

Kelly Farm

is a 397 acre property. The farm has a holding pond that can be filled during the winter and spring to provide water for summer irrigation. Summer irrigation allows two local dairy producers to grow multiple hay crops in a season. Duer Creek crosses the property, traveling toward its confluence with the Laguna de Santa Rosa. Seasonal wetlands and valley oaks dot the landscape. A wetlands creation project occurred in 1989, creating freshwater marsh habitat just above the Laguna de Santa Rosa annual flood plain. A number of special management projects have occurred in both non-farmed areas, as well as throughout the greater farm.



Projects

Kelly Farm Demonstration Wetland

Kelly Farm Demonstration Wetland was constructed in 1989 to study the benefits of tertiary-treated municipal wastewater (recycled water) for wetland creation and restoration. Wetlands that are of high value to wildlife typically include a variety of habitat and the Kelly Wetland was designed to provide diverse habitat types. The habitat types that are present at the Kelly Wetland include the following:

- Open Water – Open water areas attract resident and migratory waterfowl. The open water areas provide resting areas for water birds. Shallow water provides feeding habitat for wading and dabbling birds, and deep water provides feeding habitat for diving ducks.
- Emergent Wetland – Rooted aquatic plants that extend above the water surface typically grow in areas where water depth is less than three feet. The plants provide cover (protection from predators and heat) for birds and fish. As a result, nesting occurs amongst the emergent vegetation. Seeds from the plants also provide food for birds, and growth on the plant stems provide food for fish.
- Riparian Vegetation – Trees and shrubs on the immediate shore of a wetland provide nesting and roosting habitat for birds. Island habitat can provide a nesting area that is relatively predator-free. Riparian vegetation also provides food and shade.
- Upland Vegetation – Trees and shrubs in the vicinity of a wetland provide habitat for birds and mammals that can use the wetland as a source of food.

Upland, riparian and emergent vegetation was planted at the Kelly Wetland to accelerate the development of high quality habitat. Eight native upland and riparian tree and shrub species were planted. They are Valley oak, willow, box elder, hawthorn, poplar, dogwood, Oregon ash, and elderberry. Survival and growth of the upland vegetation has been excellent.



Emergent vegetation was planted in Cells 1, 2, and 3. California tule was planted in areas of appropriate depth through these cells and in controlled study areas. Tule is preferred in wetland habitat because it provides the highest quality food and habitat. Other wetland plant species (such as cattails and duckweed) were introduced in just a few locations for natural propagation. Initially, just a few introduced species were present; in 1992, 62 wetland plant species were present in the wetland.



Duer Creek

Duer Creek is a small seasonal drainage that crosses Kelly Farm. Beginning in 1998 a minimum setback from the bank was established and native vegetation was planted. The species planted along the creek include basket sedge, willow, ash and valley oak. Riparian vegetation provides important food, shelter and shade for both aquatic and terrestrial wildlife. The corridor furnishes animals with a route to migrate or disperse under cover. Riparian and in-stream habitats support each other, providing necessary resources. Stream-side vegetation is rooted in rich soil, obtaining growth nutrients. The roots of trees and shrubs help hold the soil in place, preventing erosion. Leaves drop into the water, supplying food for aquatic microorganisms and insects. Insects and other invertebrates are consumed by fish that are in turn consumed by other animals. Organic matter is broken down by decomposers and returned to replenish the soil. Dense riparian canopy shades the water, preventing exposure to the sun, and resulting in a significantly lower water temperature. Many organisms have a narrow range of tolerance for temperature. Colder water holds more dissolved oxygen, a critical factor for many animals, especially certain species of fish.

Duer Creek Mitigation

The Duer Creek mitigation compensates for seasonal wetlands lost when the lower portion of Duer Creek flowing across the property adjacent to Kelly Farm within the Laguna de Santa Rosa annual floodplain, was planted with riparian vegetation. Grid #9 is a 22.7 acre grid on the 397 acre Kelly Farm. This area is rich in historic seasonal wetlands. Grid #9 was removed from irrigation to promote the health and biodiversity of seasonal wetland species. Ongoing surveys for seasonal wetlands plants are conducted. Amphibian surveys confirmed the presence of California tiger salamander (CTS).

Valley Oak Buffer Areas

A farming setback from valley oaks allows natural regeneration under mature trees. The area under the canopy or drip-line of a tree is where acorns fall and germinate. Feeder roots close to the surface extend out even beyond the canopy and require protection from disking and plowing. Irrigation is redirected away from the mature trees to avoid stimulating weedy competition under the canopy and to lessen the potential for increased fungal growth on living trees. Oaks play an important role in the Laguna ecosystem. The valley oak is the most abundant oak species in the Laguna. They are found as a dominant tree in both the riparian and upland communities. Oaks form the foundation of an intricate food web where herbivores consume acorns, leaves, twigs, sap, roots, flowers and pollen. Because oaks have a diversity of food to offer, they support many types of organisms that use different resources from the same tree. Valley oaks provide shelter to many organisms. Every part of an oak from treetops to root tips is utilized. In the leaf canopy the wind, light and temperature are moderated. Birds take advantage of this protection to build nests and insects deposit eggs. Cavities in the limbs and trunks provide nesting and hiding opportunities even long after the tree has died. A standing dead tree is referred to as a snag. Often snags are removed and with them a potential home to animals using the cavities or living under the bark. Snags also serve as perches, used by birds of prey as they hunt. The leaf litter under the tree is a moist, nutrient-rich location where many invertebrates and microorganisms live. The soil below the rich litter, surrounding the roots, is home to many arthropods, protists, fungi and bacteria.

Invasive Species

Invasive species have the ability to thrive and spread aggressively outside of their natural range. Plants imported to new habitats have the ecological advantage of being introduced without their natural predators. The insects, diseases, parasites and foraging animals that prey on them are no longer present. Weed management requires multiple tools including, removal by hand, repeated mowing, grazing, burning and herbicide. All these management strategies have been employed on Kelly Farm with the exception of grazing. The species of special concern include perennial pepperweed (*Lepidium latifolia*), harding grass (*Phalaris aquatica*), Himalaya berry (*Rubus discolor*) and bristly ox tongue (*Picris echioides*).