepson Prairie Preserve present impressive displays of color. Common names such as goldfields and meadowfoam attest to this. These flowers have evolved their showy displays, not for our enjoyment, but rather to attract insects that will transport pollen. Insects that visit these plants include bees that are specialists on flowers of one genus or species of flowering plant. These bees depend on their floral hosts for pollen and nectar to feed their young. Prominent showy flowers at Jepson Prairie pollinated by specialist bees include yellow carpet (*Blennosperma*), goldfields (*Lasthenia*), meadowfoam (*Limnanthes*) and downingias (*Downingia*).

Specialist bees that pollinate these four genera of showy flowering plants at the Preserve are solitary, ground-nesting andrenids (*Andrena* and *Panurginus*). These bees emerge in close synchrony with the blooming of their host plants. Males usually emerge first and inseminate females as they emerge. Females select suitable areas of soil and excavate nests several inches deep. Soil dug from the nest accumulates at the surface in a small mound (tumulus). Nests typically consist of a vertical shaft and several lateral tunnels, each ending in a single brood cell. Walls of the brood cells are highly polished and lined with a waterproof waxy material secreted by the female. She then gathers pollen from appropriate host flowers and transports it to her nest in a brush of hairs on her hind legs. After several trips, she adds some nectar to the accumulated pollen and