

NCC Quarterly

Coordinating Science and Land Management across the Nature Reserve of Orange County

BIODIVERSITY

Biodiversity may not be a word you hear often, but one which has a profound impact on the future of mankind.

For those unfamiliar with the term, biodiversity has been defined as the interconnectedness of species, habitats and ecosystems which make up the web of life upon which humans depend. Biodiversity is at the core of everything the human species needs to survive: food, clean water, medicine and shelter.

The continuing loss of biodiversity throughout the world is alarming. It is no surprise that for many years, the science, conservation, and environmental communities have had a lot to say about the critical importance of biodiversity.

Pamela Matson, former dean of the Stanford University School of Earth, Energy and Environmental Sciences stated, "We share this planet with many species. It is our responsibility to protect them, both for their sakes and our own."

Author, Paul Hawken, described biodiversity in another way. Hawken said, "Biological diversity is messy. It walks, it crawls, it swims, it swoops, it buzzes. But extinction is silent, and it has no voice other than our own."

Legendary naturalist and proclaimed "father of national parks" John Muir, is quoted as saying in the early 1900's, "When one tugs at a single thing in nature, he finds it attached to the rest of the world."

According to a recent report from the United Nations, authored by scores of scientists from around the world, we are at a point in time where more than one million animal and plant species worldwide are now threatened with extinction. Three-quarters of the land-based environment and 66% of the ocean environment have been significantly altered. Humans have cleared forests, polluted water sources, over-fished oceans and created a climate crisis. These actions have and continue to impact biodiversity in every corner of the world.

While nature struggles to keep up with the pressures man puts on the planet, one international wildlife organization voices hope that the battle to sustain biodiversity is not lost. By managing resources well, easing up on pressure, eliminating



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threats, and giving it time, ecosystems can adapt and biodiversity may recover. The United Nations states "the science has spoken loud and clear – on climate, on biodiversity, and on resource use. Solutions and tools are available to avert the crisis, but it requires a profound change in economic and policy paradigms."

At the Natural Communities Coalition (NCC), we are striving to do our part locally. Throughout the nearly 38,000-acre Nature Reserve of Orange County, NCC directs its efforts to support biodiversity with an emphasis on coastal sage scrub, riparian, oak woodland, grassland and cliff and rock habitats. NCC staff subscribe to the ideal that biodiversity conservation is our purpose, our unyielding commitment, and the reason we exist as an organization. The 39 species receiving regulatory coverage from the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service are representative of many thousands of species found on the Reserve. Through focused habitat restoration, enhancement and applied conservation science, these species populations will be sustained and improved while benefiting the myriad other species and habitats they coexist with. A few of the conservation efforts currently underway include enhancement of vernal pools for the western spadefoot toad, propagation of cactus scrub to restore cactus wren habitat, and studies to assess the health and movement of the Southern California mountain lion.

On a worldwide scale, biodiversity has been elevated to the level of having its own holiday. The United Nations has proclaimed May 22 each year as International Day for Biological Diversity with the goal of increasing understanding and awareness of biodiversity issues and to help ensure that Earth remains a place where all creatures, no matter where they live, cannot only survive, but also thrive.

Monarch Butterfly

There is something awe-inspiring about the western monarch butterfly. Its recognizability, majestic name, vibrant orange and black wings, and ability to migrate up to 3,000 miles makes its sighting a special occasion. There was a time not too long ago when you could expect to see monarchs flying around on a given summer day. Sadly, most of us will not have the chance to see a single monarch this year, and possibly many years into the future.

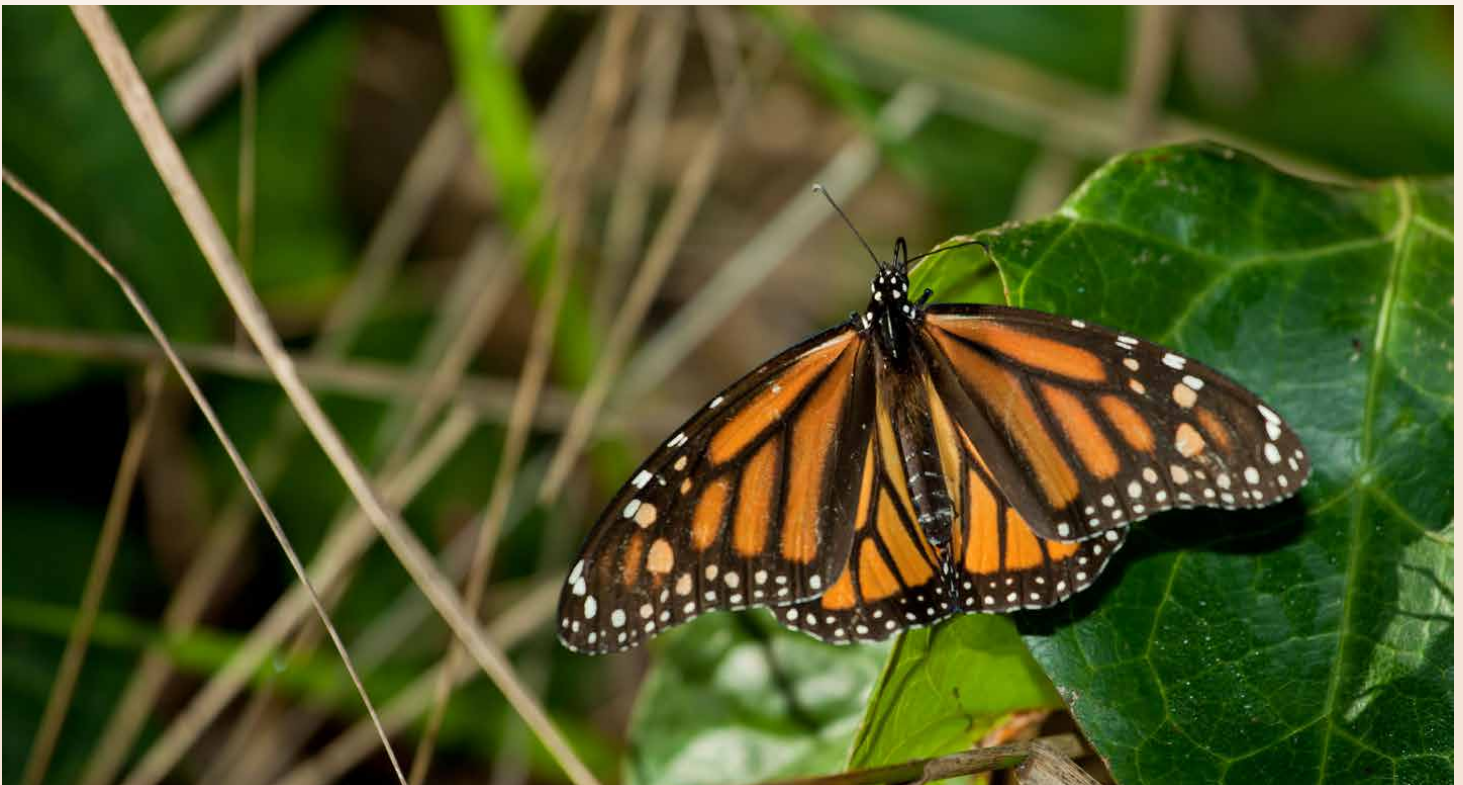
Per the *End Extinction San Diego Conservation Summary*, scientists have witnessed a steady decrease in monarch populations since the 1980's, when it is estimated that 4.5 million butterflies roosted in trees all along the coast, until an abrupt decline of 86% occurred between 2018 and 2019. The End Extinction Summary also noted for the entire state of California, only 1,914 migratory monarchs arrived at overwintering sites in 2020. This leaves western monarch population at less than .1% of their historical levels and in imminent danger of extinction.

There are multiple reasons for the monarch's decline. Considering milkweed is the only host plant for monarch caterpillars, the continuing reduction of native milkweed habitat by way of development and pesticide use has been daunting. Neonicotinoid pesticides, the most widely used class of insecticides nationally, have been a major source of monarch's demise. Disease and nonnative tropical milkweed have also been contributors to the monarch's plight.

The [Play it Safe for Monarchs](#) campaign developed by the Association of Zoos and Aquariums' SAFE (Saving Animals from Extinction) is striving to boost the actions of monarch conservation partners like Xerces Society for Invertebrate Conservation, Monarch Watch, Monarch Joint Venture and the National Wildlife Federation. The collective response is that all hands on deck are needed – now!

Some of the actions the *Play it Safe for Monarch* group are prescribing include:

- 1** Feed the migration – plant native flowers and plants;
- 2** Keep monarchs healthy – plant native milkweed instead of tropical milkweed;
- 3** Cut tropical milkweed down – remove by mid-October to keep monarchs safe from disease;
- 4** Plant monarch-safe plants – without pesticides;
- 5** Record and share monarch sightings – [Western Monarch Milkweed Mapper](#) · [iNaturalist](#), and;
- 6** Enjoy watching wild monarchs outside.



Orange County Fires and Biological Impacts

The Silverado and Bond Fires, occurring in fall and winter of 2020, are drastic reminders we live in a place and time where living things, such as humans, animals, insects and plants, may be upended at a moment's notice and without any control of the impending damage.

The Silverado Fire ignited on October 26, 2020, and was fueled by strong Santa Ana winds gusting up to 80 miles per hour. Low humidity also played a role in the fire's rapid spread. The wildfire initially moved south from Loma Ridge, toward the Irvine residential villages of Northwood, Portola Springs and Orchard Hills before moving southeast through Limestone Canyon and the communities of Foothill Ranch and Lake Forest. The cause of the fire remains under investigation, but it is suspected a lashing wire from a telecommunications line may have been the source.

The damage caused by the Silverado Fire was immense. According to CalFire, a total of 12,466 acres (much of it protected habitat) burned, evacuations were prompted, five structures were destroyed, and nine structures were damaged. Two firefighters were also severely injured.

The Bond Fire started on December 2, 2020, and in similar fashion was fueled by Santa Ana winds and low humidity. CalFire reported 6,686 acres burned, numerous evacuations ordered, 21 structures damaged and 31 structures destroyed. In addition, two injuries were sustained by U.S. Forest Service personnel, and an eight year old female [mountain lion](#) tagged as F121, one of approximately 15 to 20 known to live in the Santa Ana mountain range, was killed by the wildfire.

It's logical to assume the impact of both fires was a devastating blow to the mammal, bird and fish populations

within the burn zone. Staff at the United States Fish and Wildlife Services however tell a different story. In the article "Myth Busting about Wildlife and Fire: Are Animals Getting Burned," authors Karen Miranda Gleason and Shawn Gillette shared the following. "While some individual animals perish during wildland fires, most remain unharmed and many benefit. More animals are burned in large, fast-moving high-intensity wildland fires than during slow-moving ground fires or prescribed burns. Whether by using their speed, ability to fly, or other means to escape, or by taking advantage of opportunities to hunt, mate, lay eggs or nest, wild animals are no strangers to fire."

The impacts to vegetation through a fire event may also have both positive and negative effects. For coastal sage scrub habitats, the first post-fire growing season often include a variety of colorful herbs which germinate and flower the first post-fire growing season and then may lay dormant for decades, or until the next fire. Complete vegetation recovery, to pre-fire conditions is estimated to occur after five years. The emerging trend of high frequency fires is contributing to the type-conversion of coastal sage scrub to annual grasslands dominated by non-native grasses. The University of California, Irvine - Center for Environmental Biology indicates "CSS (coastal sage scrub) may be especially vulnerable to invasion by non-native grasses during the early stages of fire recovery. Fire and drought are increasing through time along with nitrogen-deposition, making it likely more areas covered by CSS may require continued removal of non-native grasses, especially following environmental stress such as drought, nitrogen deposition and fire."



TCA and Conservation

Partner Feature – Transportation Corridor Agencies

When thinking about toll roads, conservation may not be the first thought that comes to mind. The fact is, the Transportation Corridor Agencies (TCA) serve a vital role in restoring open spaces and protecting endangered and threatened species within the nearly 38,000-acre Nature Reserve of Orange County.

Some of the most spectacular habitat enhancement projects completed by TCA include restoration of the Upper Chiquita Canyon Conservation Area, mitigation of Coyote Canyon Landfill, and establishment of a new cattle grazing program at Live Oak Plaza Conservation Area. In nearly all of its land restoration projects, TCA has been tasked with converting ecologically degraded properties into thriving coastal sage scrub habitats.

The Upper Chiquita Canyon Conservation Area is a 1,158-acres of land within the City of Rancho Santa Margarita and borders the communities of Las Flores to the west and Coto de Caza to the east. Much of the restoration work at Upper Chiquita Canyon has focused on supporting two Natural Communities Coalition target species, the Coastal California gnatcatcher and the coastal cactus wren. Based on site monitoring in 2020, 80 gnatcatcher and 47 cactus wren locations were recorded within the Upper Chiquita Canyon landscape. The ecologically thriving site is also a welcome view to those who live and work in South County foothills. Many local residents may not be aware the site was originally zoned for residential development and a golf course before TCA purchased the land.

While it may be hard for many to believe there was once a landfill in Newport Coast, the Coyote Canyon Landfill mitigation site is one of the most dramatic restoration projects TCA has delivered. Its unique location serves as a corridor for the multiple species of birds and animals traveling between San Joaquin Hills and Upper Newport Bay. With 262-acres of self-sustaining coastal sage scrub, the Coyote Canyon site is

now an ecological gem within Orange County's Central and Coastal NCCP/HCP.

Most recently, TCA initiated a pilot program at the Live Oak Plaza Conservation area (near Cook's Corner), known as "conservation grazing." The project's intent is to reduce non-native cover and seed set by weed species. As livestock grazing has often been criticized as a cause of habitat degradation, Restoration Ecologist Travis Brooks believes conservation grazing will benefit and help restore native habitat. Brooks said, "Unlike past livestock grazing practices, conservation grazing is a science-based tool that can be used to manage the impacts of these nonnative weeds in degraded areas, including to encourage native perennial grass and shrub cover, reduce fuels and fire risk associated with the accumulation of residual matter, and improve wildlife habitat quality and connectivity." Thankfully, the results of this pilot study will serve as a useful tool to inform landowners and land managers of the benefits and liabilities of conservation grazing.

TCA works in partnership with wildlife, researchers and transportation agencies to accommodate wildlife movement to reduce wildlife-vehicle collisions. The Wildlife Protection Fence along the 241 Toll Road is a sophisticated example of how wildlife crossings, exclusionary fences, and specialized design aid in the prevention of wildlife death due to vehicle impacts. According to TCA staff, "in three years of post-construction monitoring, the 241 Wildlife Fence reduced wildlife-vehicle collisions by up to 100 percent for three target species (mountain lion, bobcat and deer)."

As a Natural Communities Coalition partner, TCA readily acts to invest, acquire, manage, and protect open spaces throughout Orange County. TCA's contributions and ongoing commitment to the long-term health of native plants, wildlife and natural landscapes, speak loudly about their promise to continually support conservation.

