

UC Santa Barbara

Newsletters

Title

NCOS News - April 2022

Permalink

<https://escholarship.org/uc/item/0nb9x8dr>

Authors

Bender, Jeremiah
Stratton, Lisa

Publication Date

2022-04-01

[We recommend viewing this email in your web browser](#)

UC **SANTA BARBARA** North Campus Open Space Restoration Project

NCOS NEWS

April 2022



Wood duck at Whittier Pond. Photo by Pamela Viale.

UPDATES

Rare plants find a home at NCOS



Coulter's Goldfields (*Lasthenia glabrata ssp. coulteri*).

Lasthenia glabrata ssp. coulteri, or Coulter's goldfields, is a small annual aster that grows around wet and saline places such as vernal pools and salt marsh edges. Known from Goleta Slough margins and recently rediscovered around the Campus Lagoon, this genus is beautiful and locally rare. Given the relatively high salinity of soils on the NCOS Mesa, we thought it would do well around the vernal pools and it appears to be thriving, although there are no specific records of the plant occurring around our area's vernal pools. While not classified as endangered by the state or federal government, the California Native Plant Society gives this plant a 1B.1 rating- their **highest rarity ranking**.



Coulter's Goldfields (*Lasthenia glabrata* ssp. *coulteri*) flowering around the mesa vernal pool. Cages protect the plants from voracious vegetation-eating Canada geese.

We have been bulking the seeds of these goldfields for a few years now, after finding the surprise plants near the campus lagoon. We are happy to say we have given these plants a new lease on life. We hope to add this rare species to more vernal pool and salt marsh edges and other appropriate habitats on campus. Two other species of *Lasthenia* formerly occurred around our vernal pools, and are good candidates for reintroduction: *Lasthenia fremontii* and *Lasthenia conjugens*, both of which are now extirpated and the latter endangered. Finding sources of seeds for those species is our next challenge. There are about 19 species or subspecies of *Lasthenia* in California, 7 of which are considered rare or endangered.



Coulter's saltbush (*Atriplex coulteri*) on the mesa.

Another rare plant, Coulter's saltbush (*Atriplex coulteri*) has expanded its range on campus. This diminutive perennial *Atriplex* occurs in very few [locations](#) in southern California, and other than occurrences on the Channel Islands and a collection from Vandenberg in the 1990's, it appears the only remaining plants in Santa Barbara County occur in a small bare area near a preserved vernal pool in CCBER's Manzanita Village Restoration area. Seeds were collected and germinated at our nursery where they were allowed to grow and mature for a year before transplanting. This month, 50 plants were planted in bare places of specifically "poor" soils in our new grassland at NCOS, which is the plant's apparent niche. We hope they thrive and we plan to expand them into more similar niches in the future, bolstering their existence in the county and on campus.



CCBER staff and student workers plant Coulter's saltbush (*Atriplex coulteri*) on the NCOS Mesa.

Outdoor Classroom

Restoration activity continues at the Duttonhaver outdoor classroom where two classrooms of fourth graders from Adelante Charter School recently helped plant clustered field sedge (*Carex praegracilis*) and brownhead rush (*Juncus phaeocephalus*) in the wetland channel. More school groups are scheduled for planting days in the upcoming weeks so this area won't be bare ground for long!



Planting native rushes and sedges in the outdoor classroom wetland channel.

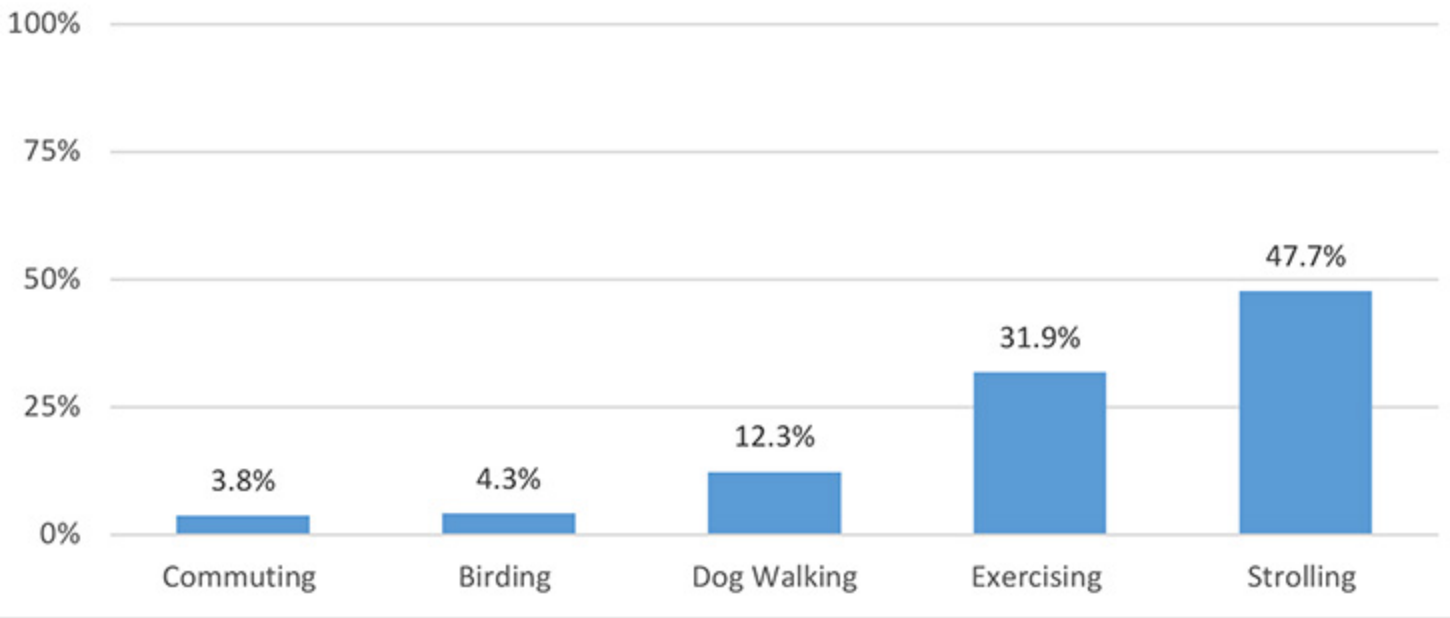


CCBER staff teach students about native wetland plants.

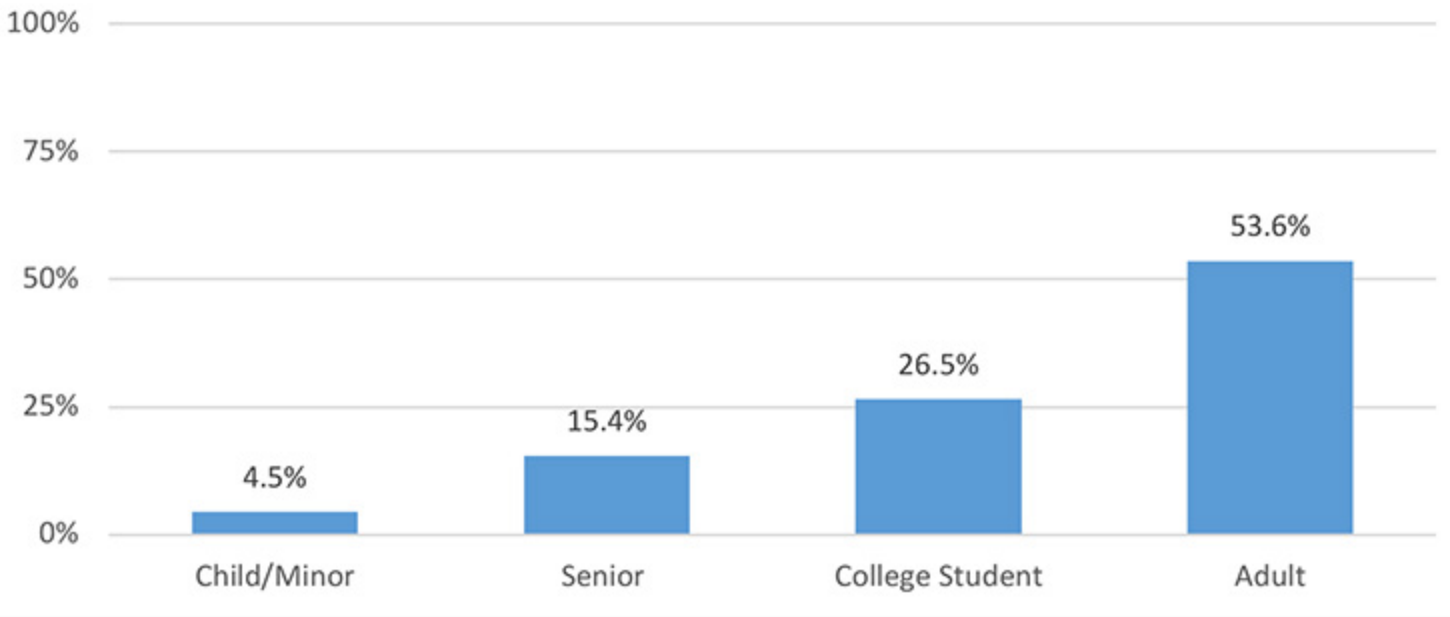
Human Use Survey

Tracking how the NCOS trails are being utilized is an important part of understanding their value and function. After the super high numbers of users (up to 80 an hour) during Covid, people seem to be getting busier since use levels averaged 30 per hour with a high average of approximately 40 per hour during weekends. Dog on leash compliance remains high at 95%, but we appreciate all the assistance the community can provide in reminding people about the importance of keeping dogs on leash so that wildlife are less disturbed and visitors feel safe walking. The following graphs display data collected from February through March during thirty minute observational periods in morning, evening, and afternoon on both weekdays and weekends and from multiple vantage points.

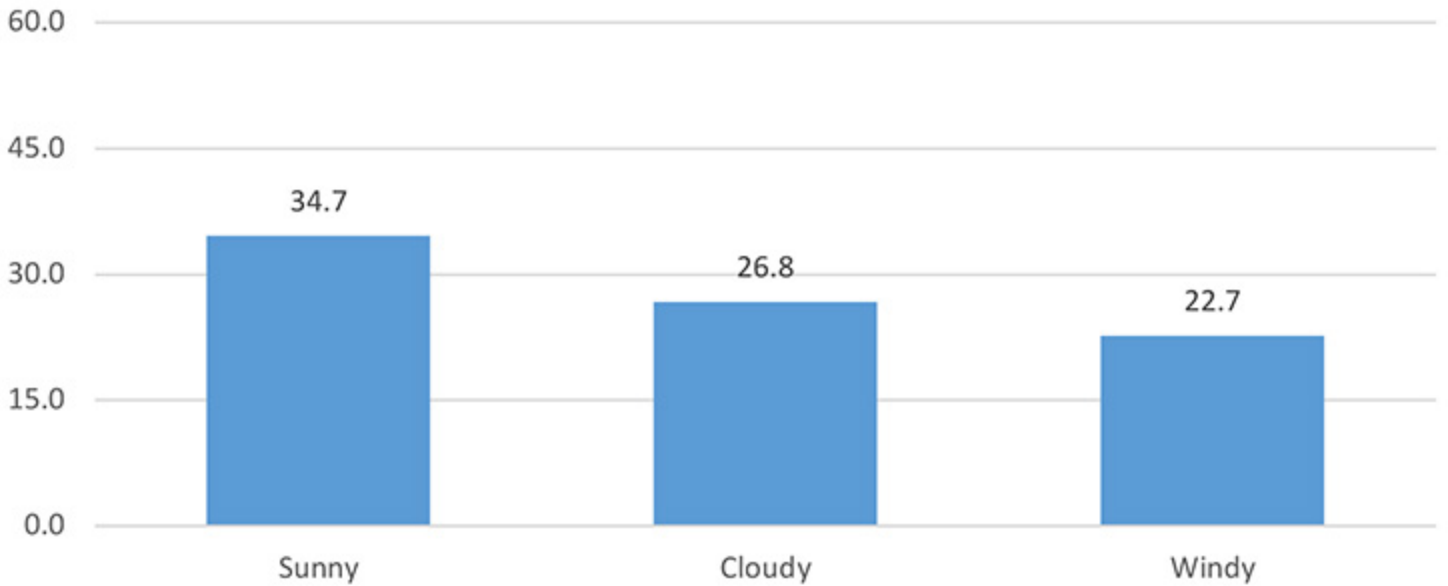
Percent of Trail Users by Activity
(Winter 2022)



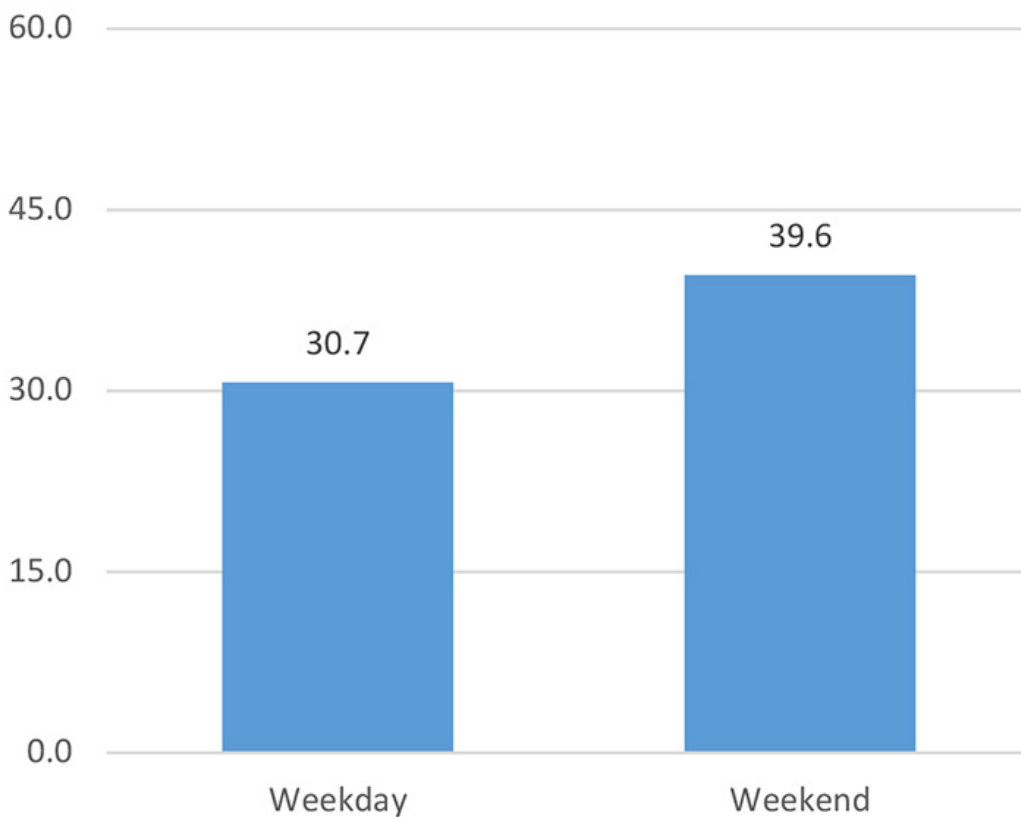
Percent of Trail Users by Age Group
(Winter 2022)

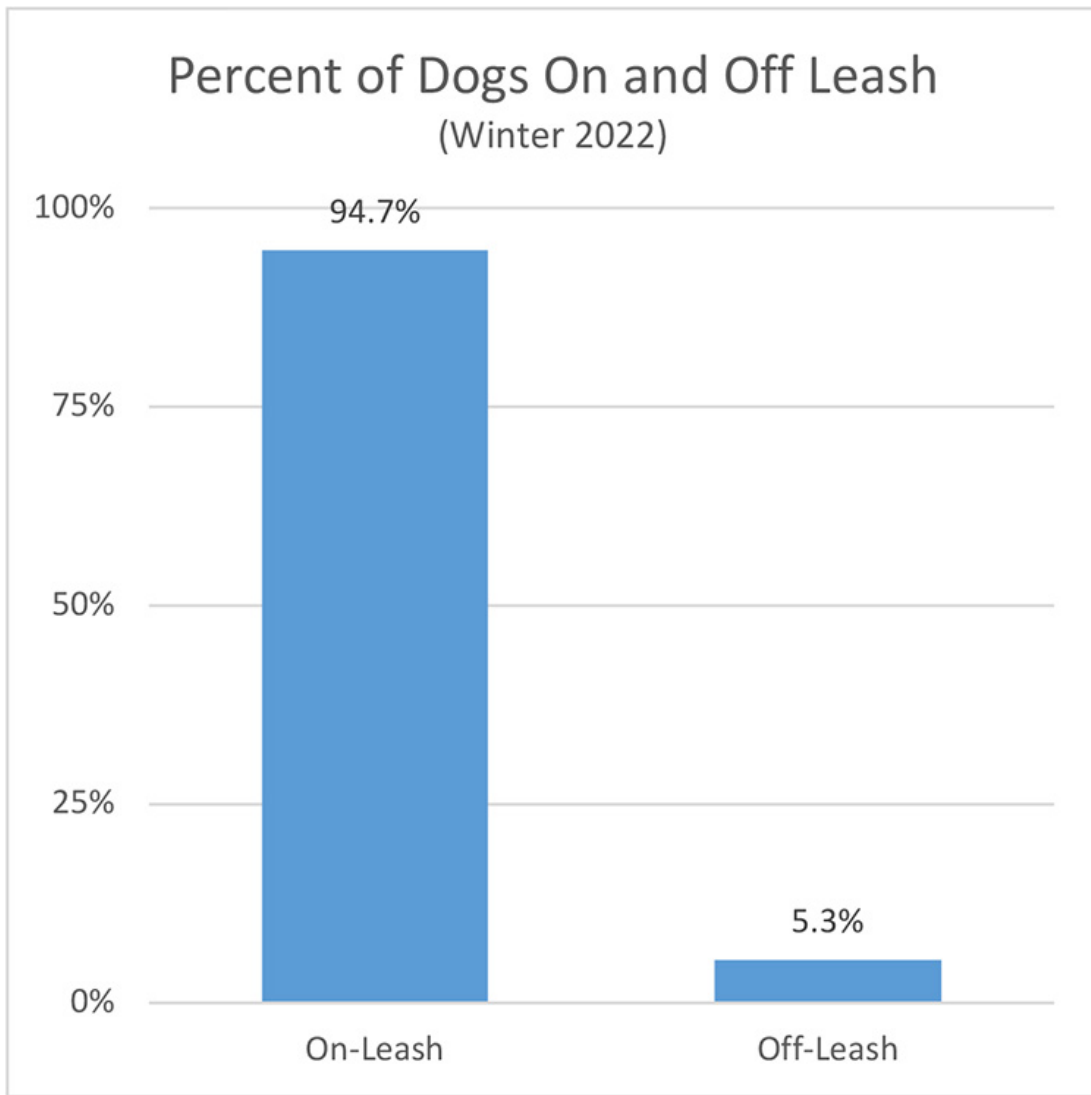


Average Trail Users per Hour By Weather
(Winter 2022)



Average Trail Users per Hour on
Weekdays and Weekends
(Winter 2022)





Dust Control

The application of binder to the main Marsh trail to control wind blown dust was a success! We will be continually monitoring the trail to assess how long the binder remains effective. More information on the binder is available here https://www.icgroupusa.com/products/construction_materials/icg_SoilSement-EngineeredFormula.pdf.



Multiple applications of acrylic and polyvinyl acetate polymer non-hazardous binder was applied to the Marsh trail.

Mesa Trail Opening

The MESA Trail Opening Celebration for the Community will be on Saturday May 14th from 10:00 - 1:00 pm. Come explore the new trail, learn more about the project and 'earn' a celebration t-shirt, participate in nature-based kids activities, take a tour of the rare plant species populations, enjoy some refreshments and more!

The formal blessing and gratitude circle will be from 10:30 - 11:15 am. Please join us on the Mesa itself (via Venoco Road) for this event and then enjoy the trail and more!



Visitors to NCOS will soon be able to walk the Mesa trail and enjoy the thriving native grassland.

TODAY IS GIVE DAY!

UCSB GIVE DAY
THE CHEADLE CENTER

THERE ISN'T MUCH TIME LEFT!

01 : 02 : 14 : 59
DAYS HRS MIN SEC

GIVE NOW x2

Help us keep NCOS Beautiful and our educational programs running by supporting us on Give Day on Thursday April 7th. A big showing of support, no matter the size, will send a strong message to campus about how much the community values this project. [Click here to donate.](#)

FEATURE STORY

[*Your Local Wetland at Work*](#)



NCOS during rain storm March 28th 2022.

North Campus Open Space not only provides a safe space to walk, bike, run, and enjoy nature; the wetland is also working to improve water quality. Nutrients such as Nitrogen and Phosphorus that accumulate on the ground from fertilizer, animal waste and car exhaust, leaches into the local watershed during heavy precipitation events. In the realm of biogeochemistry, wetlands are considered a “sink,” or a location in which these nutrients are removed from the water by natural processes. Nitrogen in the water is typically in the form of Nitrate (NO_3^-) which could be harmful if consumed. Aerobic and anaerobic microbes work together in a process called “denitrification” to transform this soluble nutrient into a harmless gas, N_2 , which makes up more than 70% of the air we breathe.

[This feature story is continued on page 23.](#)

VOLUNTEER OPPORTUNITIES



"Second Saturdays" at NCOS

This month: April 9, 9-12

Please RSVP to ncos@ccber.ucsb.edu

Help us restore and create NCOS with plants and more! Meet at 6969 Whittier Drive at 9am. Bring water, sunscreen, and wear a hat, clothes and shoes that are suitable for outdoor work.



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.



Nature Guide Tour

This month: April 16th, 9:30 -11

Come take a walk around NCOS and learn about native plants and animals with a trained Nature Guide.

COMMUNITY FORUM & PHOTOS

We are interested in any observations of wildlife activity on NCOS, as well as plants and landscapes. Please send your observations, with or without photos, to ncos@ccber.ucsb.edu. Thank you!



Wood ducks are one of the few duck species that possess strong claws capable of gripping tree branches. Seen at Whittier Pond. Photo by Pamela Viale.



Soras flick their tail as they wade slowly around wetlands. Seen at Phelps Creek. Photo by Pamela Viale.



Caspian terns are the largest of all terns and have a deep, raspy call. Photo by Jeremiah Bender.



Caspian terns are found all over the world in both freshwater and saltwater environments. Photo by Jeremiah Bender.



Although they will tolerate some vegetation, Black-necked stilts prefer large openings of shallow water where they spend much of the day wading. Seen at seasonal pond. Photo by Jeremiah Bender.



Greater yellowlegs eat primarily aquatic invertebrates but will take frogs and small fish if they can catch them. Seen at seasonal pond. Photo by Jeremiah Bender.



Western Sandpipers gather in flocks that number in the hundreds of thousands during their spring migration through California. Photo by Jeremiah Bender.



Yellow faced bumblebee (*Bombus vosnesenskii*) foraging on Purple Sage (*Salvia leucophylla*). Photo by Jeremiah Bender.



Cliff swallows collect 900 - 1,200 individual mud pellets from nearby wetlands to build their gourd shaped nests. These swallows are utilizing the seasonal pond in the northwest of NCOS near our newly built nesting structure - hopefully they find it attractive!

Received this email from a friend? [Click here](#) to subscribe to our mailing list.



**For more information on the
North Campus Open Space Restoration Project, [Click here](#), or email ncos@ccber.ucsb.edu**

Copyright © 2022 Cheadle Center for Biodiversity and Ecological Restoration (CCBER), All rights reserved.



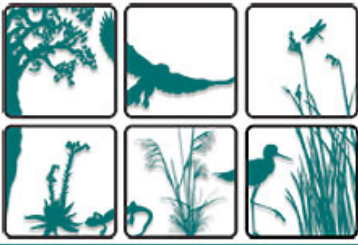
Want to change how you receive these emails?
You can [update your preferences](#) or [unsubscribe from this list](#)

This email was sent to <<Email Address>>

[why did I get this?](#) [unsubscribe from this list](#) [update subscription preferences](#)

Cheadle Center for Biodiversity and Ecological Restoration (CCBER) · Bldg 578 Harder South · UCSB, MC 9615 · Santa Barbara, CA 93106 · USA



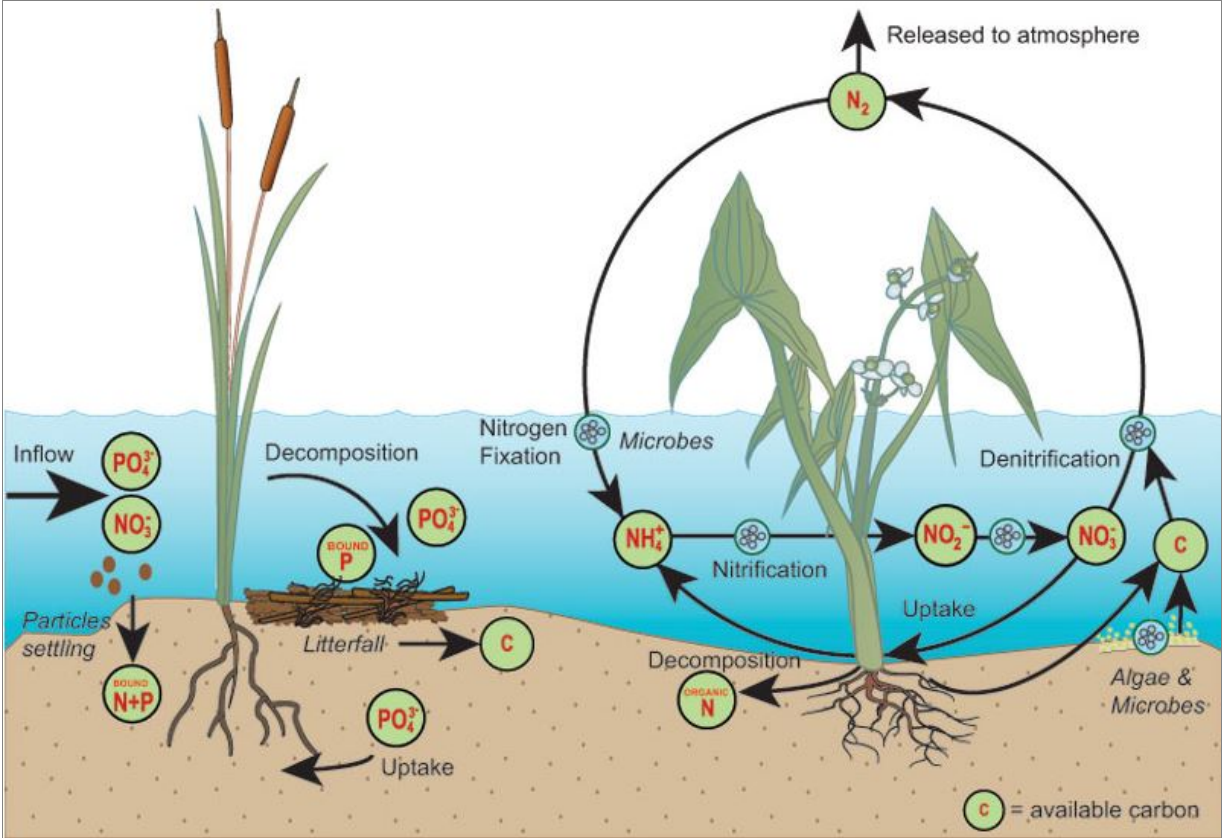
[Home](#)[News](#) ▾[About](#) ▾[UCSB Natural History Collections](#) ▾[Ecological Restoration](#) ▾[Data & Research](#) ▾[Education](#) ▾[Home](#) » [Blogs](#) » [jeremiahbender's blog](#)

YOUR LOCAL WETLAND AT WORK



NCOS during rain storm March 28th 2022.

North Campus Open Space not only provides a safe space to walk, bike, run, and enjoy nature; the wetland is also working to improve water quality. Nutrients such as Nitrogen and Phosphorus that accumulate on the ground from fertilizer, animal waste and car exhaust, leaches into the local watershed during heavy precipitation events. In the realm of biogeochemistry, wetlands are considered a “sink,” or a location in which these nutrients are removed from the water by natural processes. Nitrogen in the water is typically in the form of Nitrate (NO_3^-) which could be harmful if consumed. Aerobic and anaerobic microbes work together in a process called “denitrification” to transform this soluble nutrient into a harmless gas, N_2 , which makes up more than 70% of the air we breathe. Soluble phosphate (PO_4) is removed from the water by settling out in the calm water of the estuaries and by binding to clay particles. These two processes are shown in the diagram below. Many features at NCOS promote denitrification and phosphate reduction such bioswales, seasonal ponds and the estuary itself. These features promote denitrification, by decreasing flow and increasing surface area for water and particles to settle. They also promote phosphorus reduction because the clay soils provide a substrate for the solutes to bind to. By reducing nutrient and sediment runoff this wetland is making the ocean a safer place for swimmers and wildlife.



Nutrient cycle <http://www.wetlands-initiative.org/nutrient-removal>

NCOS staff and student researchers are working to quantify the nutrients fluxes in the wetland. To do this we need to grab our rain gear and chase the storm! We have been collecting water samples and stream flow measurements during rain events over the past four years. Collecting stream flow will help us convert nutrient sample concentrations received in mg/L to total pounds of nitrogen and phosphorus entering the system per storm. This research has been made possible with the help of UCSB professor John Melack and his lab equipment. Students have also been working to characterize the watershed by collecting dissolved oxygen and salinity data, measuring groundwater depth and identifying aquatic flora and fauna.



Hayden Vega helping collect stream flow measurements at Phelps creek Marymont bridge during a lower flow time period.



Preparing to take stream flow measurements from Whittier pond outflow.

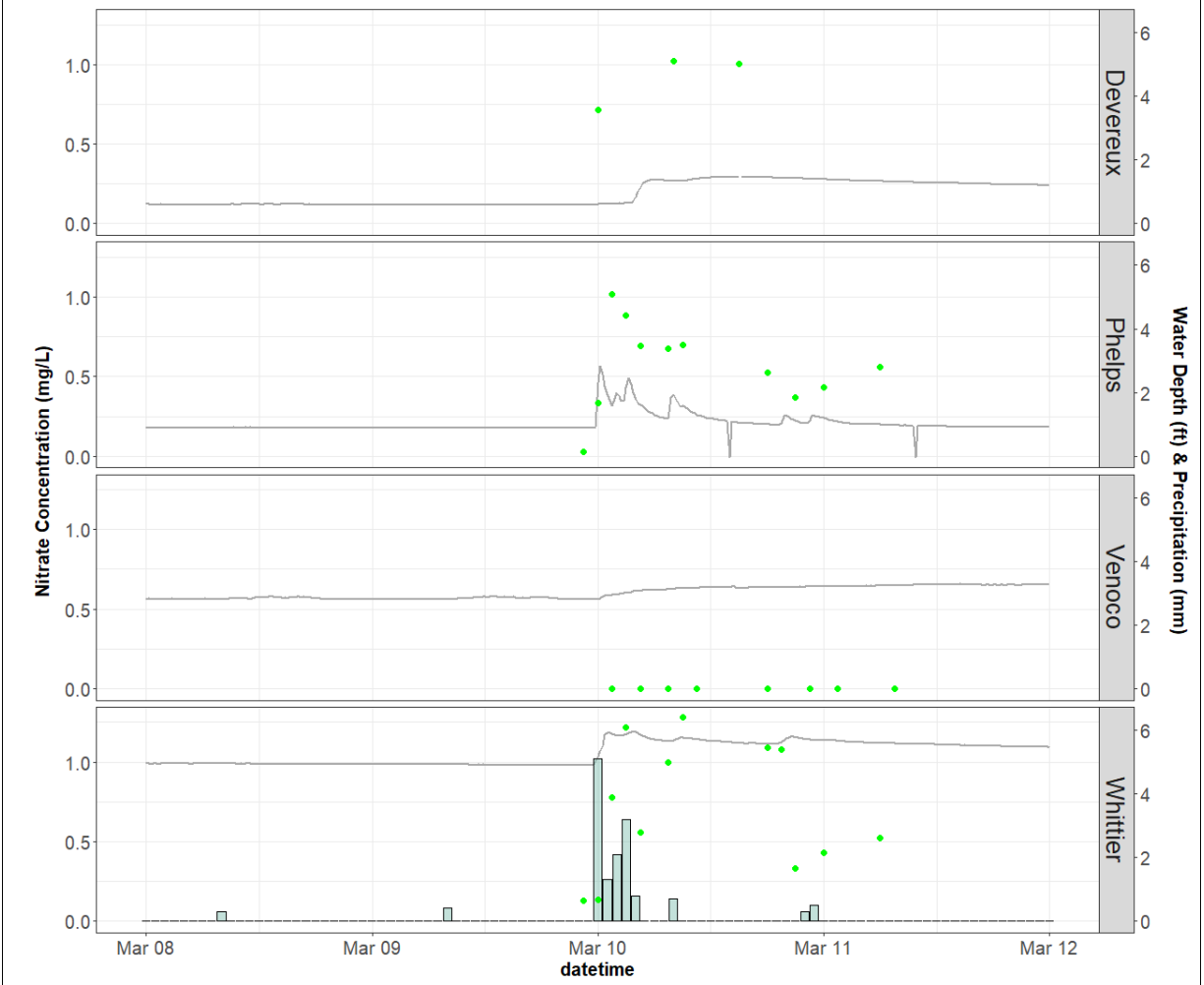


Ulva intestinalis, a type of algae that responds to nutrient influxes and takes up nutrients. Because Devereux Slough opens to the ocean periodically after large storms, there is an opportunity for the decayed, organic matter to leave the system each year.

We intend to synthesize the data we have to write a scientific paper on the findings which will quantify the multitude of benefits that the restoration project is providing to the larger Goleta watershed. In the hydrograph below you can see how nutrients (green dots) typically increases with flow rate, as indicated by stream stage (e.g. water level). You can also see that the concentration of nutrients coming in to the system at Phelps and Whittier, for example, is much higher (0.5-1 mg/L) than that flowing out of the NCOS portion of the wetland at Venoco Bridge (0.01 mg/L).

However, concentration is not the whole story! As mentioned earlier, we are working on measuring stream flow so we can quantify the volume of water entering the system by multiplying flow rate by time at that flow rate. If you have stood at Phelps Bridge during a rain event you know how fast the flow rate can jump up and also drop. We can then multiply the volume of water by the nutrient concentration at each flow rate to characterize the total weight of nitrates and phosphates entering the system. This data will allow us to compare the nutrient inputs to other systems and to follow the fate of those nutrients in Devereux Slough. Because the mouth of the slough only opens to the ocean after significant rain volumes, there is more time for denitrification to happen in the calm estuary. But, because it only opens to the ocean once or twice a year, there are also fewer times to quantify the nutrients leaving the Devereux Slough system, so we have to be ready to collect when those events happen.

March 2021 Storm Nitrate Concentration



Nutrient concentrations from the inlets of Devereux Slough.

Lastly, here are just a few ways you can help to reduce nutrients in your wetland: always clean up your pet waste, decrease your fertilizer application, use phosphorus free fertilizer, and if you do need fertilizer be sure to avoid applying it right before big storms.

Date:

Wednesday, April 6, 2022 - 09:45

[Contact Us](#)

Cheadle Center for Biodiversity and Ecological Restoration • Earth Research Institute

Copyright © 2007-11 The Regents of the University of California, All Rights Reserved.

UC Santa Barbara, Santa Barbara CA 93106 • [Terms of Use](#)

[UCSB website](#)

