F. APPENDICES TO THE COPR MP

Appendix 1. Coal Oil Point Reserve Access Plan

The Coal Oil Point Reserve recognizes the value of the public experiencing and appreciating the Reserve's unique habitats. Its relatively liberal access policies are an exception to general Natural Reserve System policy and represent an opportunity for the Reserve to promote its education and outreach missions. Implementation of the Access Plan provided appropriate forms of public access while protecting sensitive habitats. For example, in 2000, the Reserve created 1,500 feet of new interpretive trails along the Devereux Slough margin to promote environmental education and increase pedestrian safety while planting the margin of the slough with native vegetation. Benches and interpretive signs have enhanced the public's experience and their understanding of the Reserve's fragile ecosystems.

The public can access the beach from West Campus Beach and Ellwood Beach and from 3 access points on the bluffs, at the eastern boundary of the Reserve near the Cliff House, at the southern terminus of the Dune Pond trail, and at the western boundary of the Reserve adjacent to Ellwood Bluffs (Figure 1). The eastern bluff access point near the Cliff house has been improved with a new split rail fence. There is a control gate that restricts access to pedestrians and inhibits access by motorized vehicles, bicyclists and equestrians. Visitors proceed down the cliff along a trail that follows the edge of the foredunes and reaches the beach near the plover area.

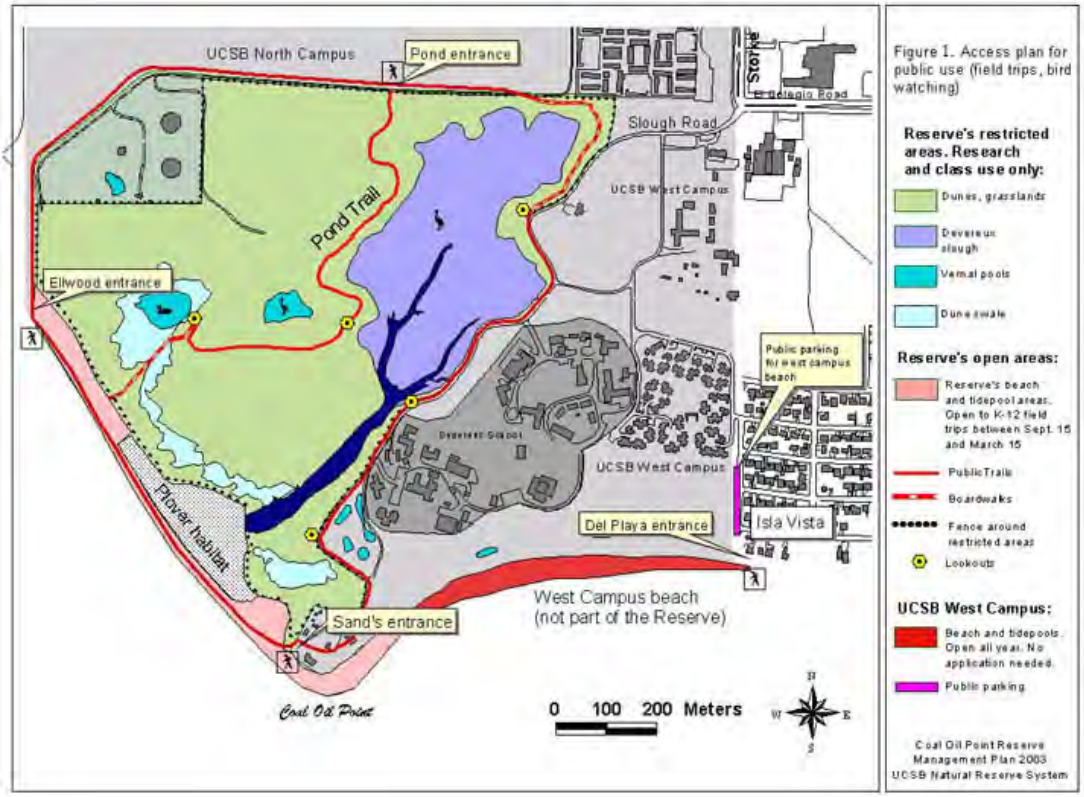
Status. The Access Plan (NOID1-10) has been fully implemented. In summary, the northern and western boundaries of the Reserve were partially fenced, old chain link fences were replaced with Woodcrete fences, and unauthorized trails were closed and restored.
In June of 2011, an electric gate was installed at the main entrance to the Reserve. The small parking area (up to 15 cars) inside the reserve is restricted to approved Reserve users. Restricting the parking access has helped limit inappropriate recreational use of sensitive habitats on the Reserve. Public parking has been created on the Devereux Campus.

Foot traffic and leashed dogs are allowed on the beach except within the dry sand areas of the plover roost and nesting areas, which are designated by a post and rope fence and signs (see Snowy Plover Management Plan). The post and rope fence surrounding the roost area in winter

will be extended during the breeding season to also protect nesting birds. Horses are not allowed on the beach to avoid disturbance to plovers and other shorebirds. A beach corridor is provided so that lateral movement of people along Sands Beach is not impaired. Docents will staff the beach area and provide information to the public about plover protection measures. The Delta path has been permanently closed to reduce foot traffic through the plover roost as per the Coastal Commission decision of November 16, 2001 (NOID 1-01). Group recreational activities that may cause disturbance to shorebirds, such as Frisbee, football, kite flying, and surf contests, are not allowed on the beach. The Reserve works with the campus police to achieve compliance with restrictions on alcohol intoxication and prohibitions of fires and camping in the Reserve (including the beach area), and to reduce vandalism, litter and trespassing. The Reserve will also work with campus police to achieve compliance with the Santa Barbara County leash ordinance. Lack of compliance with beach regulations that causes harm to the Reserve's natural resources, including snowy plovers, will cause access on Sands Beach to be re-evaluated and additional measures will be put in place to ensure protection of the Reserve and the plovers.

Policies and Actions. Public access and leashed dogs are permitted on the beach except in the designated snowy plover roost and nesting areas delineated by a post and rope fence. The public is also permitted in the Dune Pond Trail but dogs and horses are not. When there is a conflict between conservation of natural habitats (or research areas) and access, access will be modified to accommodate the conservation priorities. The Reserve will manage internal trails and access within the Reserve boundaries to protect natural resources and research projects. The Reserve retains the right to request termination of an activity that harms natural resources, including wildlife. Surf contests and try-outs and launching of kite surfing from the beach are not allowed because of the great disturbance they cause to wildlife.

Figure 1. Map of access points at COPR.



Appendix 2. Western Snowy Plover Management Plan

Snowy Plover Management Plan

Updated 2015

Summary.

UC Santa Barbara's Coal Oil Point Reserve (COPR) manages 170 acres of coastal habitats including the beach to the mean high tide. Sands Beach near the Devereux Slough mouth is a wintering and breeding site for the threatened Western Snowy Plover (WSP), and occasionally the endangered California Least Tern.

The Reserve is the first site to recover a historical breeding site of plovers that was terminated from human disturbance. Breeding of WSP had stopped at the Reserve when the beach became open to the public in the late 1960s. Evidence suggests that increased public use caused intense disturbance and contributed to the cessation of breeding. In 2001, the Reserve proposed a plan to reduce the disturbance to the wintering population. The plan was approved by the California Coastal Commission on November 16, 2001. The plan included the following actions: (1) installation of educational and regulatory signs, (2) closure of the Delta path that terminated in the plover roost area, (3) installation of a post and rope fence along a 400 meter stretch of beach above the mean high tide, (4) creation of a program to enlist docents to monitor plovers on the beach and educate the public about plovers, and (5) implementation of actions to reduce disturbance by official Reserve users, the public (e.g. direct public activities away from the roost area), domestic animals (e.g. increase compliance with leash rules and ordinances), and predators (e.g. reduce crow activity by cleaning up trash).

Immediately after the implementation of these actions, the plovers began breeding at the Reserve again. To accommodate for the new breeding population, the symbolic fence was extended to the west during the breeding season, and a predator control program started in 2008.

This program was hugely successful but a fast growing population in Goleta and on the UCSB campus creates new challenges for the protection of the beach. This plan identifies the need for new funds to maintain the Reserve and protect its beach from overuse. We plan to achieve these objectives through increased education efforts, a dedicated enforcement program, and a predator control program.

Rationale

The Pacific population of WSP is listed as threatened by the US Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA). The beach that extends from the western edge of Isla Vista to the middle of the Ellwood Mesa area, including Sands Beach at UCSB Coal Oil Point Reserve has been designated as critical habitat by the USFWS. Protective management of plovers at Sands Beach is necessary because the beach is open to the public. Public recreation has been one of the main causes of breeding site degradation and plover decline along the Pacific

Coast. People unknowingly disturb wintering plovers and may trample eggs or chicks during the breeding season. Because the UC Natural Reserve System's mission is to protect natural areas for research, education, and public outreach, COPR has the opportunity and responsibility to be engaged in an active and creative plover management plan.

History

Lafferty (2000) reviewed the status of snowy plovers at Coal Oil Point in an effort to aid management decisions by the Reserve. A study of the types of disturbances experienced by snowy plovers and other shorebirds at the Reserve was also undertaken (Lafferty 2001a, b). These studies suggested several actions for managing snowy plovers and shorebirds at Coal Oil Point. Waldo Abbott, a long-time natural historian and former curator of the Santa Barbara Natural History Museum had watched snowy plovers (and other wildlife) disappear from Goleta beaches. In a 1972 interview, he reflected on the link between increased public access and losses of sensitive wildlife and, in particular, the importance of prohibiting dogs on the beach at Coal Oil Point (Kellogg and Yokota 1972). In "Recommendations for the Future Management of Environmental Lands: West Campus", ornithologist Paul Lehman recommended a leash enforcement plan to reduce disturbance. The 1990 Long Range Development Plan (LRDP) required that the UCSB prohibit dogs on campus beaches and restrict parking at COPR, although in the past, the campus did not enforce the prohibition of pet dogs in the area. The 2010 LRDP prohibits dogs on campus beaches. Fahy and Holmgren (1993) proposed fencing potential nesting areas, beach closure between March and June, a public education campaign, enforcement of pet dog restrictions, habitat restoration and, if plovers were to breed, predator enclosures around nests and predator removal. They also suggested considering the reintroduction of large predators such as coyotes and bobcats to control the introduced red fox. Meeker (1996) recommended greater restrictions on access (especially for pet dogs) to the area of beach used by plovers. De Chant (S.B. Audubon, in. litt. 1997) asked that the University prohibit pet dogs, provide public education, and minimize access points near the roost. Coon (letter, 1997) acknowledged the willingness of the Reserve to experimentally close the beach, use volunteers to reduce disturbance, enforce existing pet dog restrictions, provide public education, restrict equestrian and motor vehicle access, and investigate other access controls. There is a current Santa Barbara County ordinance that requires dogs to be on leash on all public lands, but this law is rarely enforced in the county.

In 1997, and again in 2001, the Santa Barbara Chapter of the Audubon Society requested that UCSB develop a management strategy for snowy plovers (e.g., De Chant letter, 1997). The USFWS expects local management entities, such as COPR, to develop successful management plans and in 1997 asked for the Reserve's participation in the recovery plan process (Coon letter, 1997). In 1999, biologists from the Ventura Field Office of the USFWS visited the Reserve and determined that recreation was leading to "take" (i.e. harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species) of plovers as defined by the Endangered Species Act (D. Noda letter, 1999). Instances of take are in potential violation of Section 9 of the ESA, particularly if the property owner does not make satisfactory efforts to minimize them, and can result in a $200,000 fine for each infraction. An estimate of the rate of "take" of snowy plovers at the Reserve was around 150,000 incidents per year in 1999 before management began (Lafferty 2001).

The USFWS requested that the University apply for an incidental "take" permit, pursuant to section 10(a)(1)(b) of the ESA (Noda letter, 1999). An incidental "take" permit allows a landowner to legally proceed with activities that would otherwise result in an illegal "take" of a listed species. An incidental "take" permit is legal protection for a landowner in case a listed species is "taken" despite the owner's best efforts. The necessary components of a completed permit application are a standard application form and a low-effect Habitat Conservation Plan (HCP).

Subsequently, in lieu of an incidental "take" permit, the USFWS suggested that UCSB develop a management plan to reduce disturbance. The Reserve has taken the lead in developing a management strategy for plovers and has management authority within its boundaries. The campus assists the Reserve in limiting impacts from recreational activities by providing police and parking services enforcement of beach and parking regulations.

In 2001, the USFWS released the draft Western Snowy Plover Recovery Plan, providing goals and management guidelines. Goals set for COPR were four breeding adults (with a five-year average of one fledged chick per breeding male) and protection of the wintering population from disturbance. Because the plover recovered so well at the Reserve, the recovery goal was increased

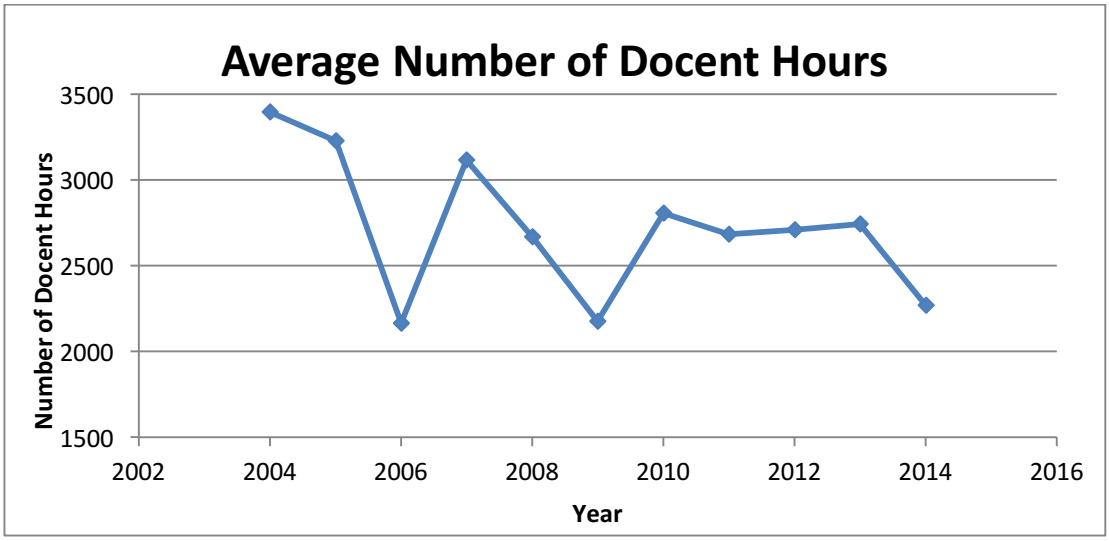
to 25 breeding adults in 2007. The Reserve's SPMP was written to be consistent with the USFWS recovery plan. The Service reviewed the COPR draft SPMP and provided a comment letter in October, 2001. In this letter, the Service suggested additional efforts to reduce trash and crows and more restrictive actions if goals were not met.

Status of implementation of the Snowy Plover Management Plan at the Reserve

1. Public Education

The Reserve instructs its users to avoid the plover area, leash their dogs, and walk along the ocean edge. Public education is provided through monthly field trips, slide shows, and a docent program that started in June 2001. The docent program has been a huge success in educating beach users and improving compliance with the leash law and restricted areas. The volunteer docents are recruited in the community and at UCSB. In addition, the Reserve seeks funds from grants for paid interns to fill shifts that are not chosen by the volunteers. The docent program staffs the beach approximately 3,000 hours per year (Figure 1), during daylight hours, 7 days a week. The Reserve is in the process of creating a Nature Center which will provide more ways to educate the visitors, such as exhibits and short films. More education needs to be done to target specific audiences such as freshman students living in the UCSB housing, particularly the new dorms close to the Reserve.

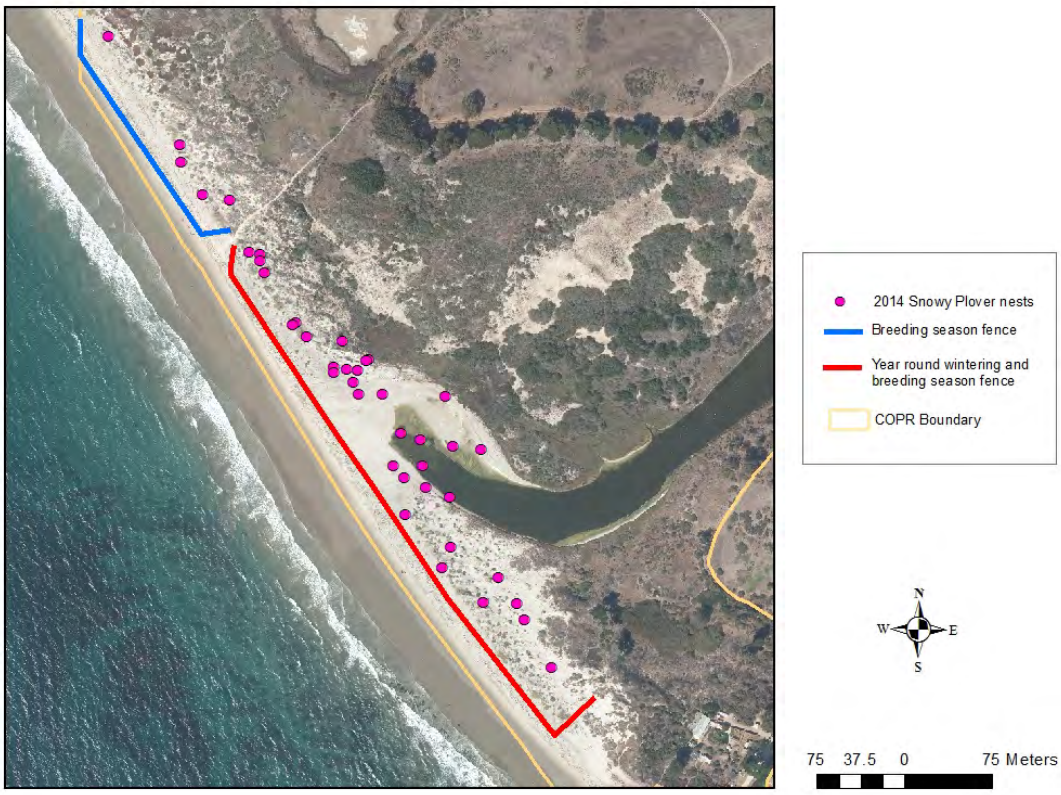
Figure 1. Average number of hours worked by snowy plover docents per year.



2. Fencing during the Winter

The Reserve continues to fence the main roost area during the winter to reduce disturbance to plovers (Figure 2). Beach erosion in the last 4 years has taken down the symbolic fence making the protection of plovers more challenging. There are several weeks each Winter when the plover population is not protected with fences because of beach erosion and high surf.

Figure 2. Map of Sands beach and COPR showing the locations of the symbolic fence to protect WSP during the breeding and winter season and the nests recorded in 2014. Note that the Winter fencing is often smaller than depicted in the figure because of beach erosion.



3. Fencing during the breeding season

Each breeding season, the Reserve extends the symbolic fence to the west end of the Reserve. Ideally the symbolic fence is installed on March 1st but beach erosion has forced us to wait until later to install the fence. The Western Snowy Plover habitat at COPR has narrowed substantially because of beach erosion, reducing the carrying capacity of the system for plovers. This makes it difficult to protect the plovers from disturbances because people recreating on the beach are now

closer to the plovers, increasing the chances of disturbances to nests and chicks. As a result, nests have been less common east and west of the slough mouth and are now concentrated at the mouth of the slough and the slough mudflats (so long as the water level in the slough is low). We will continue to monitor the population of plovers and work with researchers studying beach erosion to attempt to understand and monitor these changes to the plover habitat.

4. Enforcement of beach use rules

The beach is open to the public for recreation. Despite the efforts of the docent program, not everyone complies with the regulations aimed at reducing disturbances to the plovers. Enforcement of the leash law has been the main regulatory problem that still exists. The Reserve posted the leash regulation on signs at all entrances of the Reserve. The docents talk to pet owners and request compliance with the leash law. Docents carry leashes to distribute to pet owners who do not have leashes. The docents also restrain dogs without owners and, if they cannot find the owner, they call County Animal Control to remove the dog from the beach. Docents call campus police if dog owners refuse to comply with the leash regulations. The number of unleashed dogs on the beach has declined since these measures have been implemented (Figure 3). Yet 40% of dogs (Figure 4) arriving at the beach are unleashed and this poses a risk to plover nests and chicks. Many unleashed dogs come from Ellwood beach, where there is no enforcement.

Figure 3. Number of dogs at Sands Beach per hour.

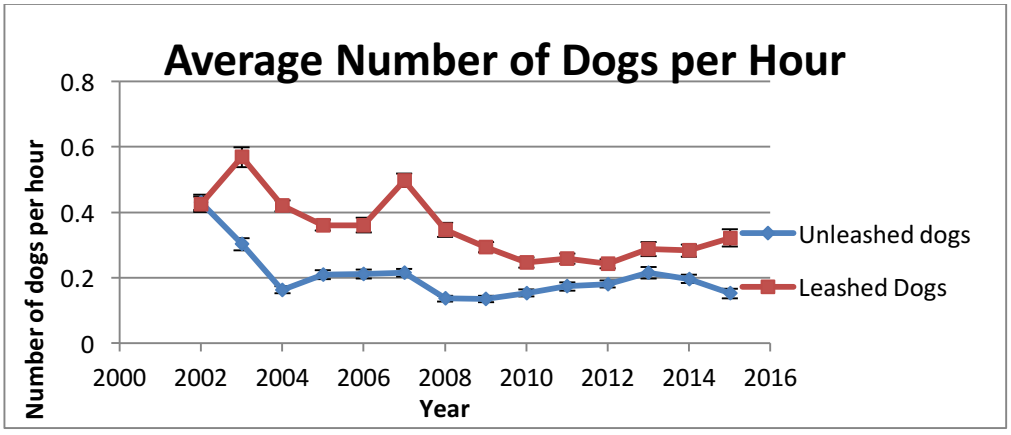
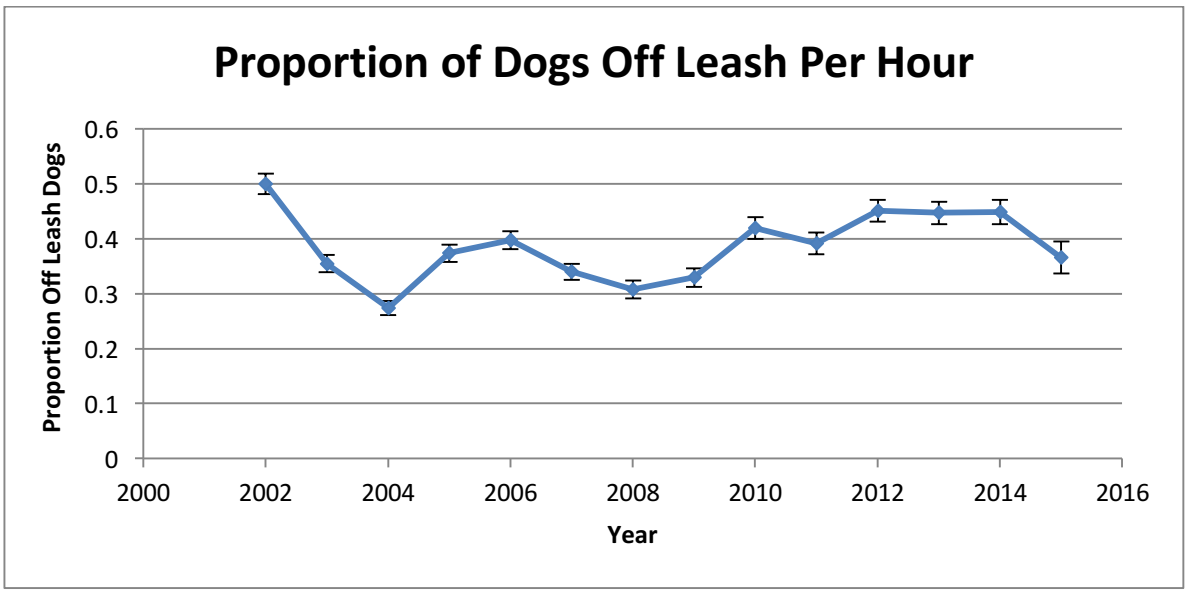


Figure 4. Proportion of dogs off leash per hour

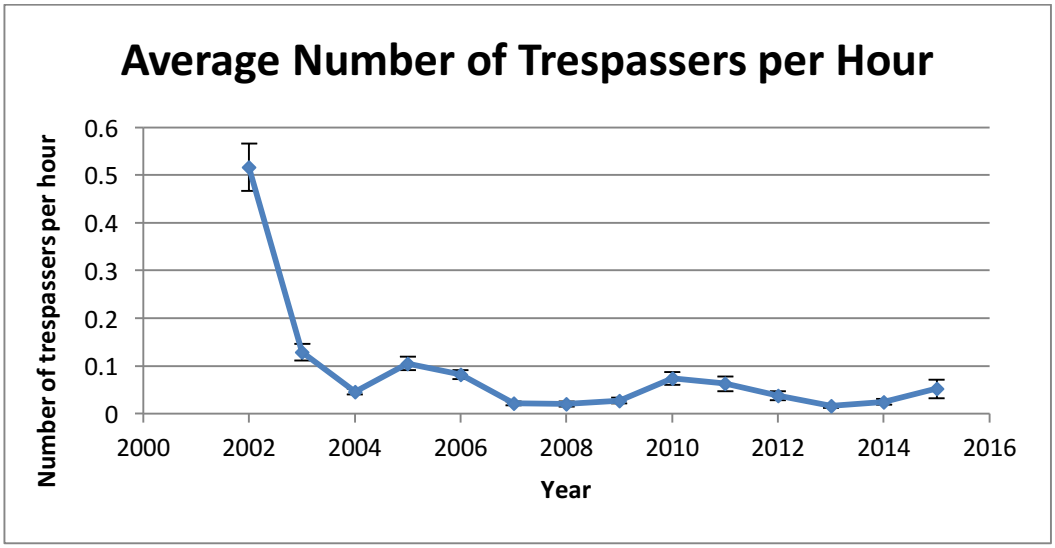


Horses are not permitted at the beach on COPR and Ellwood. Some horses still access the reserve through Ellwood bluffs and Access D.

Trespassing has decreased over the years (Figure 5) but it still occurs occasionally (about one per day). The docents talk to the trespassers or call the campus police.

The Reserve Director will work with campus Administration to get dedicated enforcement authority such as a CSO at the beach to deal with all of the public enforcement issues. The plover docents are meant to be educators and have no enforcement authority. New funds from the University need to be allocated for this purpose as enforcement of beach recreation is not the Reserve's responsibility.

Figure 5. Number of trespassers into the plover area per hour.



5. Signage

Signs showing a map of the plover area and the beach regulations were posted at all entrances of the Reserve. Along the plover fence, additional signs request that users stay along the ocean's edge (Figure 6).

Figure 6. Sign posted at the beach entrance and near plover area.

6. Monitoring of plovers

Reserve staff and trained volunteers monitor plover nests and chicks a minimum of 3 times per week during the breeding season. Although chicks are not banded at the Reserve, the small area makes it possible to determine the fate of each brood until the chicks fledge. The Reserve is required to submit an annual report to the California Coastal Commission and the US Fish and Wildlife Services. A summary of the breeding success is shown in Figure 7, 8, and 9.

Figure 7. Number of adults of WSP counted in the breeding window surveys.

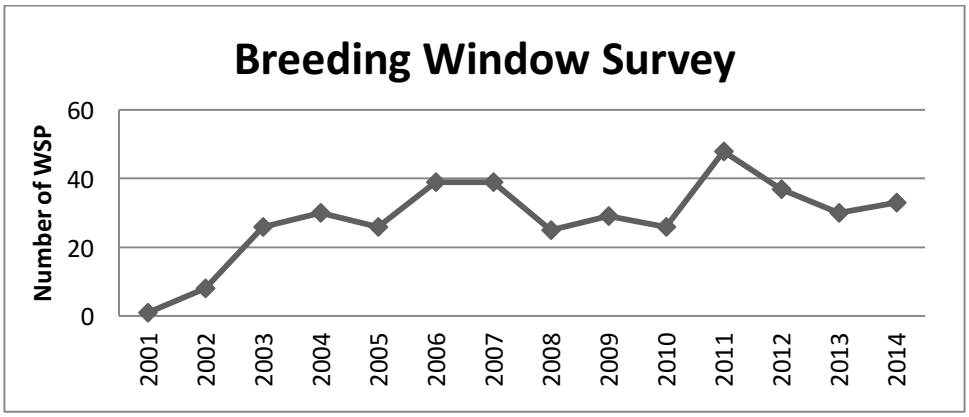


Figure 8. Number of WSP nests that successfully hatched each year at COPR.

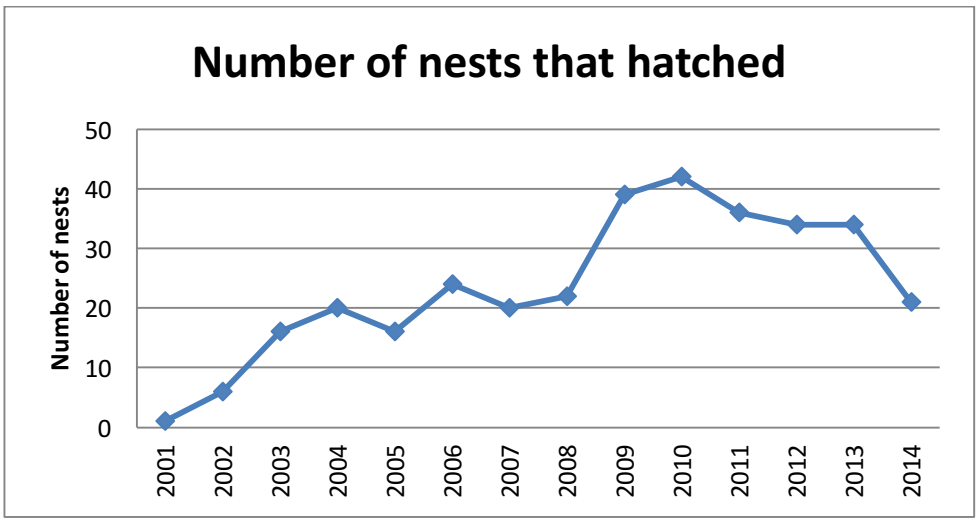
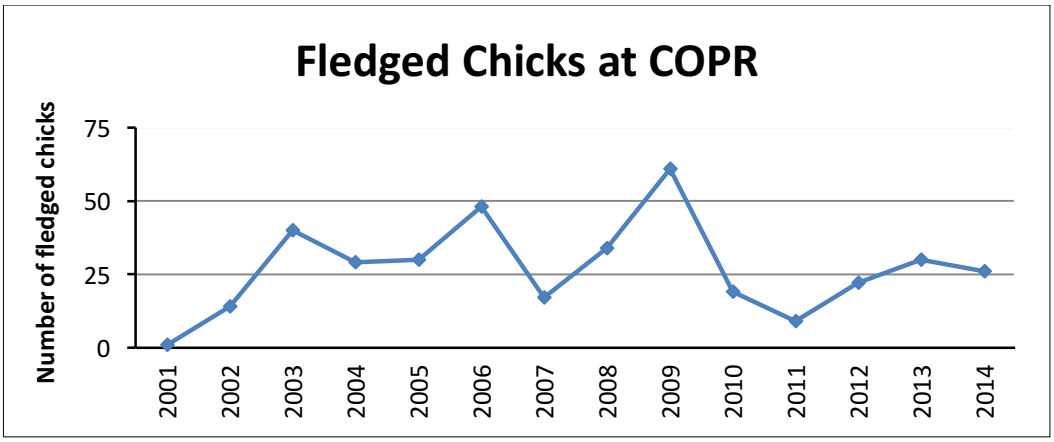


Figure 9. Number of fledged chicks of WSP at COPR



7. Monitoring of beach use

The docents count the number of people on the beach and in the ocean at the beginning of each docent shift (2 hours) (Figure 10). They also record the numbers of leashed and unleashed dogs on the beach and the number of trespassers. They note whether the interaction with the dog owner or trespasser is positive and compliant.

Figure 10. Year average of the number of beach users counted during snapshot surveys. At the start of every shift, each docent does a count of all people present on the COPR beach (sunbathing, jogging, bird watching, etc).

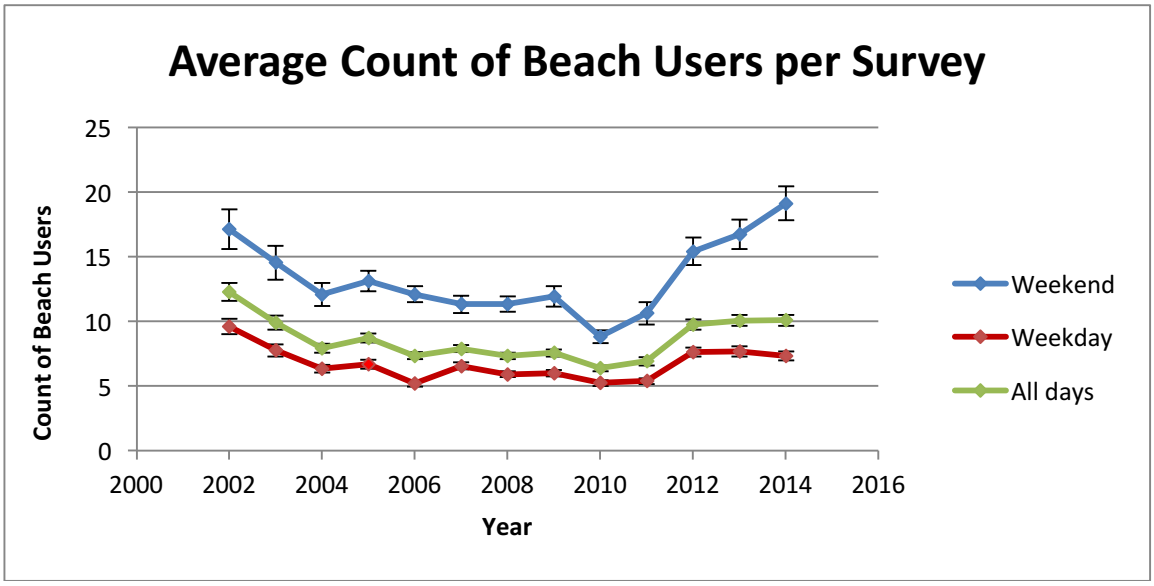
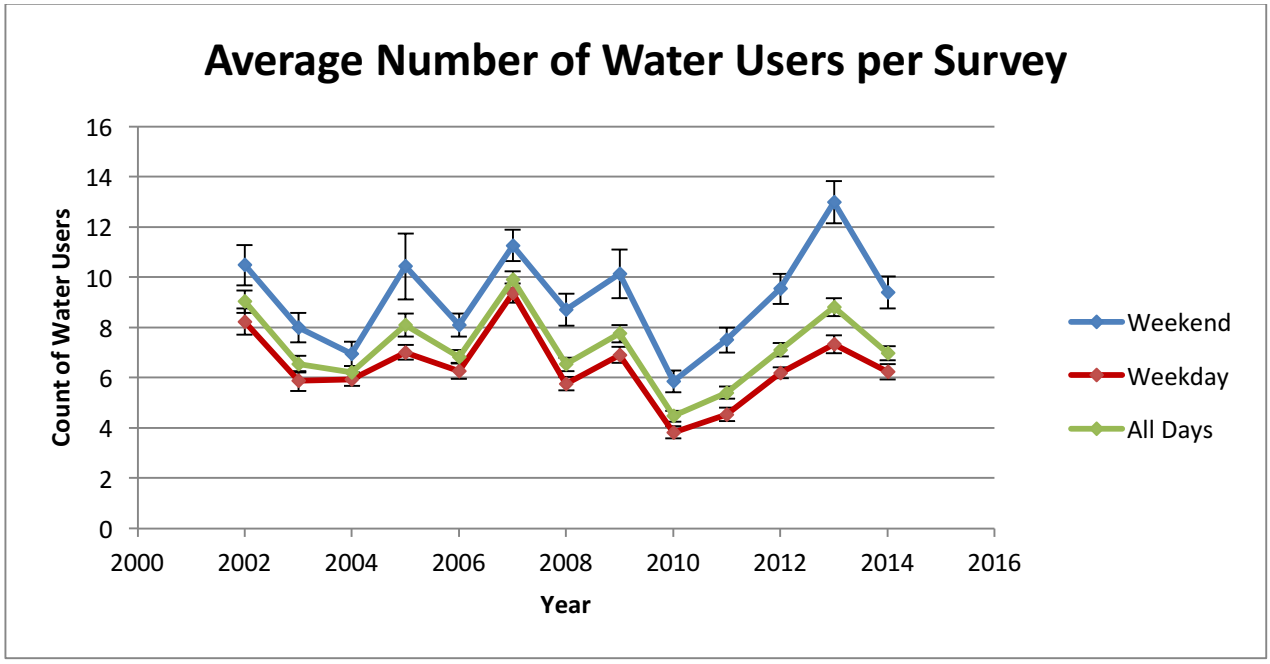


Figure 8. Year average of the number of people using the ocean during snapshot surveys. At the start of every shift, each docent does a count of all people in the ocean at COPR (surfing, swimming, etc).



8. Predator Control

Coal Oil Point Reserve has contracted USDA Wildlife Services at since 2008 to conduct predator management activities in the plover nesting area during the breeding season. USDA traps and removes mammalian predators that are found in the nesting area. New funds need to be identified for this effort as the Reserve does not have a recurrent budget for controlling predators.

To reduce crows, the Reserve replaced all trash cans and dumpsters with ones having secured lids. Also, the docents scare off crows that approach the protected area. Crow use of the beach has declined, but constant vigilance and removal of individual crows that prey on nests is still required to protect plover eggs and chicks.

Appendix 3. Coal Oil Point Reserve Restoration Plan

Prepared by Cristina Sandoval, Reserve Director, and Tara Longwell, COPR Restoration Specialist

BACKGROUND

The UC Natural Reserve System is charged with the stewardship of and preservation of native habitats. Therefore, degraded habitats should be restored and exotic species removed. The Coal Oil Point Reserve (COPR or the Reserve) contains about 170 acres of diverse coastal habitats. Approximately 1/4 of this area has been impacted from agricultural practices before it became a reserve. The Reserve's goal is to restore degraded habitats to a close proximity of their historical condition while contributing to the recovery of endangered and rare species, when appropriate.

Restoration at the COPR includes 3 main types of work: a) control of exotic weeds, b) revegetation with native species of the appropriate habitat type, and c) replacement of exotic trees with native trees.

A. CONTROL OF EXOTIC WEEDS

The most important exotic species (other than trees) that have been removed or are still being removed include acacia, myoporum, tamarix, fennel, thistles, harding grass, pampas grass, cape ivy, iceplant, and annual grasses.

The removal of small herbs and grasses is primarily accomplished by hand-removal, mowing, solarization, and/or herbicide application (in the case of harding grass and fennel). There is no grading or excavation used, except for the holes made to insert the seedling in the ground. The soil is not tilled. Exotic perennial shrubs and trees are cut at the base and herbicide (Glyphosate) is applied on the base to kill the roots so they do not sprout again. Whenever possible, exotic trees and shrubs are chipped and left on site as mulch.

An annual exotic grassland was mowed in 2012 on the north west corner of the reserve to control annual grasses. In the following year, a number of *Lupinus bicolor* and California poppy grew in the mowed area. Mowing with a hand mower or small tractor is now used routinely to control exotic grasses and annual weeds.

An accidental fire occurred in the western portion of the Reserve in June of 2014 and burned 20 acres. By September of 2014, several burned areas had already grown back with native vegetation, including the edges of the dune pond (photos on the right). Such disturbances (mowing and fire) had positive effects on the control of weeds and the establishment of native vegetation. Prescribed disturbances such as mowing, raking, and fires, may be used in the future for restoration in the reserve, when appropriate.

B. REVEGETATION

In 2003, a panel of specialists has been consulted about the restoration of the grasslands at the Reserve. This plan is available upon request. The panel suggested that research and education be encouraged in conjunction with the implementation of restoration projects to the extent possible.

The plant species used in restoration depends on habitat and soil type. The proportion of each plant species and how they are distributed spatially are characteristics of each plant community, which the Reserve staff seeks to replicate in restoration projects. Areas of the reserve that have not been disturbed in the past have been used as templates for the restored sites.

Plants for the re-vegetation are propagated in the reserve's greenhouse from seeds collected in the reserve. Plant species that don't occur in the Reserve but occur at similar habitats nearby, are sometimes introduced to the Reserve, under the assumption that they were extirpated from the Reserve by past human activities.

Planting is done by staff and volunteers. Watering is done as needed using a portable water tank pulled by a truck and a portable irrigation system. Mulch is applied during planting to control weeds and maintain soil moisture.

Monitoring using transects, quadrats, and photos is done before and after each restoration project. A record of the number of each plant species planted is maintained for all restoration projects.

The Reserve maintains a GIS map of the restored areas (Figure 1) and description of each restoration project (Table 1). Most restoration projects are conducted as funds become available. Habitats near wetlands have been the focus of the last 20 years. The future areas to be restored are mostly grasslands and coastal scrub as off June 2015 (Figure 2).

C. TREE REPLACEMENT

The Reserve contains several eucalyptus and cypress trees that were planted approximately 70 years ago (Figure 3, Table 2). We propose to slowly replace these exotic trees with native species such as elderberry and coastal live oak because the native trees provide a more valuable habitat for many bird species. For example, oaks produce acorn which is eaten by many species, including Acorn Woodpeckers. Elderberries produce abundant berries that are eaten by frugivorous birds. They also support a number of insect species that are eaten by birds.

In addition, exotic trees can be detrimental to the Reserve's rare ecosystem when planted in the wrong place. For example, eucalyptus is known to remove ground water and can dry wetlands. Trees near the beach and the slough attract raptors and crows which have been observed to prey on threatened and endangered birds (Western Snowy Plovers and California Least terns). The beach and mudflats are typically safe habitats for shorebirds to nest as they allow a wide view of

the surrounding giving them enough time to escape from an approaching predator. When trees are planted near these habitats, it impacts shorebirds by attracting birds of prey. The shorebirds do not have time to escape from a bird of prey hiding and observing from a nearby tree. At the Reserve, crows have been observed eating plover eggs and chicks, Great Horned Owls ate adult Western Snowy Plovers, and Red-tailed Hawk ate plover chicks and mistakenly took away a California Least Tern decoy. Thus, the removal of large exotic trees from a 500 m zone from the beach is a critical step to protect these listed shorebird species.

Trees are important habitat for birds and they may have occurred in the northern part of the Reserve and the North Campus Open Space before human disturbance in the early 1900's. The Reserve's goal is to increase the current canopy area occupied by exotic trees but use native species and at appropriate locations instead. To do this, the exotic trees will be replaced with native trees at a ratio of at least 1:1. The new oak woodland being planted since 2014 will serve as a bank for the exotic trees that will be removed. Exotic trees will be removed gradually and removals will be timed to avoid disturbance to nesting birds (only between September 1 and February 15). The gradual removal will allow the birds of prey to become used to the change in habitat and find other trees to nest. Trees are actively being used (or have been used in the last 2 years) as a nesting site for raptors, Great Blue Herons, egrets, or cormorants, will not be removed. A raptor survey was performed in August 2007, February 23 2015, March 17 2015, and May 20 2015. No raptor nests were observed in the Reserve trees or the trees surrounding the EMT oil tanks in these surveys. These surveys were part of a bi-monthly bird survey that started in 2015 and will continue in the future.

If a tree or shrub needs to be removed for safety reasons and it is during nesting season, a bird nesting survey will be performed by a qualified biologist, at a minimum one week before removal or trimming. If active nests are located in the survey, a 250-foot buffer will be placed around the nest until the young have fledged. A qualified biologist will be on site during the entire duration of construction to ensure protection of any sensitive species encountered during the course of the project. All tree trimming and removal will follow applicable LRDP Policies and protocol in LRDP Appendix 2, Tree Trimming and Removal Program.

Figure 1. Completed restoration projects at Coal Oil Point Reserve as of 2015. See Table 1 for a description of each project.

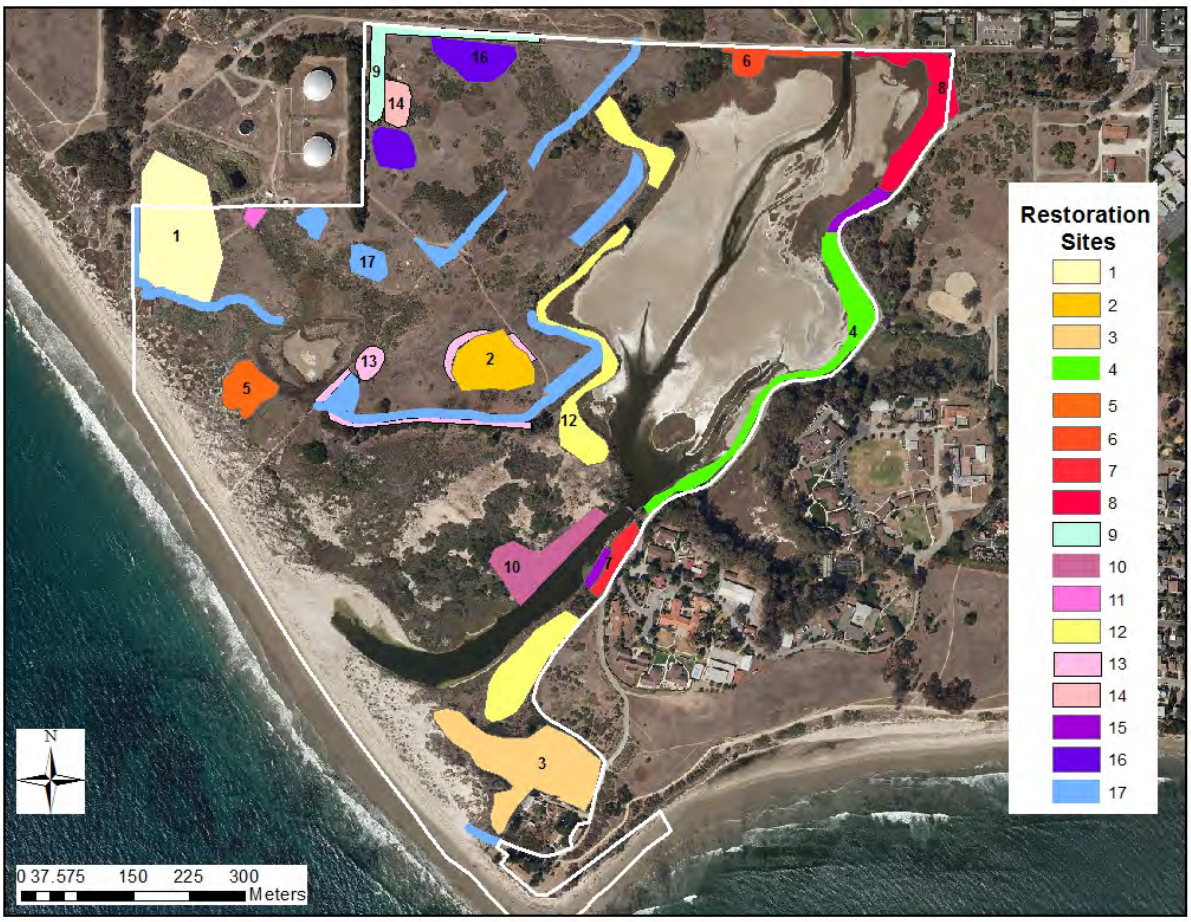


Figure 2. Areas dominated by exotic species as of June 2015 and planned to be restored in the future. The different colors correspond to vegetation types that these areas will be restore to. The dune scrub is currently occupied by iceplant and the oak woodland and grassland/coastal scrub mix areas are occupied by exotic annual grasses.

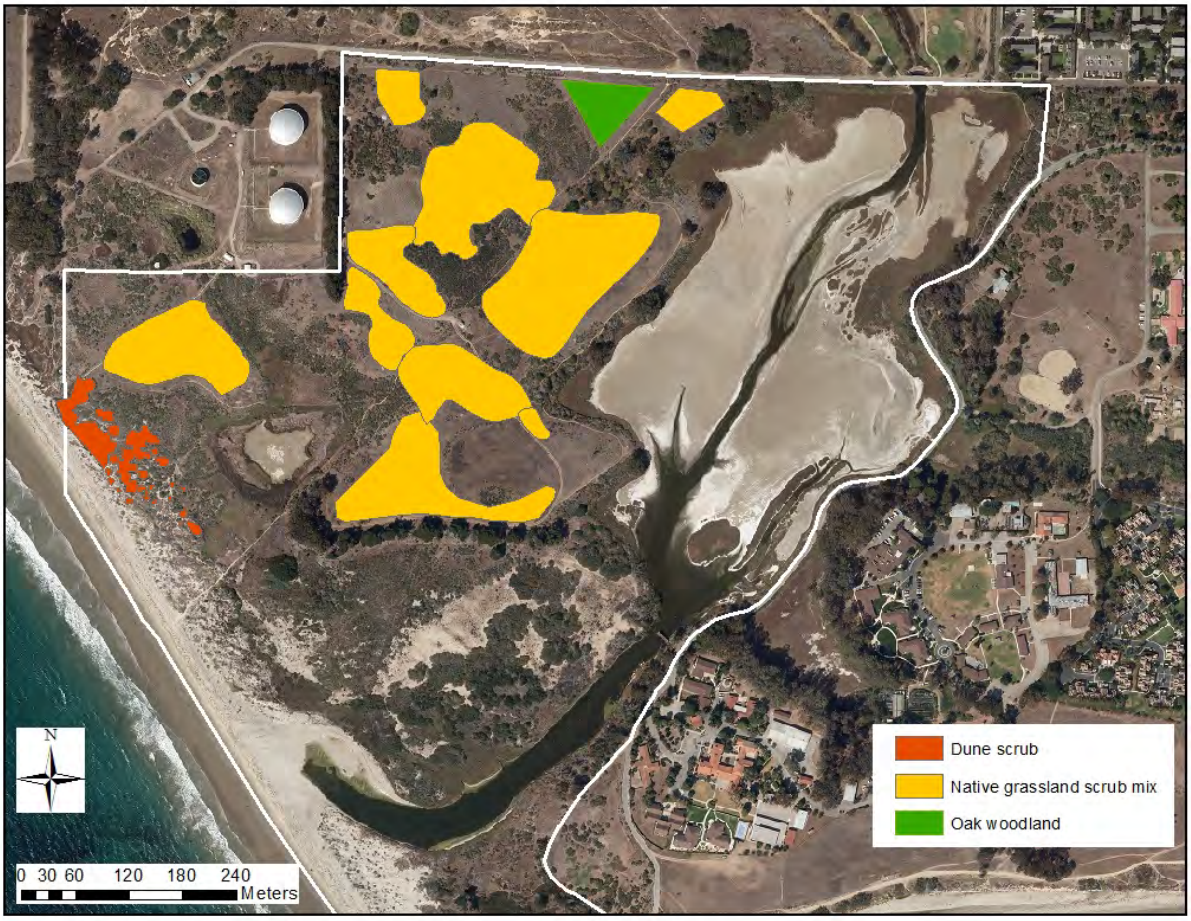


Figure 3. Location of exotic trees at COPR. Note: some trees are outside the reserve boundary (white line). Each point is a tree added to the map using their GPS coordinates. These trees were inspected in 2015 and their height, diameter, and condition were recorded (Table 2).

Table. 1 Description of restoration projects already completed. See Figure 1 to see the location of the projects.

Title	Year	Project Description
1.	1980s	This project is located on the west boundary of the Reserve in the 40 acres that were added to the Reserve in 1998. The area was replanted in the 1980's after a remediation project to clean up the soil. The origin of the plants used to replant the area is unknown, but it is clear that they came from a variety of locations. For example, the *Lupinus arboreus* has a yellow-flower and is native to Monterey. The coastal golden bush is much taller than the variety native to the Reserve and has a different leaf shape. These plants that originated from non-local populations can hybridize with the Reserve's natural populations and alter the local gene pool. Ideally the vegetation in this area should be removed and the site restored with local genotypes.
2.	1987	The vernal pool was created in 1987 as a mitigation project for the UCSB West Campus Faculty Housing project. It was the first vernal pool reconstruction project attempted by the UCSB Museum of Systematics and Ecology. Currently, the deep areas of the pool function as a vernal marsh that rarely dries up, and the shallower edges function as a vernal pool that dries up seasonally.
3.	1998 to 2002	This site is located on the south-east corner of the Reserve, adjacent to the reserve's field station. Before it was restored, the site was dominated by *Acacia longifolia* and there were almost no native species on site except for some nightshade, willows, and a small patch of *Scirpus mexicanus*. When the acacia was removed, the bare area revealed a complex landscape with dune and sandy loam soils. The dunes were planted with seeds collected from plant species found on the dunes on the west side of the slough. On the sandy loam soil seedlings of coastal scrub species were planted to mimic the vegetation growing on the west side of the slough. Project done by volunteers and donated service by arborists from McPherson Tree Care.
4.	1999-2001	The project included restoration of the slough margin and 7 vernal pools on west campus, and planting of vegetation to screen buildings south of the reserve's field station. The slough margin was dominated by iceplant that was killed by covering it with black plastic for 8 weeks. The thatch was removed by hand and taken off-site. None of the natural plant community endemic to this degraded site remained to provide a model for restoration. We used the plant communities found at nearby wetland sites (e.g. Hollister Ranch and Carpinteria Salt Marsh Reserve), which are similar to COPR but less degraded, to determine which species to plant. Funded by the Santa Barbara Coastal Enhancement Program.

5.	2000	The main goal of this project was to eradicate pampas grass from the Reserve. One acre of pampas grass was removed from the dune pond margin using a backhoe and disposed off-site. Isolated clumps of pampas grass were sprayed with glyphosate and left on-site to decompose. Small plants were removed by hand. Volunteers also removed curly dock and cockle burr by hand. No revegetation was conducted as the area already had native plants to spread to the space left by the pampas grass. Funded by the Santa Barbara Coastal Enhancement Program.
6.	2000-2004	The project began in 2000 when a large meleleuca tree was removed from the wetland edge. This tree was the site of a homeless encampment that was a problem for the Reserve. The project was supported by a grant from the Wetlands Recovery Project and it was implemented by the Santa Barbara Audubon.
7.	2002	This site is located immediately south of the bridge over the Devereux slough channel. The project area was dominated by a number of exotic shrubs such as acacia, myoporum, and large eucalyptus trees. Some native species such as coastal live oak (*Quercus agrifolia*), mugwort (*Artemisia douglasiana*), and California brome (*Bromus carinatus*) occurred in the gaps and edges of the thick exotic vegetation. The goal of the project was to restore the area with native coastal scrub species, improving the views from the public trail while visually screening the Devereux Foundation buildings. All exotic brush species were removed, eucalyptus trees were trimmed to within 2 meters from the ground, and coastal scrub species and oak trees were planted. All plants used in this restoration project, except the California sunflower and lemonade berry, were propagated from seeds collected from plants found on the Reserve, and were grown in the Reserve greenhouse. Seeds of the California sunflower were collected at Goleta beach and lemonade berries were collected at the UCSB's north bluff because there was no source of seed for these species on the Reserve. A professional arborist removed the trees and shrubs and the area was planted with natives with help of numerous volunteers of the Santa Barbara Chapter of the Audubon Society. A wood fence replaced a degraded barbwire fence along the slough margin at the completion of the project. Funded by the UCSB's Shoreline Preservation Fund.
8.	2004-2006	This area was dominated by iceplant and restored in 2000 by students from the Goleta Family School under the supervision of the Reserve Director. Students removed the iceplant by hand and hauled it off-site. They collected seeds of native plants on the Reserve and cultivated them in the Reserve's greenhouse. Funded by the Wetlands Recovery Project and implemented by the Santa Barbara Audubon.

9.	2004-2006	This project created a vegetated zone to function as a buffer zone between the northern boundary of Reserve and the road. The Reserve calls this the "green fence". Funded by the UCSB's Shoreline Preservation Fund.
10.	2007-2008	This project removed ½ acre of iceplant, and plants of white poplar, myoporum, acacia and pittosporum. Native dune plants were planted in the dead iceplant mulch. Funded by the Important Bird Area program (Audubon California) and implemented by the Santa Barbara Audubon.
11.	2008	A 6 acre area was burned in 2006 from a faulty power line. The enhancement of 1 acre that burned included the removal of pampas grass and myoporum shrubs, fennel, annual weeds, and some iceplant. Seeds of native plants were planted in the grassland area to complement the bunchgrass and Blue-eyed grass. Funded by the Coastal Fund and implemented by the Santa Barbara Audubon.
12.	2007-2010	This project focused on the restoration of the western margin of the Devereux Slough. 7 acres of exotic shrubs and annual non-native species were removed (*acacia, myoporum, tamarisk, and pittosporum* and trees were limbed at the lower branches (*eucalyptus and Monterey cypress). Other invasive species removed included wild radish, black mustard, fennel, Himalayan blackberry,* New Zealand spinach, Italian ryegrass, harding Grass, *and Italian thistles.* Following the removal of exotic species, a total of 31 native species and 5,743 native plants were installed in the project area. Six sensitive species were planted: *Hordeum bracheantherum, Lasthenia glabrata subspp. Coulteri, Anemopsis californica, Lonicera subspicata var. subspicata, Stephanomeria elata,and Astragalus pycnostachyus var. lanosissimus* (Ventura marsh milkvetch). 15 of the 167 plants of Ventura marsh milkvetch survived to produce flower and seeds. *Lasthenia glabrata subspp. Coulteri* was propagated from seeds collected at Goleta Slough. Funded by the Wildlife Conservation Board.
13.	2009-2010	This project focused on enhancing habitats surrounding the dune swale pond and the vernal pool on the western side of Devereux Slough. Non-native invasive plants such as tamarisk, harding grass, fennel and thistles were removed from the wetland edges and the area was re-vegetated with native species. An informal trail east of the freshwater pond was closed to reduce disturbance to wetland habitats. Willows, mulefat and native grasses were planted in the closed trail, and allowed for the expansion of the rhizomatous wetland plants into the trail from both sides. Funded by the Goleta Valley Land Trust and implemented by the Santa Barbara Audubon.
14.	2011-2013	The main goal of this project was to eradicate cape ivy from COPR. The largest infestation, totaling 0.4 acres, in the north-east corner of the Reserve was cleared by hand.

		The second goal was to enhance a coastal poppy population, a subspecies of the common California poppy by clearing weeds and mulching around the poppies. About 200 seedling of the poppies were planted and another 200 plants of coast goldenbush, California fuchsia, purple needlegrass and California sagebrush. Funded by Goleta Valley Land Trust and through the Santa Barbara Audubon
15.	2011-2013	*This project enhanced the eastern margin of the slough by removing weeds such as iceplant and New Zealand spinach and planting native species (*671 plants) *such as* coast goldenbush, California sagebrush, mugwort, beeplant, California brome, coast morning glory, California fuchsia, California buckwheat, western goldenrod, arroyo willow, wood mint, alkali ryegrass, Santa Barbara honeysuckle, and California sunflower. In addition, 2 populations of Western goldenrod, *Euthamia occidentalis,* were planted from seeds collected at the Goleta Slough. Funded by the Wetlands Recovery Project.
16.	2014-2015	The planting of *150 coast live oak (Quercus agrifolia) on the northwest corner of the reserve aimed to provide new habitat for wildlife. The location of the new oaks, in the northern section of the Reserve are far enough from the beach that they raptors perching on them will not see the plovers on the beach. The restoration will also function as a wildlife corridor linking 2 wetlands, the Devereux Slough and the fresh water pond at the Ellwood Marine Terminal. Plants were grown by Goleta Valley Beautiful from seeds collected in the Devereux and San Jose Creek watersheds.* Implemented and donated by the Goleta Valley Beautiful.
17.	2011-2015	The mail goal of this project was to implement the Access Plan of the Coal Oil Point Reserve. The project involved extensive restoration along trails, to a natural "green fence" composed of native plant species to encourage people to stay on trails. Funded by the California Coastal Conservancy

Table 2. List of exotic trees at the Coal Oil Point Reserve (some trees are outside the Reserve) and their size and condition.

ID	Location	Species	DBH (ft)	# Trunks	HT (ft)	Condition	Notes	Date Inspected
1	Cypress Row	cypress	5	1	45	good	healthy	4/8/2015
2	Cypress Row	eucalyptus	7	2	50	poor	burned in fire	4/24/2015
3	Cypress Row	eucalyptus	6	1	50	poor	burned in fire	4/24/2015
4	Cypress Row	eucalyptus	5	1	50	poor	burned in fire	4/24/2015
5	Cypress Row	eucalyptus	4	1	50	poor	burned in fire	4/24/2015
6	Cypress Row	eucalyptus	5.5	1	50	poor	burned in fire	4/24/2015
7	Cypress Row	eucalyptus	6	1	50	poor	burned in fire	4/24/2015
8	Cypress Row	eucalyptus	5.5	2	45	poor	burned in fire	4/24/2015
9	Cypress Row	eucalyptus	5	1	50	poor	burned in fire	4/24/2015
10	Cypress Row	eucalyptus	5	2	50	poor	burned in fire	4/24/2015
11	Cypress Row	eucalyptus	8	3	50	poor	attached to 497	4/24/2015
12	Cypress Row	eucalyptus	5	2	35	poor	burned in fire	4/24/2015
13	Cypress Row	eucalyptus	12	2	50	poor	burned in fire	4/24/2015
14	Cypress Row	eucalyptus	6	1	50	poor	burned in fire	4/24/2015
15	Cypress Row	eucalyptus	8	1	40	poor	burned in fire	4/24/2015
16	Cypress Row	eucalyptus	4	1	50	poor	burned in fire	4/24/2015
17	Cypress Row	eucalyptus	8	2	50	poor	leaves at base	4/24/2015
18	Cypress Row	eucalyptus	5	1	50	poor	burned in fire	4/24/2015

19	Cypress Row	eucalyptus	5.5	1	50	poor	burned in fire	4/24/2015
20	Cypress Row	eucalyptus	7.5	1	40	poor	burned in fire	4/24/2015
21	Cypress Row	eucalyptus	3.5	1	40	poor	burned in fire	4/24/2015
22	Cypress Row	eucalyptus	2.5	1	45	poor	burned in fire	4/24/2015
23	Coal Oil Point	palm	4	1	45	good		4/27/2015
24	Coal Oil Point	eucalyptus	4	1	40	good		4/29/2015
25	Coal Oil Point	cypress	3	2	45	good		4/29/2015
26	Coal Oil Point	cypress	3	1	30	good		4/29/2015
27	Coal Oil Point	cypress	2	1	50	good		4/29/2015
28	Coal Oil Point	cypress	3	1	50	good		4/29/2015
29	Coal Oil Point	cypress	2	1	35	good		4/29/2015
30	Coal Oil Point	palm	2	1	45	good		4/29/2015
31	Coal Oil Point	cypress	3	1	45	good		4/29/2015
32	Coal Oil Point	cypress	2	1	40	good	slanted	4/29/2015
33	Coal Oil Point	cypress	3	1	45	good		4/29/2015
34	Coal Oil Point	cypress	2.5	1	45	good		4/29/2015
35	Coal Oil Point	cypress	1.5	1	40	good		4/29/2015
36	Coal Oil Point	cypress	1	1	45	good		4/29/2015
37	Coal Oil Point	cypress	2	1	40	fair		4/29/2015
38	Coal Oil Point	cypress	3	1	40	fair	tangled with 540	4/29/2015
39	Coal Oil Point	cypress	2.5	1	45	good		4/29/2015

40	Coal Oil Point	cypress	3	1	45	good		4/29/2015
41	Coal Oil Point	cypress	2.5	1	45	good		4/29/2015
42	Coal Oil Point	cypress	3	1	45	good		4/29/2015
43	Coal Oil Point	cypress	3	1	40	good		4/29/2015
44	Coal Oil Point	cypress	2	1	40	good		4/29/2015
45	Coal Oil Point	eucalyptus	3	1	30	good		4/29/2015
46	Coal Oil Point	eucalyptus	2	1	30	good		4/29/2015
47	Coal Oil Point	eucalyptus	1	1	35	good		4/29/2015
48	Coal Oil Point	eucalyptus	2.5	1	35	good		4/29/2015
49	Coal Oil Point	eucalyptus	4	1	35	good	branches wide	4/29/2015
50	Coal Oil Point	eucalyptus	4	2	40	good		4/29/2015
51	Coal Oil Point	pine	3	1	5	good	has pods/sapling	4/29/2015
52	Coal Oil Point	acacia	1 in	1	20	good		4/29/2015
53	Coal Oil Point	cypress	1	1	25	good		4/29/2015
54	Coal Oil Point	cypress	2	2	35	poor	horizontal	4/29/2015
55	Coal Oil Point	eucalyptus	4	1	40	good		4/29/2015
56	Coal Oil Point	eucalyptus	3.5	1	30	good		4/29/2015
57	Coal Oil Point	eucalyptus	2	1	15	good		4/29/2015
58	Coal Oil Point	acacia	2 in	2	30	poor	no leaves/branches	4/29/2015
59	Coal Oil Point	cypress	2.5	1	40	poor	dripping sap	4/29/2015
60	Coal Oil Point	cypress	3	1	10	good	bushy	4/29/2015

61	Coal Oil Point	acacia	2 in	3	35	good		4/29/2015
62	Coal Oil Point	eucalyptus	3	2	40	fair	one trunk cut off	4/29/2015
63	Coal Oil Point	cypress	3	1	35	poor	horizontal/half in ground	4/29/2015
64	Coal Oil Point	cypress	2	1	40	fair	leaning	4/29/2015
65	Coal Oil Point	cypress	2.5	1	40	good		4/29/2015
66	Coal Oil Point	cypress	3.5	1	30	poor	no green leaves	4/29/2015
67	Coal Oil Point	cypress	3	2	40	good		5/6/2015
68	Coal Oil Point	eucalyptus	2.5	2	30	fair	horizontal	5/6/2015
69	Coal Oil Point	eucalyptus	3.5	2	25	fair	horizontal	5/6/2015
70	Coal Oil Point	eucalyptus	2	2	30	good		5/6/2015
71	Coal Oil Point	eucalyptus	2.5	1	40	good		5/6/2015
72	Coal Oil Point	eucalyptus	2	2	40	good		5/6/2015
73	Coal Oil Point	cypress	2.5	1	35	good		5/6/2015
74	Coal Oil Point	eucalyptus	2	2	35	good		5/6/2015
75	Coal Oil Point	eucalyptus	2	1	35	good		5/6/2015
76	Coal Oil Point	eucalyptus	3	1	30	good	healthy	5/6/2015
77	Coal Oil Point	eucalyptus	2	3	25	critical	second trunk cut	5/6/2015
78	Coal Oil Point	eucalyptus	1	1	40	critical	no leaves	5/6/2015
79	Coal Oil Point	eucalyptus	2.5	1	15	critical	no leaves/branches	5/6/2015
80	Coal Oil Point	eucalyptus	1	1	40	poor	leaves falling off	5/6/2015
81	Coal Oil Point	eucalyptus	3	5	20	critical	no leaves/branches	5/6/2015

82	Coal Oil Point	eucalyptus	1.5	2	30	critical	stump with branches	5/6/2015
83	Coal Oil Point	eucalyptus	1	2	15	fair	lots of tiny sprouts	5/6/2015
84	Coal Oil Point	eucalyptus	0.3	3	25	poor	broken trunks/branches	5/6/2015
85	Coal Oil Point	eucalyptus	2.5	1	20	fair	bent	5/6/2015
86	Coal Oil Point	eucalyptus	2.5	2	15	critical	roots out of ground/dead leaves	5/6/2015
87	Coal Oil Point	eucalyptus	0.3	1	15	critical	horizontal	5/6/2015
88	Coal Oil Point	eucalyptus	1	1	20	critical	second trunk cut	5/6/2015
89	Coal Oil Point	eucalyptus	1	1	35	fair	second trunk cut	5/6/2015
90	Coal Oil Point	eucalyptus	1	1	30	fair	second trunk cut	5/6/2015
91	Coal Oil Point	eucalyptus	2	4	30	fair	horizontal/lots of shoots	5/6/2015
92	Coal Oil Point	eucalyptus	3	1	30	good	~3 eucs here-poison oak cover	5/6/2015
93	Coal Oil Point	eucalyptus	1	1	30	good		5/6/2015
94	Coal Oil Point	eucalyptus	2	3	25	fair		5/6/2015
95	Coal Oil Point	eucalyptus	1.5	2	40	good		5/6/2015
96	Coal Oil Point	eucalyptus	2	2	40	good		5/6/2015
97	Coal Oil Point	eucalyptus	3	1	25	fair		5/6/2015
98	Coal Oil Point	eucalyptus	3	2	10	fair		5/6/2015
99	Coal Oil Point	eucalyptus	0.2	3	20	poor	no leaves	5/6/2015
100	Coal Oil Point	eucalyptus	2	1	30	good		5/6/2015
101	Coal Oil Point	eucalyptus	3	1	35	fair	branch growing back in ground	5/6/2015
102	Coal Oil Point	eucalyptus	3	1	35	fair		5/6/2015

103	Coal Oil Point	eucalyptus	2.5	1	1	critical		5/6/2015
104	Coal Oil Point	eucalyptus	3	1	15	fair		5/6/2015
105	Pond trail	eucalyptus	15	4	60	fair	multiple shoots. dead branches lying on ground	7/8/2015
106	Pond trail	eucalyptus	10	2	45	poor	lying on ground, still live growth. Should be removed	7/8/2015
107	Pond trail	eucalyptus	6	1	40	poor	leaning. At risk of falling over	7/8/2015
108	Pond trail	eucalyptus	6	1	45	poor	branches falling	7/8/2015
109	Pond trail	eucalyptus	3	1	30	critical	should be removed	7/8/2015
110	Pond trail	eucalyptus	10	1	60	fair	risk of falling over	7/8/2015
111	Pond trail	eucalyptus	10	2	60	critical	fell over in wetland. Should be removed	7/8/2015
112	Pond trail	eucalyptus	7	1	40	fair	in wetland	7/8/2015
113	Pond trail	eucalyptus	4	2	40	fair	in wetland	7/8/2015
114	Pond trail	eucalyptus	1	1	45	critical	should be removed	7/8/2015
115	Pond trail	eucalyptus	2	1	45	poor	should be removed	7/8/2015
116	Pond trail	eucalyptus	2	1	45	critical	should be removed	7/8/2015
117	Pond trail	eucalyptus	6	3	30	fair		7/8/2015
118	Pond trail	eucalyptus	3	2	30	fair		7/8/2015
119	Pond trail	eucalyptus	4	2	30	fair		7/8/2015
120	Pond trail	eucalyptus	10	1	45	poor	should be removed	7/8/2015
121	Pond trail	eucalyptus	6	2	40	poor	should be removed	7/8/2015
122	Pond trail	eucalyptus	6	3	30	fair		7/8/2015

123	Pond trail	eucalyptus	8	3	30	fair		7/8/2015
124	Pond trail	eucalyptus	6	1	25	fair		7/8/2015
125	Pond trail	eucalyptus	10	1	30	fair	in wetland	7/8/2015
126	Pond trail	eucalyptus	5	1	20	fair		7/8/2015
127	Pond trail	eucalyptus	10	1	30	fair		7/8/2015
128	Pond trail	eucalyptus	15	1	35	fair		7/8/2015
129	Pond trail	eucalyptus	6	1	30	fair		7/8/2015
130	Pond trail	eucalyptus	20	1	30	fair		7/8/2015
131	Pond trail	eucalyptus	10	1	30	fair		7/8/2015
132	Pond trail	eucalyptus	10	1	30	fair		7/8/2015
133	Pond trail	eucalyptus	10	2	50	fair		7/8/2015
134	Pond trail	eucalyptus	30	2	45	poor	sideways in wetland	7/8/2015
135	Pond trail	eucalyptus	30	4	45	fair	branches at risk of falling on trail. Trunk sideways	7/8/2015
136	Pond trail	eucalyptus	20	4	30	fair	multiple shoots	7/8/2015
137	Cypress Row	eucalyptus	15	3	30	fair	gnarled from wind	7/8/2015
138	Cypress Row	eucalyptus	10	3	20	poor	gnarled from wind	7/8/2015
139	Cypress Row	cypress	15	1	35	poor	branches falling over. Should be removed	7/8/2015
140	Cypress Row	eucalyptus	5	1	20	poor	wind blown. Branches falling off	7/8/2015
141	Cypress Row	pine	4	1	20	fair		7/8/2015
142	Cypress Row	cypress	3	1	15	critical	should be removed	7/8/2015

143	Cypress Row	cypress	15	2	40	fair	wind blown. Branches falling off	7/8/2015
144	Cypress Row	cypress	5	1	20	poor	should be removed	7/8/2015
145	Cypress Row	cypress	10	1	40	fair	wind blown. Branches falling off	7/8/2015
146	Cypress Row	cypress	15	2	40	fair	wind blown. Branches falling off	7/8/2015
147	Cypress Row	cypress	1	1	20	critical	should be removed	7/8/2015
148	Cypress Row	cypress	8	1	30	fair	wind blown. Branches falling off	7/8/2015
149	Cypress Row	cypress	8	1	30	poor	should be removed	7/8/2015
150	Cypress Row	cypress	8	1	20	poor	should be removed	7/8/2015
151	Cypress Row	cypress	8	2	20	poor	sideways	7/8/2015
152	Cypress Row	cypress	8	2	25	fair	wind blown. Branches falling off	7/8/2015
153	Cypress Row	cypress	7	1	30	poor	dead branches	7/8/2015
154	Cypress Row	cypress	6	1	30	fair		7/8/2015
155	Cypress Row	cypress	5	1	20	critical	should be removed	7/8/2015
156	Cypress Row	cypress	10	1	25	poor	should be removed	7/8/2015
157	Cypress Row	cypress	5	1	30	fair	wind blown. Dead branches	7/8/2015
158	Cypress Row	cypress	5	1	30	critical	wind blown. Dead branches	7/8/2015
159	Cypress Row	cypress	10	1	30	fair	wind blown. Dead branches	7/8/2015
160	Cypress Row	cypress	15	1	30	fair	wind blown. Dead branches	7/8/2015
161	Cypress Row	cypress	8	1	30	poor	uprooted. Sideways	7/8/2015
162	Cypress Row	cypress	8	1	25	fair		7/8/2015
163	Cypress Row	cypress	10	1	30	critical	should be removed	7/8/2015

164	Cypress Row	cypress	5	1	30	critical	should be removed	7/8/2015
165	Cypress Row	cypress	5	1	30	critical	should be removed	7/8/2015
166	Cypress Row	cypress	8	1	30	critical	should be removed	7/8/2015
167	Cypress Row	cypress	10	1	30	critical	should be removed	7/8/2015
168	Cypress Row	cypress	20	1	30	poor	should be removed	7/8/2015
169	Cypress Row	eucalyptus	5	1	20	critical	Burned on fire	7/8/2015
170	Slough Road	eucalyptus	12	4	30	good		7/8/2015
171	Slough Road	eucalyptus	5	1	30	good		7/8/2015
172	Slough Road	eucalyptus	5	1	25	good		7/8/2015
173	Slough Road	eucalyptus	5	1	25	good		7/8/2015
174	Slough Road	eucalyptus	6	1	35	good		7/8/2015
175	Slough Road	eucalyptus	4	1	20	good		7/8/2015
176	Slough Road	eucalyptus	15	3	35	good		7/8/2015
177	Slough Road	eucalyptus	6	1	35	good		7/8/2015
178	Slough Road	eucalyptus	8	1	30	good		7/8/2015
179	Slough Road	eucalyptus	2	1	30	good		7/8/2015
180	Slough Road	eucalyptus	6	3	20	good		7/8/2015
181	Pond trail	cypress	15	1	15	good		7/8/2015
182	Pond trail	cypress	15	1	35	good		7/8/2015

Appendix 4. Infrastructure Plan for Coal Oil Point Reserve

"3.5 **Administrative Areas**. Each Reserve management plan will identify a projected "build-out" location that specifies the optimum allowable facilities for resident staff, researchers, classes, and public outreach programs to ensure minimal impacts on the natural systems (e.g., carrying capacity based on the ecosystem responses or biodiversity). These locations may in some cases overlap with disturbed areas." (*Extracted from the UC Natural Reserve System Use Guidelines.)*

Overview:

The goal of the Coal Oil Point Reserve (COPR) Infrastructure Plan is to describe current and future infrastructure needed to support the core functions of the Reserve (research, education, and outreach) while protecting the fragile ecosystems of the Reserve, particularly the beach, dunes, and the Devereux Slough. In summary, the Reserve proposes to maintain all current buildings and renovate an existing building on West Campus. No new buildings are proposed in the Coal Oil Point Area.

About 20 research projects and 20 university classes use the Reserve annually. In the 2013-2015 fiscal year, the Reserve supported over 2,000 users for a total of 6,908 user-days, including a large group of volunteers who assist with management of the threatened snowy plover, restoration projects, and public environmental education programs. COPR has facilities located at the field station at Coal Oil Point (Figure 1) that support Reserve operations and programs. The Reserve located its field station at Coal Oil Point because the site provides an excellent visual vantage point for monitoring the Reserve, and the area was already highly disturbed, having been the site of various facilities that were developed to support a variety of uses over the past 100 years. The COPR field station is surrounded by dunes to the north and west and grasslands to the east. These areas had been denuded of native vegetation due to activities in the area before the Reserve was established in 1970. Reserve staff and volunteers have fully restored the dune and grassland habitats adjacent to the field station and the areas now function as a buffer zone to protect ESHAs in the Reserve.

Historical use of the COPR field station site:

The location of the COPR field station at Coal Oil Point was the site of a summer camp more than 50 years ago. The summer camp facilities included the Cliff House, which housed the kitchen, dining area and restrooms, and a number of rustic wooden cabins that were used as bunkhouses for campers. The area was cleared of vegetation and built up with about 1 foot of dirt fill in preparation for the construction of the summer camp facilities. The cabins were constructed on concrete slab foundations. Water and electricity were extended to Coal Oil Point from Isla Vista and a septic system was constructed adjacent to the Cliff House to serve the restrooms. The grounds of the summer camp and about 20 acres surrounding the facilities were landscaped with *Acacia longifolia*, an exotic invasive shrub that grows very quickly, produces large quantities of seed, and spread into adjacent native habitats in the Reserve.

By the late 1960's the summer camp had ceased operations and the wood frame cabins were not being used. At the same time, the dunes to the west of Coal Oil Point and the Devereux Slough were recognized as important coastal habitats by faculty and researchers at UCSB who were using the area for research and field courses. Research and teaching use was facilitated by the proximity to campus. The UC Natural Reserve System (UC NRS) had been established in 1965 (then known as the Natural Lands and Water Reserves System) and was adding reserves throughout California to support research and teaching. The Coal Oil Point Reserve was established and incorporated into the UC NRS in 1970. UCSB hired a Reserve caretaker who lived at the Reserve field station in a mobile home and the Reserve took over the use of the wood frame cabins for storage and office space.

Originally the Reserve was 117 acres and included dunes, upland habitats and the Devereux Slough. Fifty-three acres of additional dune and upland habitat were subsequently added adjacent to the northwest boundary of the Reserve; the total area of the Reserve is now 170 acres. COPR has one of the most active conservation and restoration programs in the UC NRS system.

Current Facilities

In its current configuration, the COPR field station at Coal Oil Point has seven buildings that provide key support for the Reserve's operations and programs (Figure 2, Table 1). The buildings include a residence, an older wood frame cabin used for office space, and five newer sheds that replaced aged wood cabins and are used for storage and a workshop. All sheds sit on concrete slabs that were constructed in the 1960s as part of the facilities for a summer camp. An additional building, the Docent Office (Table 1, Figure 3G), is used by the Reserve to support the snowy plover management program, but it not located within the COPR Field station. It is just outside the field station, on the bluff next to the Cliff House, and it is small block building from the 40's. In addition to the buildings, infrastructure elements at the field station include a greenhouse and shade hut for the native plant nursery, a parking area, and wood and Woodcrete fencing. The Reserve Director's residence has an adjacent yard (Figure 2) that is used by the Reserve Director's family.

Reserve Director's residence and yard: There has been a Reserve caretaker or director living in a residence at the COPR field station since the Reserve was established in 1970. Initially, the reserve caretaker lived in a 1960's-style mobile home located adjacent to the public entrance to Sand's beach on Coal Oil Point. In 1999, the mobile home was in extremely poor condition and safety issues precluded using the structure as a residence for the Reserve Director and her family. It was demolished and replaced with a new manufactured home. The new residence was moved from the original mobile home site to its current location in the northwest corner of the field station (Figure 2, Figure 4A). The new location was chosen to separate the residence from the main public access to the beach for the privacy and safety of the Reserve Director's family, and to open up the view of the Reserve from the residence to improve surveillance of the protected areas in the evenings and on weekends.

The COPR Reserve Director is required as a special condition of employment to live on site at the Reserve. The current Reserve Director and her family live at the COPR field station full time. The residence includes a fenced yard area for the family's personal use (Figure 2). The septic system for the residence, a greenhouse and a domestic animal pen that is used for the Reserve Director's domestic pets are located in the yard.

The current septic system for the three-bedroom residence has a 1,500 gal septic tank with a single infiltrator-type leach line. When the manufactured home was installed it was hooked up to the septic system that had served the original mobile home. However, after about 18 months, the original septic system failed. The current system was installed in 2000 as an emergency measure. The septic tank must be pumped more often than a well-functioning system should require. The system should be improved by either expanding the leach field with a second infiltrator-type leach line or installing a greywater system to divert the laundry and shower wastewater from the septic system. This improvement is planned for the future and will require review by the California Coastal Commission.

The greenhouse in the residence yard was installed in 2000 on a concrete pad that was originally used as the foundation for a summer camp cabin. The residence greenhouse is sometimes used to grow native plants for the Reserve's restoration projects when the native plant greenhouse is full. The domestic animal pen in the residence yard was constructed in 2004. It is enclosed by a fence and has a number of small animal shelters that are easily moved around within the pen. The site of the domestic animal pen was chosen because it was highly disturbed area; the site was utilized by the summer camp and had been cleared of native vegetation more than 50 years ago. The Reserve Director has kept goats in the pen since it was installed. A project description for a "confinement animal facility" for up to 10 adult goats has been approved by the UCSB NRS and the UCSB Office of Research and will be submitted to the Coastal Commission for approval. The animal enclosure and goats are the personal property of the current Reserve Director and will be removed when she leaves her position as director.

Sheds: The COPR field station has five sheds (Figure 2) that are used to support Reserve staff and users. Four of the sheds are used to store equipment and supplies. The plover and garden sheds provide storage for the snowy plover management program and the native plant nursery. Sheds #1 and #2 provide storage for maintenance supplies and equipment for Reserve operations. Shed #3 is a workshop that is used by Reserve staff and research users for repairs and small construct projects. The plover and garden sheds were installed in 2008 and the other three sheds were installed in 2014. All of the new sheds replaced old wood frame cabins that were built for the summer camp more than 50 years ago and had been used by the Reserve since it was

established in 1970 for storage and workspace (Figures 3B, 3C, 3D, 3E. and 3F). The replacement sheds were all installed on the existing foundations of the original sheds.

Staff Office: The building that is currently used for staff offices is located in the south east corner of the field station (Figure 2). It is an aged wooden structure that was built more than 50 years ago for the summer camp. In the future, the Reserve proposes to move the staff offices to a different location. The building will then be available to researcher groups, such as the whale migration monitoring program, who would benefit from office space adjacent to the ocean.

Docent Office: The cinder block building next to the Cliff House on the bluff is outside the COPR field station footprint but is used, with the University's permission, by the Reserve's Snowy Plover docents as the headquarters for their operations on the shore (Figure 3G). The building, which was constructed in the 1940's, provides an excellent observation post for viewing the Reserve's protected plover habitat.

Greenhouse and shade hut: The Reserve has a greenhouse and a shade hut that are used exclusively to propagate native plants (Figures 2 and 4A). Seeds are collected in the Reserve and sprouted in the greenhouse. Seedlings are then transferred to the shade hut to acclimate before being used in restoration projects. The greenhouse was not installed on a permanent foundation but rather on railroad ties that are staked into the ground. The shade hut is constructed of a metal pipe frame covered with shade cloth.

Fences: A wood fence surrounds the field station and protects the Reserve's structures. The wood fence was installed in 2012 to replace an aged chain link fence that was in poor condition. A small section of the original chain link fence has not yet been replaced with wood fencing. The Reserve will complete the fence replacement project in the near future.

A Woodcrete fence (comprised of concrete "boards" textures and painted to resemble wood) was installed on the bluff edge by the Reserve in 2013 to replace the chain link fence that was in poor condition. This fencing is on UCSB property that is not within the boundary of the COPR field station. The project was completed with the cooperation of UCSB to improve safety to visitors.

A Woodcrete fence was also installed on the western boundary of the Reserve as a barrier to trespass by mountain bikers and pedestrians who were trampling fragile dunes and wetlands in the south western section of the Reserve. A small section of woodcrete fence was also installed at the northern entrance to the Pond Trail to define the entrance and restrict access to the trail by bicycle traffic. These fences are described in more detail in the Access Plan (Appendix 1 of the COPR Management Plan). The Access Plan was approved by the California Coastal Commission in 2011 (NOID 1-10).

Roads: Coal Oil Point Reserve is located one mile west of the UCSB campus on Coal Oil Point. Access to the Reserve is via Slough Road (Figure 1), which runs along the eastern edge of the Devereux Slough. Slough Road is owned by UCSB and provides access to the University's Devereux School property as well as Coal Oil Point. In the future this road will be restricted to pedestrian and emergency vehicles only. Reserve staff and users will access the Reserve through the Devereux property (Policy TRANS 12-B, 2010 LRDP).

There is a short section of road that connects with Slough Road and provides access to Coal Oil Point (Figure 1). This road provides access to the COPR field station and the Cliff House area, and can be used by maintenance and emergency vehicles. The first section of the road as it comes off Slough Rd. is paved, and the second section that leads to the Cliff House is a dirt road. The paved section of road is not within the boundary of the COPR field station, but COPR maintains the road since it is primarily used for Reserve functions.

Parking: Parking on Coal Oil Point has always been restricted to staff and users of the Reserve and the Cliff House. However, illegal parking was frequent and vehicular traffic led to habitat destruction and facilitated uses of the beach that were incompatible with protection of populations of threatened bird species that live and nest on the upper shore. To reduce illegal parking, an electronic gate was installed at the end of Slough road in June 2011 (Figure 1) and the old gravel parking lot on the Point was closed. The gate has successful in eliminating illegal parking, damage to vernal pools by off road vehicles, and the occurrence of activities on the beach, such camping, BBQs, bonfires, fireworks and parties, that disturb populations of threatened birds and damage fragile dunes. Coastal access parking is now provided on the UCSB Devereux property adjacent

to the Point. The gate does not restrict pedestrian access; pedestrians and bicycles can pass by the gate and access the Point and beach on roads and trails. The gate is not within the boundaries of the COPR field station, but the Reserve maintains it.

The old gravel parking area on the Point that was adjacent to the COPR field station but not within its boundaries of the Reserve was restored with native coastal scrub and grasses in 2012. The area has since been overgrown by coyote bush, the most common species of native vegetation in the area.

Reserve staff and users currently park in a designated area within the field station that has been resurfaced with gravel to prevent erosion (Figure 4B). The area can accommodate up to 15 parking spaces. The Reserve will add a sign at the gate to inform handicap visitors to call the office and obtain the gate code to park in the Reserve's parking area. The Reserve has two trucks and a water tank that are parked next to the greenhouse. Parking for Reserve users in this lot has been adequate to support current Reserve use.

No new public access development is planned within the Reserve boundary.

Auxiliary equipment for research and education

Research equipment to measure environmental parameters is routinely used by researchers at the Reserve. Current equipment includes:

Weather stations: The Reserve has two weather stations, both owned and maintained by research groups. A large weather station owned by NOAA provides weather data online via satellite. The NOAA station is part of a large network of identical stations established throughout the United States to monitor global climate change. A smaller station is owned by the Geography lab at UCSB and is used by researchers and students to learn techniques for environmental monitoring. An air quality monitoring station operate by Venoco will be removed during the EMT decommissioning but the antenna will remain to support the wireless internet system at the Reserve.

USGS earthquake antenna: The antenna is owned & operated by UCGS and is used to monitor ground disturbances caused by earth movement.

Internet radios: The Reserve has three small radios that are located throughout the Reserve. The radios create a mesh for internet connectivity that is used by researchers when they are working out on the Reserve and by remote cameras set up to monitor Reserve sites.

New infrastructure proposed for the future at Coal Oil Point

Infrastructure located within the Reserve and the COPR field station:

- No new buildings are proposed at the field station
- The septic tank that serves the director's residence will be improved by extending the existing leach line or adding a second leach line.
- Approximately 120 ft. of the old chain link fence around the field station will be replaced with wood fencing that will match the existing wood fence.
- An existing 14 by 16-foot concrete slab that was once used as a foundation for a summer camp cabin will be enclosed with a 6-foot wood fence to hide materials such as pipes and lumber stored on the site.
- The UCSB Art Studio (Figure 2) is currently used by UCSB faculty. In the future it will be allocated for Reserve use and will be renovated to function as a garage for Reserve vehicles and large equipment. Renovations will include adding a garage door and painting the exterior a brownish color to match other Reserve buildings.
- Future requests for installation of temporary research equipment and instrumentation in the Reserve will be granted by the Reserve Director if they do not cause impacts to natural resources.

Infrastructure located in areas adjacent to the COPR field station but not within its boundaries:

- The Reserve will replace four old picnic tables in front of the Cliff House with new ones.
- A new public drinking fountain will be installed adjacent to the docent building near the access to Sands beach. This project will be completed by UCSB, not by COPR.

- COPR proposes to renovate a 5,390 square foot building located on the UCSB Devereux property adjacent to the Reserve (Figure 5) that will function as a headquarters and education and conservation center to support Reserve programs and operations. The proposed facility will meet crucial needs, provide continued support for current Reserve users and programs, including conservation programs, and promote additional outreach programs, including nature-based educational programs for K-12 students and the public. The Center will have a meeting room, classroom, small laboratory, library, conference room, offices, restrooms and a small kitchen. The facility will also eliminate the need for future facility development at the COPR field station site on the Point.

TABLE 1 - List of facilities at the COPR field station on Coal Oil Point.

Building	Size (sq ft)	Function	Notes
Director's Residence	1,246	Residence for Reserve Director's family	Replacement in 1999 for old condemned
Staff Office	416	Office for Reserve staff; researchers, volunteers, and interns	Built in the 1960 as a storage shed for summer camp.
Plover shed	120	Support of snowy plover management program	Installed in 2008 on a concrete slab that was the foundation for an old summer camp cabin
Shed #1	224	Storage	Old cabin was replaced with new shed in 2014 on original concrete slab
Shed #2	224	Storage	Old cabin was replaced with new shed in 2014 on original concrete slab
Shed #3	480	Workshop	Old cabin was replaced with new shed on original concrete slab in 2014
Garden shed	120	Storage of restoration supplies	Installed in 2008 on a concrete slab that was the foundation for an old summer camp cabin
Docent Office	300	Office for docent program staff & volunteers	NOT located on the Reserve. Built in the 1940's.
Additional infrastructure			
Greenhouse - plant nursery	220	Grow native plants for research & restoration	Built in 2013 - NOT on a permanent foundation
Shade hut	900	Grow native plants for research & restoration	Temporary structure with metal poles & shade cloth roof
Septic system - residence yard	1,500 gallons	Serves the residence	Installed in 2000 to replace old system located near beach entrance that failed.
Greenhouse – residence yard	240	Used by Reserve Director's family	Built in 2000 – sit on concrete pad
Animal pen – residence yard	33 ft x 65 ft	Used by the Director's family for their animals	Temporary structure that will be removed when the Director leaves

Woodcrete fence on bluff edge	910 linear ft	Protect Reserve and bluff edges	Replaced chain link fence in 2012
Wood fence around field station	245 linear ft completed	Protect field station buildings	Replaced original chain link fence in 2012. (120 ft to be completed in future)
Parking area		Parking space for reserve users	Gravel surface

Figure 1. Topographic map of Coal Oil Point Reserve showing the location of the Reserve's field station area.

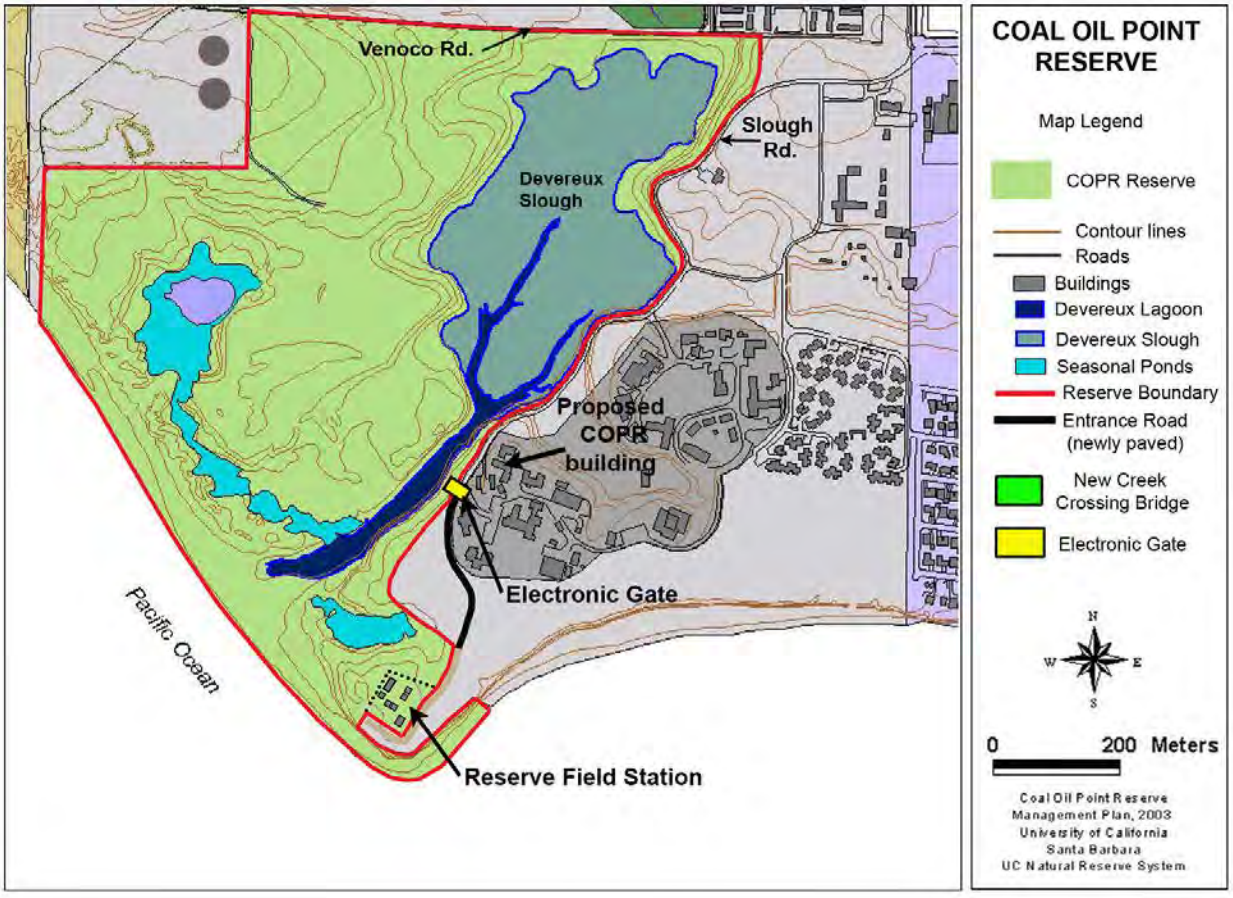


Figure 2. Map of Coal Oil Point Reserve field station area, showing existing buildings. The white line represents the COPR boundary. The green line is delineates the residence yard and the blue line shows the animal pen within the yard. Note that the Art Studio is used by UCSB faculty and is not currently within the COPR field station. Image is from Google Earth.

Figure 3. Photos of existing facilities at the field station.

A. Reserve Director's residence

B. Plover shed was installed atop a concrete slab that formerly supported an old cabin

C. Old cabin #1 (left) was demolished and replaced with Shed #1 (right) using existing concrete slab. Shed #1 is used for storage.

D. Old cabin #2 (left) was demolished and replaced with Shed #2 (right) using existing concrete slab. Shed #2 is used for storage.

E. Old cabin #3 (left) was demolished and replaced with Shed #1 (right) using existing concrete slab. Shed #3 is used as a workshop..

F. Porta-potty Garden shed. Shed was installed atop a concrete slab that formerly supported an old cabin.

G. Docent office

Figure 4. Additional facilities at the COPR field station.

A. Greenhouse used to propagate native plants for restoration & research.

B. Parking area at Coal Oil Point Reserve field station

Figure 5. Location of proposed new headquarters building adjacent to the eastern boundary of COPR.