UC SANTA BARBARA

North Campus Open Space Restoration Project

NCOS NEWS *August 2018*

Composite aerial image of NCOS on August 7 by Bill Dewey. Note that almost the entire primary trail is visible.

UPDATES

United Way Day of Caring - September 15th

27th ANNUAL DAY of CARING 2018

Saturday, September 15th
9:00 AM - 12:00 PM

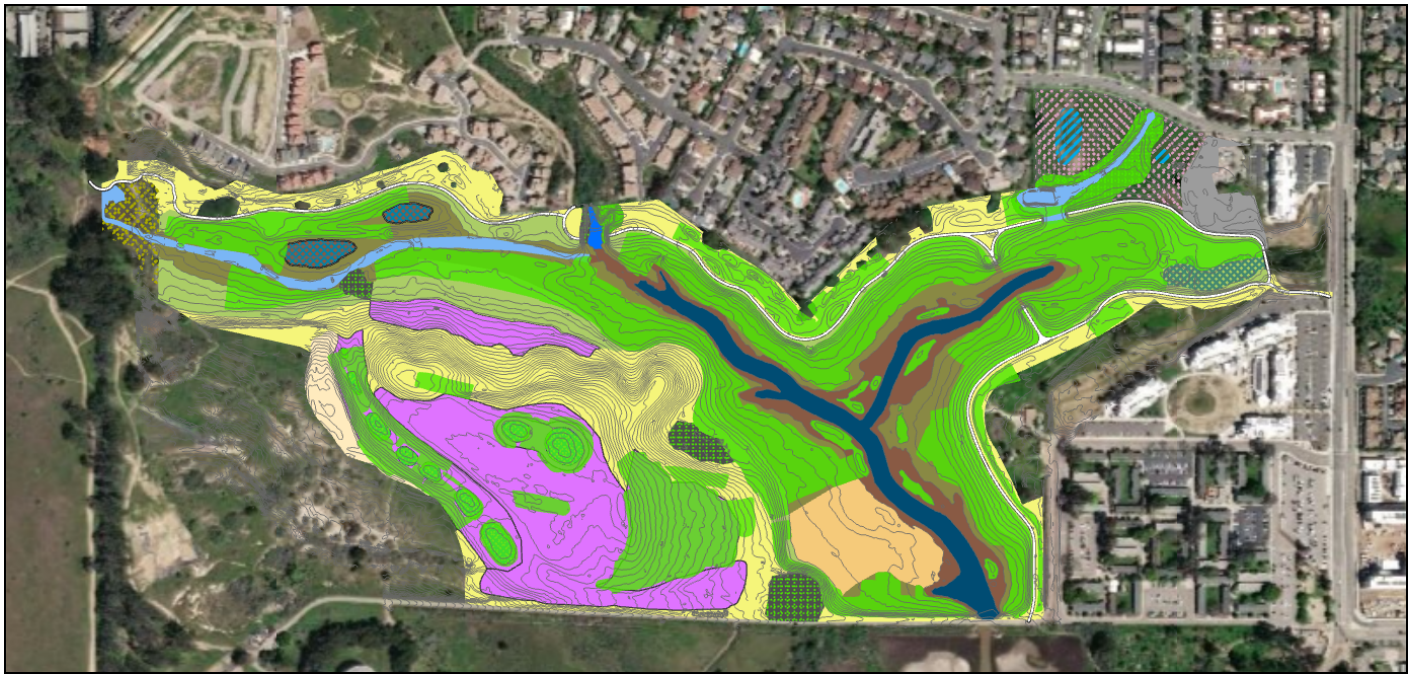
This year's United Way Day of Caring features the North Campus Open Space Restoration Project! Mark your calendar and **sign-up with the UCSB Team for planting at NCOS**, 9:00 AM to 12:00 PM, Saturday, September 15th. Sign up by September 7th to receive a free Day of Caring t-shirt and a UCSB baseball cap (donated by the UCSB Bookstore)!

Planted plants aplenty, and plenty more to come

After focusing on controlling weeds in May and June, restoration efforts returned to planting in July. You may recall that the landmark of 100,000 plants installed was reached in April. As of July 31, this number has grown to more than 146,000. More than 32,000 plants were installed in July alone, equating to more than 1,000 plants planted per day! In addition, since last September, 137 saplings of native oak, willow, cottonwood, alder and sycamore trees have been planted by Your Children's Trees along the Whittier and

Phelps Riparian areas.

The area planted at this point is approximately 39.8 acres, which is half of the total area to be planted! Who is behind these numbers? - an average of 40 paid UCSB students per quarter working 10 - 20 hours per week since last Fall, along with many more volunteers, and a dozen CCBER staff.



Map of NCOS habitats with the approximate area planted as of July 31st shaded in bright green.

"Gator Barn" Construction

The construction of a “Gator Barn” in the northeast corner of NCOS will begin this summer. The Gator Barn will be used for storing and charging electric utility vehicles called Gators, which are green in color but bear no other resemblance to the animal they're named after. The barn will also be used for the storage of tools and a variety of equipment for management, monitoring and research.

A rendering (by Brett Ettinger of Ferguson Ettinger Architects, Inc.) of the "Gator Barn" to be constructed on NCOS.

As built Report with Before and After Photos

Interested in some of the details about the construction of NCOS? A report about the as-built grading and hydrology of the restoration project site is now available on the **UCSB Open Space Administration website.** The report includes before and after grading photos from several points around the site, such as this pair below for example.

View west from the southeast corner of NCOS in April 2017 - before grading (top image), and in July 2018 (bottom image).

Second Saturday - August 11th!

Take part in an opportunity to get on the project site and help restore NCOS **THIS SATURDAY - August 11th, 9:30 am.** Meet at the parking lot on Whittier Drive at 9:30 am. Please RSVP to ncos@ccber.ucsb.edu. See the Volunteer Opportunities section of this newsletter for more information.

Creek Week Tour - September 21st

As part of Santa Barbara County's 19th annual **Creek Week**, we will be hosting a tour of NCOS on Friday, September 21, at 5:15 pm. The tour is open to the public. Meet at the parking lot on Whittier Drive.

FEATURE STORY

What are you Curious About at NCOS?

A draft version of one of the interpretive signs currently being designed for the visitor plaza and other areas of NCOS.

California State Parks has recently awarded a grant to CCBER for the construction of a Visitor Plaza at NCOS, along with an interpretive garden, viewpoint overlooks with benches, and a variety of interpretive signs. We would like to invite you to **review some of our draft interpretive signs**, and more!

This feature story is continued on page 11.

VOLUNTEER OPPORTUNITIES

Second Saturdays at NCOS

SATURDAY - August 11th

Take part in an opportunity to get on the project site and help restore NCOS. Meet at 6975 Whittier Drive at 9:30 am. Bring water, sunscreen, and wear a hat, clothes and shoes suitable for garden work. Please RSVP to ncos@ccber.ucsb.edu

Group Volunteer Opportunities

We gladly welcome local business, non-profit, school and other community groups to come out to NCOS to help with planting and other activities. For more information, please send an email to ncos@ccber.ucsb.edu.

Thursdays - CCBER Greenhouse Associates

Come help transplant seedlings of native plants with the CCBER team from 9:00 - 12:00. To join, please send an email to ncos@ccber.ucsb.edu.

COMMUNITY FORUM & PHOTOS

This month's bird photos - Cooper's Hawk, Redtails and Owls oh my!

Local ornithologist, Mark Holmgren, captured the following shots of a juvenile Cooper's Hawk perched on the railing of the new bridge crossing at Phelps Creek.


07/13/2018 08:26

A motion detection camera caught a lot of action on a popular snag on NCOS last month, including a pair of adult and juvenile Redtailed Hawks and Great-horned owls. These individuals were photographed on the snag almost daily while the camera was deployed.

Have a plant, wildlife, or other photo of the NCOS project site you'd like to share? We welcome submissions of photos of the project site and/or the adjacent Ellwood-Devereux area to share with NCOS News readers. Please email a photo you would like to share along with a brief description to

ncos@ccber.ucsb.edu.

Bee Identification Workshop at CCBER

Learn how to identify the common species of native bees of California at a workshop hosted by CCBER and UCSB Extension in September. See flyer below for more details.

Learn how to identify the common species of the native bees of California

This is an intensive, three-day introduction to the identification of bees. We will focus on identifying common native bees to family and genus. Other topics we will cover include: learning how to preserve bee specimens for identification, how to become proficient using the keys for identification, as well as examining conservation biology and pollination ecology of bees.

Who should attend? People interested in learning about native bees!

- The workshop will be taught by Jaime Pawelek. Jamie is an alumnus of the Urban Bee Lab at the University of California, Berkeley and has authored several papers on bees and pollination.
- The course is appropriate for any person who is interested in learning the technical skills for identification of native bees, including curious naturalists, students, consultants, entomologists, and botanists.
- September 12th: Basic morphology of bees, bee specimen preparation, identification of Apidae of California
- September 13th: Identification of non-apid bees (Andrenidae, Colletidae, Halictidae, Megachilidae, Melittidae); attendees will share a group dinner in the evening
- September 14th: Continue identification of native bees working individually or in small groups
- The fee is $200; UCSB graduate and undergraduate students will get a 40% discount if they enroll in person at Kerr Hall.

Register at https://extension.ucsb.edu (search XLRN 811.CCBER under courses tab)

Contact Katja Seltmann for further information at seltmann@ccber.ucsb.edu

University of California Santa Barbara CCBER Cheadle Center for Biodiversity & Ecological Restoration

UC Santa Barbara Extension

Received this email from a friend? Click here to subscribe to our mailing list.

For more information on the
North Coast Open Space Restoration Project, Click here**, or email** ncos@ccber.ucsb.edu

CCBER
CHEADLE CENTER FOR BIODIVERSITY
& ECOLOGICAL RESTORATION

Want to change how you receive these emails?
You can update your preferences or unsubscribe from this list

What are you curious about at NCOS?

California State Parks has recently awarded a grant to CCBER for the construction of a Visitor Plaza at NCOS, along with an interpretive garden, viewpoint overlooks with benches, and a variety of interpretive signs. This grant comes just as Granite, the bridge and trail contractor, is completing their work. The visitor plaza will include information panels, shade and seating, and is designed to accommodate a wide range of users, including school groups, community members, UCSB students and researchers, and tourists. Considering this diverse audience and that the NCOS project site is still under construction, some of the signage is challenging to design due to the different interests of visitors and the likely future changes in how the restored ecosystem will function for wildlife as the plants grow. Another challenge is that, despite our familiarity with the goals and history of the project, we may not notice where there are missing links in the logic of information or in the background material. Therefore, we would like to invite you, as future users of the site, to review some of our draft interpretive signs, and to be involved in reviewing and developing signage and other interpretative features at NCOS in the coming months.

The proposed sign themes include the following:

- Plant communities
- Wildlife
- Hydrology
- Land Use History
- Climate change adaptation and Ecosystem benefits
- Ethnobotany - primarily Chumash use of native plants
- Site Maps and place names
- Management and Use practices – hours, dogs, on-going management activities
- Acknowledgement of funders and donors

You may have other ideas about what we should interpret or how we should display or present it, and we welcome those questions and ideas. If you would like to participate, please contact us at ncos@ccber.ucsb.edu.

To get an idea of what some of the signs might look like when they're complete and set-up, have a look at this interactive map that shows the locations of 20 of CCBER's interpretive signs around the UCSB campus that you can visit, along with links to an image of each sign.

Below are images of some of the DRAFT signs with links that you can read and review. We hope you will participate in helping make sure that our message is clear, and that the kind of questions different people may have will be answered in a natural, fun and informative way.

Plant Communities
Creating Diversity

Whittier Pond and Storke Wetlands

Freshwater Marsh

The freshwater marshes that occur here are separated from the saline estuary system and occur on soils that drain slowly and are wet for most of the year from urban run-off. Variations in depth and duration of water support species, such as bull rush (Schoenoplectus sp), basket rush (Juncus textilis), and willow dock (Rumex salicifolius). . Freshwater resources for wildlife are rare in urban coastal environments where stormwater is generally shunted in to storm drains and dumped in the ocean. These wetlands provide an opportunity for nutrient cycling and infiltration, which reduce downstream pollution. The protection and enhancement of these habitats is an important aspect of this project.


Basket Rush


Willow Dock


California BulRush

Phelps Creek and Whittier Channel

Riparian Woodland

Riparian habitat occurs along fresh water tributaries with flowing water and can include flood plains, streambanks, and places with near surface ground water. Arroyo willow (Salix lasiolepis) and black cottonwood (Populus trichocarpa), for example, occur adjacent to Phelps Creek and in sandy soils at the western edge of the property where there is a perched water table. Riparian species have been planted along Whittier storm channel to increase habitat structure for birds and wildlife.


Arroyo Willow


Arroyo Willow (close-up)


Cottonwood

15 acres on mesa top

Native Perrenial Grassland

Considered one the most invaded habitats in North America, grasslands in California have been heavily impacted by exotic annual grasses and human disturbance. These restored grasslands will be dominated by a number of native bunchgrasses: Purple Needle Grass (Stipa pulchra) and Meadow Barley (Hordeum brachyantherum), as well as a diverse community of native wildflowers. After winter rains, look for blooming wildflowers such as the California Poppy (Eschscholzia californica), Blue-eyed Grass (Sisyrinchium bellum), Miniature Lupine (Lupinus bicolor), California Buttercup (Ranunculus californicus), and Checker Bloom (Sidalcea malviflora).


California Poppy


Checkerbloom


Miniature Lupine

Nine Vernal Pools at NCOS

Vernal Pools

Vernal pools are seasonally flooded during the winter season and dry during the summer and fall. Generally found on open mesas with dense clay soils or underlying hardpans, vernal pools are not part of stormwater drainage systems and are generally oligotrophic, or low nutrient. The plants and animals that are uniquely associated with these systems have mechanisms for adapting to the short wet window and for persisting as seeds and cysts during the dry season. Be on the lookout for Coyote thistle (Eryngium vaseyi), Dwarf Woollyheads (psilocarphus brevissimus), dragonflies and clam shrimp.


Dwarf Woolyheads


Coyote thistle


Pacific Foxtail

Trailside and mesa slopes

Coastal Sage Scrub

A fog-adapted shrub community along the coast of California, Coastal Sage Scrub can be found along trails and in patches on the mesa slopes. It is characterized by aromatic low-growing shrubs that are drought tolerant. There are over 20 different Coastal Sage Scrub species growing here. Keep an eye out for the showy California bush sunflower (Encelia californica), Sticky monkey flower (Diplacus aurantiacus), and Golden Yarrow (Eriophyllum confertifolium).as well as the characteristic Coastal sage (Artemisia californica) and giant wild rye grass (Elymus condensatus).


Golden Yarrow


California Brittlebrush


Monkey Flower

Surrounds Sub-Tidal Zone

Salt Marsh

One of the project's dominant habitat features is the salt marsh habitat which is found at elevations between 7 and 9 feet within the restored estuary. The plants that live in the salt marsh are adapted to intermittently flooded conditions and high salinity levels. These harsh conditions support a surprising diversity of plants. Look for, alkali heath (Frankenia salina), salt grass (Distichlis spicata), and pickleweed (Salicornia pacifica) at the edge of the salt marsh and transitional species such as the rare shore grass (Distichlis littoralis) and Parish's glasswort (Salicornia subterminale), and the more common and adaptable: California saltbush (Extriplex californica), creeping wild rye (Elymus triticoides) and California sea blite (Suaeda taxifolia).


Alkali Heath


Pickle Weed


Salt Grass

supported at Wildlife North Campus Open Space

This restoration project was designed to support a diverse suite of animals by creating unique habitat niches defined by hydrology, salinity, slopes, and soil texture. These niches support specific plant communities and associated wildlife. As this restoration project matures, the suite of species will evolve as the amount of plant cover, soils and wetlands develop and change through time.

Raptors

Found yearround

Most raptors prey on birds, rodents and reptiles and look for prey from high perches. To provide some protection for shorebirds, portions of the site have reduced perches, while in other areas vertical perches were erected and hibernaculum where rodents and reptiles can breed were constructed to support raptors.


White tailed kite: A special status species in Santa Barbara County where local populations have fluctuated substantially and been declining since the 1970s. While hunting, these birds hover and then plunge onto prey, primarily voles. Hovering in a stationary position has come to be called 'kiting.'


Red-tailed hawk: The most widespread large hawk in North America and locally common. Adults can be recognized by the trademark red-dish-brown tail. Along the South Coast they nest in eucalyptus and prey on squirrels, gophers, snakes, and, occasionally, birds.


Cooper's hawk: Cooper's Hawks now nest in upland, riparian, forested and open habitats including this site. A medium-sized hawk that feeds on other birds and small mammals. Some suggest that the increase in Cooper's Hawks results from the colonization and explosive spread of Eurasian Collared-Doves.

Waterfowl

Seasonal/Migratory

The expanded diversity of wetland types offer the ecosystem variations in salinity, depth and connectivity, and are designed to support fish eating divers and vegetarian dabbling waterfowl and omnivorous herons and egrets.


Eared Grebe: These small, fish-eating birds can quickly take advantage of new bodies of water which is likely an adaptation to life in arid climates.


Ruddy Duck: This bird is one of the few that can be seen here year-round and, although some populations migrate during the winter months. The Ruddy duck has been seen nesting in the Goleta Slough, Lake Los Carneros, and the Goleta sewage treatment plant. It feeds on algae, seeds and insects.


American Wigeon: This species frequents local wetlands in the winter, but only a handful of individuals have been seen during the summer. Its sturdy short bill is useful for eating plant stems and leaves as well as insects and crustaceans.


Redheads: These birds arrive in the area in September–her and particularly favor the Goleta Slough, the UCSB Lagoon, and Devereux Slough. Most are gone by May with very few staying over the summer. This duck eats aquatic plants and insects.


Green Heron: The stealthy green heron with its striking green back and chestnut body nests in Phelps Creek and can be seen hunting fish from rocks and behind vegetation along the edge of the wetland.

Shorebirds

Migratory, Winter

Our goals are to provide the foraging opportunities for the huge numbers of Arctic-breeding birds passing northward in March and April, then southward in July through September. To encourage shorebirds we have constructed different types of wetlands that support a variety of benthic invertebrates. Persistent, muddy habitat edges should persist along the channel, seasonal pond, and island edges with gradually-sloped margins. The wetland options should allow for nest¬ing, foraging, and possibly breeding. This project significantly increases the available inland shorebird habitat in the Santa Barbara area.


Greater Yellowlegs: This species have been reliably found in the Goleta and De¬vereux Slough over many years. Listen for its piercing call. It's the most likely migratory shorebird to overwinter and thus, it has a year-round presence.

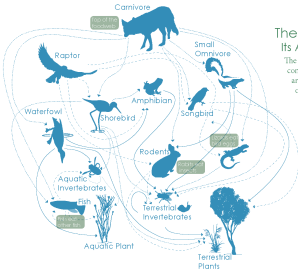

Long-billed Dowitcher: These birds begin arriving in early July and can be seen along the coast through winter and spring. The largest populations can be found in the Santa Maria sewage treatment plant. A shorebird recognized for the distinc¬tive white diamond on its back and sewing machine like feeding action.


Least sandpiper: While a common winter visitor to Goleta, the largest SB County populations occur along the North Coast where there are more wetlands. The smallest of the small sandpipers known as "peeps," these birds are not much bigger than a sparrow. They have distinctive yellow-green legs and a high-pitched creep-call.


Western sandpiper: Common here during the late sum¬mer. Although it has a restricted breeding range in western Alaska, the western sandpiper is the most abundant shorebird in western North America. It is distinguished from least sandpiper by its black legs and slightly more robust, but drooping, bill.


Black-necked Stilt: This bird has been found nesting lo¬cally at the Andree Clark Bird Refuge, Goleta Slough, Goleta Sanitary District ponds, and Devereux Slough. A striking bird with very long, thin red legs, the black-necked stilt is found along the edges of shallow water in open country.

Add Killdeer?



The Food Web: It's All Connected

The diagram highlights how interconnected the plants and animals are and how the loss or disruption of one component can have impacts throughout the food web. Actions taken by neighbors and open space users can have profound effects on these dynamics through inhibiting the behavior of species (e.g. dogs disturbing birds or rodents), over-supplying food to meso-predators (e.g. trash or pet food feeding skunks and rats), or fragmentation, created by roads and fencing, inhibiting movement of key predators like bobcats and coyote who play key balancing roles in ecological systems.

Invertebrates

Yearround

While small and often overlooked, invertebrates, such as bees, ants, and butterflies, can be found in every habitat here. If you sit in one spot for a few minutes, you will likely begin to see a variety of invertebrates walking along the ground or vegetation, flying, or associated with water. In-vertebrates are vital for the healthy functioning of the ecosystem by perform¬ing important roles such as pollination and eating dead and decaying material and serving as part of the base of the food web.


Native Bees: There are over 1600 species of native bees in California. Many are solitary ground nesting species and play important pollination functions.

Butterflies and Skippers: According to the RAMONA (Butterflies and Moths of North America) database there are 110 verified species of butterfly and skipper that have been seen in Santa Barbara County. This includes the threatened Monarch butterfly, which can be found roosting in the woodlands along Devereux Creek. This project supports monarchs through pre¬vision of nectar-producing native flowering plants.

Reptiles & Amphibians

Wet Season/After Rain

Look for lizards and snakes sunning themselves on logs or rocks in the open area or near the many hibernaculum created as part of the restoration process. During the wet season, listen for frogs at dawn and dusk, especially after a rainstorm.

Southern Alligator Lizard: A common species of lizard native to the Pacific coast of North America. It ranges from Baja California to Washington State. It is known for its vicious self-defense and will bite and defecate if handled.

Gopher Snake: Relatively common on the south coast, sometimes the gopher snake will pretend to be a rattlesnake, but they have no venom and are completely harmless.

Pacific Treefrog: This frog lives in most of California except in the desert. They need a clean habitat with either heavy morning dew or a moist area and make a cacophony of sound at dusk.

Western Fence Lizard: A very common species in California. It has been discovered that when ticks carrying Lyme disease feed on the western fence lizard the bacteria that cause Lyme's disease is killed.

Songbirds

Yearround

Songbirds can be seen actively hunting for insects, eating seeds and berries, and congregating in shrubs and trees. Songbirds will become more abundant as the habitat grows and develops.

Say's Phoebe: Most individuals are winter visi¬tors, with a few staying in the area to breed in the summer months. While typical of prairies, Say's phoebes can also be seen in human altered habitat. In open terrain, where there are few high perches, Say's phoebe may hunt for insects in the grass by hovering low over the fields.

Black Phoebe: Also insectivorous, the black phoebe can be commonly seen around the estuary and throughout campus and is a common year-round resident. Black phoebe often nest on manmade structures.

Belding's Savannah Sparrow: The state threatened savannah sparrow often causes confusion for birders because it is so variable. Belding's nest in salt marsh habitat and may be able to nest on site if dogs are kept on leashes and on trails. The local population decreased during the 1900s due to habitat loss, but a remnant population remained in the Goleta slough and Carpinteria salt marsh. Devereux slough was recolonized in the 1990s.

Yellow-rumped Warbler: Flashing its trademark yellow rump patch as it flies away, this is one of our best-known warblers. While many warblers migrate to the tropics in fall, the Yellow-rumped warbler, able to live on berries, commonly remains as far north as Seattle. It is abundant in Santa Barbara County from mid-October until early April.

Loggerhead Shrike: This predatory songbird can be found perched up high looking for prey, usually a large insect, lizard, or a rodent. The presence of this bird here is special because the loggerhead shrike has been declining for unknown reasons in many parts of the country. While it is still seen during the winter months, the loggerhead shrike is rarely observed breeding in the area currently.

Mammals

Yearround

Many different mammals can be seen here. While not as ubiquitous as birds, keep an eye open for small rodents such as the ground squirrel and pocket gopher before they dart back into their burrows. Less com¬monly seen are bobcats, coyote and fox with their more crepuscular (dawn and dusk) behavior.

Racoon: Raccoons are noted for their intelli¬gence. Raccoons tend to come out at night, and can be seen eating a wide variety of food such as insects, reptiles, seeds and berries. While raccoons are native to the area, their population sizes are higher now because they readily con¬sume human trash and pet food.

Pocket Gophers: Pocket gophers feed on plant material, shoots and grasses in the summer, and roots, tubers, and bulbs in the winter. While considered a nuisance species by many, they actually provide food for many predators such as raptors, coyotes, and bobcats and help aerate the soil when they create burrows.

Coyote: The coyote is highly versatile in its choice of food, but is primarily carnivorous, with 90% of its diet consisting of meat. The species is also very adaptable and able to live in areas that have been modified by humans.

Bobcat: Approximately twice the size of a domestic cat, they are adaptable to many environments and can be found across the United States. They are generalist carnivores and eat small mammals, birds and reptiles. A pair has been spotted on Coal Oil Point Reserve , but they are secretive and rarely seen.

Threatened Species

As part of the restoration plan, CCBER has created habitat that is designed to support two endangered species that live in Santa Barbara.

Western Snowy Plover: The southern portion of the project site is a 3 acre sandy flat designed to have sparse vegetation which allows the plover to see potential predators from their nests while also providing access to the water.

NEED PHOTO

Tidewater Goby: CCBER has expanded subtidal habitat by 4 acres and created small side channels where tidewater goby's can seek refuge when there are big flows during large rain events.

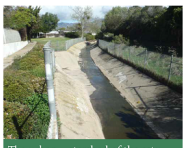
UCSB CCBER

Our Wetland
Part of a Greater System

The restoration of the upper arms of Devereux Slough was designed with multiple water-related benefits in mind:

- Create diverse wetland types for wildlife
- Support endangered species
- Increase the capacity of the wetland to absorb floodwater
- Recharge our aquifers
- Be adaptive to sea level rise Provide public access

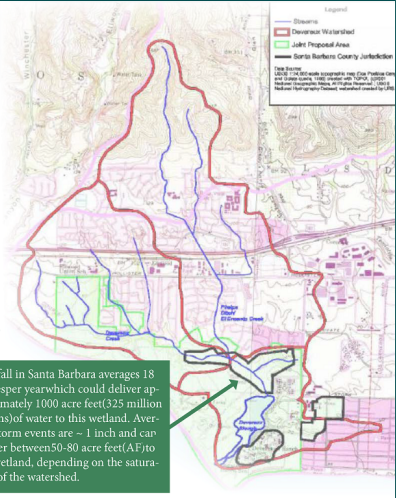
The diverse wetland habitat for fish and birds is achieved by conserving and creating wetlands with a variety of depths and salinities that are available into the spring and early summer.By doubling the water holding capacity, the project expands the ability of the wetland-to absorb stormwater, which reduces neighborhood flooding, and recharges the aquifer.



The urban watershed of the estuary includes trapezoidal concrete channels which create flashier rain events and offer few opportunities for water to soak into the water table.

Our Watershed

Devereux Slough's watershed is 2000 acres and reaches an elevation of 500 feet. It is 50% developed such thatrain hits impervious surfaces and is flushed rapidly into the wetland with littleopportunity to soak into the soil. By increasing the capacity of the wetland system this project helps mitigate for the flashy nature of rain eventsto recharge the aquifers and support wildlife. Thetwo golf courses in the watershedlikely deliver increased nutrients to and support algal and bacteria growth.

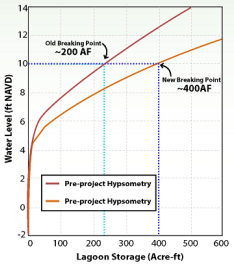


Rainfall in Santa Barbara averages 18 inchesper yearwhich could deliver approximately 1000 acre feet(325 million gallons)of water to this wetland. Average storm events are ~ 1 inch and can deliver between50-80 acre feet(AF)to the wetland, depending on the saturation of the watershed.

Holding Capacity

This graph shows the relationship between the elevation of the water (not the depth) and the capacity of the wetland to hold water. To orient you: you are now standing at 15 ft elevation*and the bottom of the wetland channel is between 3 and5 ft.elevation.The sand berm at themouth (Sands Beach)builds up over the summer and can regularly reach an elevation of 9-10 ft. This bermholdswater inthe wetlandto that elevation before the first breach of the winter. This hypsometric curve shows how the North Campus Open Space restoration project expanded the capacity of the wetland to hold water (yellow line) before it willbreach. See dotted lines showing that at a water level of 10 ft,under pre-project conditions(blue line),the system held 200 AF of water but after expanding the capacity it can now hold 400 AF.

* Elevation relative to sea level called NAVD, North American Vertical Datum



This curve shows the expanded the capacity of the wetland to hold water (orange line) before it would breach.

Slough Dynamics: Intermittently Tidal

Devereux Slough is an intermittently tidal system that it is only tidal when the beach berm at the mouth is open. This opening happens after largerain or wave events cause the system to breach. The larger the tidal prism (amount of water flowing in and outwith the tides) the longer the system will remain connected to the ocean in a tidal manner.

Water levels in this image are approximately 5 feet elevation and range from 1 to 6 feet deep across the full Devereux Slough system. These levels will be common for summer and fall as water evaporates from the estuary.

Water levels of approximately 8 feet,shown here,will be common during winter and spring,depending on the rainfall and breaching patterns.

Pressure from a full lagoon or large waves can break through the beach berm separating the estuary from the ocean and lead to a rapid flushing of the system.

Land Use History
A Return to Nature

Our Wetland: Thousands of years in the making

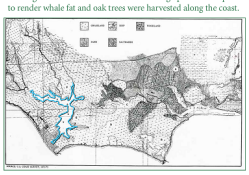
12,000 years ago the ocean was up to 200 to 400 feet lower than today and the ocean was five miles off our current shoreline. This estuary was just a portion of an evolving river system cutting through the uplifting terraces and filling in low lying areas created by faults. Over time the ocean level rose and enveloped the river and turned this section into an estuary with brackish to saline water. A mix of native grasslands and oak woodlands were sustained by the native Chumash until the arrival of Europeans.

1880s

There were extensive oil and gas exploration and activity on the Ellwood Bluffs and the project site.

1780s –1870s

Europeans brought cattle, eliminated Chumash prescribed burning practices and began more intensive use of the land for grazing, dry farming and fruit trees. In the 1850s whaling operations required wood to render whale fat and oak trees were harvested along the coast.



1928 – 1966
Active Development

During the mid 20th centuray there was active filing of Goleta Slough to create the airport and of the upper arms of Devereux Slough to create a golf course. Thes actions degraded the wetlands, caused erosion and sedimentation in the wetlands, and facilitated the invasion of disturbed habitats by invasive plants. The filled wetlands resulted in regular localized flooding.

1928 Note extent of wetlands extant in 1928

1944 Filling of Goleta Slough to create the airport was in full swing.

1966 White areas around the upper arms of Devereux Slough reflect newly disturbed areas resulting from grading to fill wetland.

After several years of grant writing, community meetings, design and planning work the project came to fruition and 350,000 cubic yards of fill were removed from the historic upper arms of Devereux Slough.

Students, staff, volunteers, Conservation Corp and and elementary school students have all be involved in planting some of the 400,000 native plants on site.

1995 – 2015
Coastal Conservation

By 1995 this portion of the coast was becomingincreasingly developed and residents began to realize that they were at risk of losing their unique coastal resources and open space. Localized flooding, ocean water quality problems, and a downturn in the economy also created more incentives to conserve open space and restore wetland function.The Ellwood-Devereux Joint Proposal put forth by UCSB and the County moved proposed development off the bluffs and helped conserve 652 acres of coastal lands, making thisrestoration project more valuable ecologically.

1995 Highlighted area shows Ellwood-Devereux Proposal area.

2005 The golf course flooded regularly since it was essentially a filled flood plain.

2014 Golf Course was purchased in 2013 and donated to UC Santa Barbara for eventual restoration.

2017 Undoing the impacts to the land

Nature Protected

2018

NCOS is designed to achieve multiple benefits. The restoration project brings back the historic hydrologic function by reducing flooding and mitigating for sea level rise through increased tidal connection, while also supporting increasingly rare coastal habitats and wildlife. Public access, including a safe route to school, is provided within the context of supporting endangered species and migratory birds.

Date:
Tuesday, August 7, 2018 - 09:15
File:
wildlife_sign_DRAFT3.pdf
Hydrology_DRAFT3.pdf
plant communnities_Draft3.pdf
land_use_DRAFT3.pdf
Tags:
NCOS