Vernal pools reflect seasonal changes

LLNL's wild side

By Jennifer Garrison

The new year is a time of renewal when we take a moment to reflect on our lives and make resolutions to change our ways. In California, the new year is also a time of renewal in nature. Nothing better exemplifies this than the rebirth of vernal pools in the rolling grasslands in the Tri-Valley and Central Valley. Not many people notice temporary wetlands, but these little oases play an extremely important role in Californian grasslands, providing water, habitat and food for many wildlife species.

Vernal pools are a type of temporary wetland that was once common but now is quite rare due to large-scale alteration of lands for agriculture and development. 'Vernal' means spring in Latin, and vernal pools are so named because of the amazing growth of flowers along the drying edge of the pools in the spring.

Despite the name, winter marks the actual beginning of the life cycle of vernal pools, as winter rains fill depressions. During the winter, vernal pools may look like nothing more than a big puddle, but they are already teaming with life. Both the California red-legged frog and California tiger salamander use temporary wetlands to breed in the early spring. In addition to our amphibian friends, there is a cornucopia of wildlife species waiting to "spring to life" when the vernal pools begin to fill with water.

Among these are the vernal pool tadpole shrimp and fairy shrimps (which resemble "sea monkeys" or the brine shrimp you had as a kid). These shrimp survive the dry phase of the pool sealed into tiny living time capsules called 'cysts' (which are really shrimp eggs with a special coating). The cysts hatch when they are submersed in water, and the baby shrimp grow to maturity in a few weeks to two months. The mature shrimps mate and produce new cysts, which can remain dormant for years. Because their unique habitats have become so rare, vernal pool tadpole shrimp and several species of fairy shrimp are classified as federally endangered under the Endangered Species Act. Other common residents of vernal pools include beetle and dragonfly larvae, western spadefoot toads, and pacific tree frogs. Bobcats, coyotes, badgers, herons and egrets also visit the pools to drink water and to snack on the tasty critters living there.

As the pools dry and the animals depart, flowers bloom in concentric rings around the pool. Colors range from white to bright yellow to hot pink and purple. These vernal pool plants, many of which are found nowhere else in the world, have wonderful descriptive names, such as palmate-bracted bird's beak, little mousetail, calicoflower, monkey flower, and woolly marbles. All vernal pool plants are short-lived, and grow, flower, and put out seed while there is still moisture around the pool. The seeds will then wait patiently for the rains to begin, to start the whole process again.

By the time the vernal pool has completely dried up in the summer, there is little sign to the casual observer of the plethora of life found there only a few months prior. The moral of the story is that sometimes first impressions can be deceiving — something that appears to be a plain brown field in the heat of summer can transform into something very special in the winter and spring. This winter see if you can find a vernal pool. Then remember where it is, go back to visit it as the seasons progress, and see what changes time brings.

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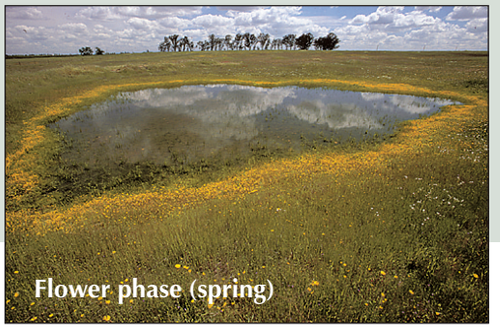
A typical vernal pool in the spring. Notice plant species change as you move away from the wetter center. The purple in the center of the photo is not water; it comes from thousands of purple flowers.



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The three phases of the vernal pool life cycle. There are many vernal pools in the Livermore Area, especially in North Livermore in the Springtown area.