

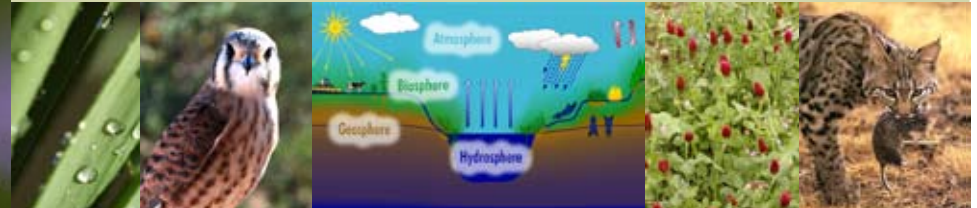
# BIODIVERSITY

**Biodiversity (or biological diversity)  
is the variety of life.**

From bacteria and fungi to grasses, ferns, trees, insects, and mammals, biodiversity encompasses all life forms. More than that, it covers the full range of processes, such as nutrient cycling, carbon and nitrogen fixation, pollination, and beneficial predation.



**To conserve biodiversity is to maintain and enhance  
the capacity of the land to sustain a variety of native species  
and functioning ecosystems  
that support farms and wild communities.**



**WHAT IT IS  
&  
HOW TO INCREASE IT  
ON YOUR FARM**

What does this have to do with your farm? Conserving biodiversity can benefit your farm and the larger landscape. Agriculture that provides natural habitat, combined with similar efforts across the land, can meet the needs of multiple species, support pollination and pest control, protect water quality, and make a meaningful contribution to wild Nature. On most farms, opportunities exist to accommodate the needs of local species with only minor changes to farming practices. Many farmers are already contributing to biodiversity by some of their activities.

Morel: Taylor Lockwood, [www.fungiphoto.com](http://www.fungiphoto.com); Fern: Chris Evans, [www.ipmimages.org](http://www.ipmimages.org); Wildflowers: Glen Little; Lacewing: Jack K. Clark, UC Statewide IPM Project; American kestrel: John Pickering, [www.discoverlife.org](http://www.discoverlife.org); Nitrogen cycle: Illinois State Water Survey, [www.sws.uiuc.edu](http://www.sws.uiuc.edu); Red clover: Dawn Mathes

## Caring for the Land

Consider how habitat can contribute economically to your farm, and how your farming practices can benefit wildlife and the landscape. Use pesticides sparingly, and time sprays to have least impact on sensitive species such as native bees and fish. Provide habitat by cover-cropping, planting a diversity of crops, leaving food/cover in the fields, and managing fields for native pollinators, predatory birds and four-footed rodent-eating wildlife. Increasing and maintaining biodiversity on farms can be compatible with food safety practices. Habitat attracts wildlife with minimal risk of harboring species that carry human pathogens.

- Wild Farm Alliance. Farmer's Guide to Biodiversity. [www.wildfarmalliance.org/resources/organic\\_BD.htm](http://www.wildfarmalliance.org/resources/organic_BD.htm)



David Cappaert, ipmimages.org

## Restoring Native Habitat in Wilder Margins

Restore degraded habitat on your property based on native species and ecosystems present on the land before it was turned over to agriculture. Nearby intact ecosystems can be useful models. Revegetate riparian areas and wetlands, which have the ability to breakdown nitrogen and toxins, and which recharge groundwater and protect against flooding. Restore and maintain other wild margins using a high diversity of native plants that then will support a diverse array of wildlife.

- California Native Plant Society. [www.cnps.org](http://www.cnps.org)
- NCAT/ATTRA. Protecting riparian areas. [www.attra.org/attra-pub/riparian.html](http://www.attra.org/attra-pub/riparian.html)
- Society for Ecological Restoration. [www.ser.org](http://www.ser.org)
- CAFF. Conservation and Restoration Manual. [www.caff.org/programs/WSP/wsp.shtml](http://www.caff.org/programs/WSP/wsp.shtml)



Sam Earnshaw

## Installing Native Grasses & Hedgerows

Start increasing biodiversity by planting native plants in those odd-shaped pieces of land or along ditches, fences and roads that harbor weeds and are problem erosion sites. Native trees, grasses and shrubs support pollinator and predatory insects and other wildlife beneficial to the farm. This perennial vegetation is also good at filtering runoff, stabilizing soils, modifying wind, and controlling dust.

- Community Alliance with Family Farmers. Hedgerows for California Agriculture. [www.caff.org/programs/farmscaping/hedgerowin.shtml](http://www.caff.org/programs/farmscaping/hedgerowin.shtml)
- Yolo County Resource Conservation District. Bring Farm Edges Back to Life. [www.yolorcd.org/library/index.shtml](http://www.yolorcd.org/library/index.shtml)



Sam Earnshaw

## Protecting Existing Habitat

Protect sensitive habitats from degradation, and conserve existing native habitat on your land rather than converting to agricultural production. In any region, farms should aid in protecting enough native habitat to maintain self-sustaining populations of native plants and animals. You can help by identifying high-priority existing habitats, including grasslands, scrublands, forests, oak woodlands, and wetlands; by eliminating non-native invasive species; and by encouraging the re-establishment of native vegetation.

- Biodiversity Partnership/Defenders of Wildlife. Learn how your farm can be part of a conservation network. [www.biodiversitypartners.org](http://www.biodiversitypartners.org)



## Controlling & Removing Invasive Species

The spread of non-native or exotic plants, animals, and diseases poses a major threat to biodiversity, pushing some at-risk species to the edge of extinction. Invasive introduced species out-compete native plants and animals for space, food, and water. Some may also fundamentally alter ecological processes, making it difficult or impossible for native species to survive. It is critical to control populations of established invasives on your property and to aggressively prevent the spread of invasive species, especially those that threaten natural areas.



Kenneth M. Gale, forestryimages.org

- CA Invasive Plant Council. [www.cal-ipc.org](http://www.cal-ipc.org)
- The Nature Conservancy. The Global Invasive Species Initiative. <http://tncweeds.ucdavis.edu/methods.html>

## Learning About At-Risk Species & Habitats

Endangered plants and animals are those in danger of becoming extinct within the foreseeable future. Maintaining these species is a very high priority for the conservation of biological diversity. Learn about and protect these species on your property. By providing habitat and wildlife corridors for these species, your farm can make a major contribution to their survival.

- NatureServe. Information on rare and endangered species by particular watersheds and threatened ecosystems. [www.natureserve.org/explorer](http://www.natureserve.org/explorer)
- California Natural Diversity DataBase. Rare plants and wildlife occurring in USGS quad maps. [www.dfg.ca.gov/whdab/html/quick\\_](http://www.dfg.ca.gov/whdab/html/quick_)



Kelly McAllister

## Using Incentive Programs

You can receive assistance from different agencies and organizations to help with your conservation efforts. Cost-share programs help defray costs of creating riparian buffers around streams or restoring wetland, grassland, or woodland areas. Long-term easements can help protect priority habitat from damage or development. Extension services, resource conservation districts, and other local groups can offer technical assistance to get you started and help you along the way.



Robert Shantz

- Biodiversity Partnership/DOF. [www.biodiversitypartners.org/state/ca/incentives.shtml](http://www.biodiversitypartners.org/state/ca/incentives.shtml)
- USDA NRCS. Farm Bill conservation programs. [www.nrcs.usda.gov/programs](http://www.nrcs.usda.gov/programs)
- The Nature Conservancy. [www.nature.org/aboutus/howwework/conservationmethods](http://www.nature.org/aboutus/howwework/conservationmethods)
- WFA Briefing Paper. Farming with the Wild Forever. [www.wildfarmalliance.org/resources/briefing.htm](http://www.wildfarmalliance.org/resources/briefing.htm)

## Planning & Monitoring

Develop a plan with specific conservation goals for your property and determine if the farm and surrounding area have benefited from your efforts. Review and revise the plan based on your results. Ways to begin include:

- Inventory wildlife and major native plants.
- Create a farm map that includes hedgerows, woodlands, riparian zones, invasive species, eroded areas, and other wildlife habitats.
- Prioritize actions to conserve biodiversity based on regional conservation goals, at-risk species and sensitive habitats, problem areas, and value to the farming operation.
- Use before and after photographs, water quality analysis, and plant and wildlife surveys to assess the biodiversity successes.



Sam Earnshaw/Jo Ann Baumgartner

## A Farm Is Not an Island

Picture your property in a larger context of the surrounding landscape. Think of the way water flows through your land, the routes wildlife take, and the connections to your neighbors' properties and wildlands beyond. Learn about what conditions local species are adapted to, and what ecosystems historically occupied the farm. Habitat conservation can ensure clean water leaves your land, and can provide a stopover for migratory birds and movement corridors for wildlife. After all, water, species and habitats do not follow property lines.



Work with your neighbors to make your efforts more effective. Individual farms and ranches are an important part of fish and wildlife habitat. However, when managed at a watershed or regional scale, the farm becomes more accessible for fish, wildlife and pollinators, and the regional ecosystems become naturally complex, stable, and resilient. By collaborating with neighboring farmers, private organizations and public agencies, you can achieve even broader conservation goals.

- View aerial photos and topo maps of your property and others that surround it. [www.googleearth.com](http://www.googleearth.com) or [www.teraserver-usa.com](http://www.teraserver-usa.com)
- Wild Farm Alliance Briefing Paper: Making the Connections for Nature. [www.wildfarmalliance.org/resources/wfaconnectbrief.pdf](http://www.wildfarmalliance.org/resources/wfaconnectbrief.pdf)

Cover Page - Barn owl: Bert Kersey, [barnowls.com](http://barnowls.com); Stream: Ellen Isaacs, [eurekaphotos.com](http://eurekaphotos.com); Hedgerow: Sam Earnshaw; Bumblebee: David Cappaert, [ipmimages.org](http://ipmimages.org). This Page - Aerial photo: [www.googleearth.com](http://www.googleearth.com); Phil Foster Ranches: Dawn Mathes

## Work with Supportive Organizations

- Wild Farm Alliance [www.wildfarmalliance.org](http://www.wildfarmalliance.org)
- Community Alliance with Family Farmers [www.caff.org](http://www.caff.org)
- Audubon California. Land Stewardship Program [www.Audubon-ca.org/LSP/Willow\\_Slough.htm](http://www.Audubon-ca.org/LSP/Willow_Slough.htm)
- Defenders of Wildlife [www.biodiversitypartners.org](http://www.biodiversitypartners.org)
- National Center for Appropriate Technology [www.ncat.org](http://www.ncat.org)
- Natural Resources Conservation Service [www.nrcs.usda.gov](http://www.nrcs.usda.gov)
- Resource Conservation Districts of California [www.nacdnet.org/resources/CA.htm](http://www.nacdnet.org/resources/CA.htm)
- U.C. Sustainable Agriculture Research and Education Program [www.sarep.ucdavis.edu/](http://www.sarep.ucdavis.edu/)
- U.S. Fish and Wildlife Service [www.fws.gov](http://www.fws.gov)
- The Xerces Society [www.xerces.org](http://www.xerces.org)



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