



February 5, 2016

Mr. James Sulentic  
Executive Director  
Natural Communities Coalition  
15600 Sand Canyon Avenue  
Irvine, California 92618

**Subject: 2015 ANNUAL PROGRESS REPORT and 2016 ANNUAL WORK PLAN  
NATURAL COMMUNITY CONSERVATION PLAN (NCCP) and HABITAT CONSERVATION PLAN (HCP)  
IMPLEMENTATION AGREEMENT (IA), SECTION 4.4.5**

Dear Mr. Sulentic:

Please find attached the NCCP/HCP Annual Progress Report for 2015 and Annual Work Plan for 2016 for lands owned by OC Parks, City of Irvine, City of Newport Beach and the Irvine Company. The report satisfies the NCCP/HCP IA Section 4.4.5 requirements.

The report was prepared in accordance with the Natural Communities Coalition (NCC), U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) guidelines and uses the NCC recommended table format.

If you have any questions or comments please feel free to contact me at (714) 508-4752.

Sincerely,

A handwritten signature in black ink, appearing to read "John T. Graves".

John Graves  
Director,  
Planning and Field Operations

Attachments



cc:

Stacy Blackwood, OC Parks  
Jonathan Nicks, OC Parks  
John Gannaway, OC Parks  
John Gump, OC Parks  
Jennifer Naegele, OC Parks  
Laurie Hoffman, City of Irvine  
Angie Burgh, City of Irvine  
Laura Detweiler, City of Newport Beach

Michelle Clemente, City of Newport Beach  
Dan Miller, Irvine Company  
Dean Kirk, Irvine Company  
Mike O'Connell, IRC  
David Raetz, IRC

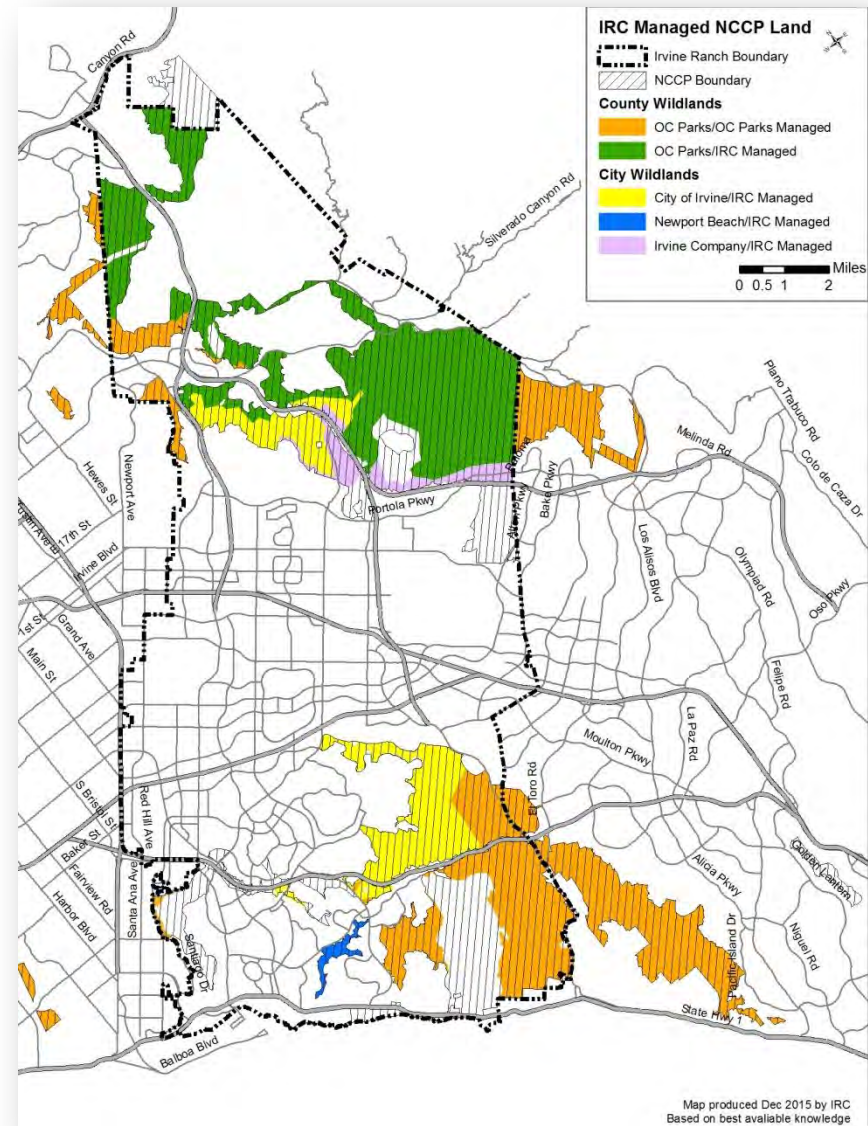
## Central/Coastal Orange County Wildlands

### Introduction:

This progress report and annual work program was prepared following the guidelines provided by the U.S. Fish and Wildlife Service and California Department of Fish & Wildlife “Recommended Outline for Reserve Owner/Manager Annual Work Programs”, dated February 10, 2003 using the NCC recommended table format.

### Note:

All 2016 research, monitoring, and management projects summarized on the following pages that require NCCP compliance determinations (specifically, projects directly related to the conservation and management of NCC Target Habitat and Species, namely, sage scrub (CSS), California Gnatcatcher, Cactus Wren, and Orange-Throated Whiptail) or those projects requested by the NCC Technical Advisory Committee (TAC) for review, will be developed as full proposals using the format recommended by USFWS and CDFW (project justification, methods [hypotheses, approach, methodology, sites, analysis], timeline, project outputs, evaluation of potential impacts, investigators, literature cited & reviewed, tables or figures). These proposals will be submitted for review by the TAC as they are developed prior to the initiation of each project. The NCC review period is 45 days, after which projects may be initiated if no comments are received. All CDFW, USFWS, and NCC nesting bird and exotic species control guidelines will be followed. Highest priority issues include fire prevention and control, rapid landscape-scale restoration of native habitats, and landscape connectivity for wildlife. Projects initiated by NCC on OC Parks-owned land are not included in this reporting or work plan (e.g., NCC oak survey, NCC cactus wren survey, NCC California Gnatcatcher survey, NCC vegetation survey), although we look forward to continuing to coordinate and collaborate with these efforts.



## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Recreation Use, Monitoring &amp; Management:</b>		
<p>Current Use Policies:</p>	<p>Docent-led hiking, mountain biking, passive recreational fitness activities, and equestrian programs for the public. Limit is generally 25 participants with a minimum of 2 "IRC-Certified" volunteers. However, on the paved Hicks Haul Road, when adequate volunteer coverage is available we have experimented splitting participants into two groups, with a minimum of four volunteers and a limit of 30 participants. This have also allowed for increased safety of small groups travelling closer together.</p> <p>Managed self guided access days were implemented in Limestone Canyon and Black Star / Baker Canyons in 2015.</p> <p>Public access was cancelled for 72 hours following each rainfall greater than 1/2 inch, and on days with Red Flag Warning conditions and/or Santa Ana Winds as determined by the Orange County Fire Authority and the National Weather Service.</p>	<p>Existing policies will remain as the general rule through 2016.</p> <p>Managed self-guided wilderness access days will continue in Limestone Canyon and Black Star / Baker Canyons. Sensitive areas will be gated off to self guided access and volunteer patrols will be deployed to monitor the public user groups.</p> <p>We will continue to have one wilderness access day per month on IRC-managed areas: OC Parks Open Space and the City of Irvine's Open Space Preserve. This allows Wilderness Access Days to rotate between three separate locations to minimize human impacts on wildlife movement.</p> <p>Consistent with adaptive management practices/policies of the NCCP/HCP and to reflect results of the USFW Local Assistance Funding (LAG) research to NCC, regarding the study of recreation and wildlife activity, there may be refinements to the human access guidelines governing access programs to better address capacity issues, and to minimize human impacts</p>

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		to the natural wildlife. If implemented, these refinements will be noted in the following year's annual progress report.
Recreational Monitoring: - Use & Access	<p>The Irvine Ranch Conservancy offers an array of programs on the OC Parks portion of the historic Irvine Ranch. This land is currently referred to as the Irvine Ranch Open Space. The following totals include recreation, education, restoration, citizen science and more. These include NCCP and easement land. The time frame is from January 1 through December 31, 2015.</p> <p>Total activities offered: 1,306  Total activities implemented: 1,204  Total volunteers: 5,221  Total volunteer hours: 18,482  Actual public participants: 11,037  Public participant stewardship/trail work hours: 2,541</p> <p>The following public recreation and interpretation programs were offered from January 1 through December 31, 2015. Some programs were cancelled due to the Red Flag Warnings, Rain Closure and Santa Ana Wind events.</p> <p>Total recreation programs offered: 637  Total recreation programs implemented: 579  Total volunteers: 2,965  Total volunteer hours: 9,462</p>	<p>The volunteer program will continue to expand in an effort to manage and implement recreational and interpretive use of the property, and connect more people to the land in meaningful ways.</p> <p>In 2016, we will begin offering recreational programming on the large loop of the Irvine Mesa area. For the Winter of 2016, three docent-led public programs per month are currently open for online registration. Plans are in place for "IRC-certified" lead volunteers to submit additional programs in this location as construction of a new staging area advances.</p> <p>Public access will continue to be suspended during Red Flag Warning conditions and/or Santa Ana Winds as determined by the Orange County Fire Authority and the National Weather Service.</p> <p>The Irvine Ranch Natural Landmarks Website in partnership with multiple land owners and partners will continue to be enhanced in an effort to increase the public awareness and participation in the land.</p> <p>The Irvine Ranch Natural Landmarks also has a Facebook tool, which will continue to be used to</p>

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Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>Actual public participants: 10,148  Number of programs per NCCP Location:  Limestone Canyon: 430  Weir Canyon: 55  Fremont Canyon: 60  Black Star/Baker: 85</p> <p>Total trail boss programs offered: 40  Total trail boss implemented: 39  Total volunteers: 87  Total volunteer hours: 515  Total public participants: 40</p> <p>Bi-monthly managed self-guided Wilderness Access Days in Limestone Canyon and Black Star / Baker Canyons were continued in 2015. Sensitive areas were gated off to self guided access and volunteer patrols were deployed to monitor the public user groups. Public access was suspended during Red Flag Warning conditions and/or Santa Ana Winds as determined by the Orange County Fire Authority and the National Weather Service. This occurred 5 times between January 1, 2015 and December 31, 2015. Volunteer efforts were shifted from leading tours to fire watch activities during these events (fire prevention).</p> <p>The Irvine Ranch Natural Landmarks Website in partnership with multiple land owners and partners continues to be used to connect the</p>	<p>expand the public awareness and participation in the land.</p> <p>The quarterly program brochure will continue to expand and include the listing of program options throughout the NCCP locations.</p>

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	<p>community with available programs. The site receives more than 70,000 page views and has approximately 6,900 active users per month.</p> <p>A joint effort quarterly program brochure continues to expanded to include Irvine Ranch Conservancy, City of Irvine, OC Parks, State Parks, Laguna Canyon Foundation, Newport Bay Conservancy, Sea and Sage Audubon, City of Newport Beach and the Coastal Commission programs. This brochure is distributed county wide through all of the above mentioned organizations and other outside organizations.</p>	
<p>Recreational Monitoring:</p> <ul style="list-style-type: none"> <li>- Private Programs, Outreach Programs and Patrols</li> </ul>	<p>Private programs, outreach programs and patrols have been incorporated into the above recreation and interpretation numbers.</p>	<p>Private programs, outreach programs and patrols will continue in 2016.</p>
<p>User Compliance Programs:</p> <ul style="list-style-type: none"> <li>- Access Monitoring</li> </ul>	<p>Unauthorized Access Monitoring Program:</p> <p>Camera traps, video surveillance, trail counters and patrols were conducted to identify and monitor levels of unauthorized access and unauthorized trail use. This allowed the Irvine Ranch Conservancy and OC Park Rangers to establish unauthorized use patterns and focus resources to manage the issue.</p> <p>In an effort to reduce unauthorized public access, OC Parks implemented targeted enforcements</p>	<p>Enforcement activities and monitoring equipment used in the Unauthorized Access Monitoring Program will continue in 2016.</p>



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	<p>based on use patterns of unauthorized public access. Enforcement activities included patrols, visual deterrence, and citation of individuals primarily by 4 OC Parks staff assigned to the Irvine Ranch Open Space.</p> <p>The following OC Parks enforcement activities were implemented:  Contacts: 167  Warning citations: 32  Citations (parking &amp; civil): 25  Medical assists/aid: 8  Maintenance tasks: 123</p> <p>Patrol hours: 2,235  Patrol miles: 15,273</p>	
<p>User Compliance Programs:  - Monitoring and Human Access Management</p>	<p>Seasonal closures for nesting raptors in Limestone Canyon were again not implemented because there were no active nests in the immediate vicinity of trails.</p> <p>Data from public access program reports was compiled and overlaid onto a trail layer to produce a map of recreational activity for 2015. Data are subject to both reporting and entry error and do not include some private hikes and access from management activities.</p> <p>CDFW LAG funding was received by NCC in collaboration with IRC to study recreation and its</p>	<p>Wilderness Access Days will continue to take place in Limestone Canyon and Black Star Wilderness Area. Alternative trails will be available during Wilderness Access Days in the event of seasonal trail closures due to sensitive species' breeding activity.</p> <p>LAG funding will be used to collaboratively continue a three year evaluation of wildlife activity patterns in relation to recreational and total human trail use. Management hypotheses developed in 2012 will be tested and an evaluation of core wildlife areas will begin.</p>



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	<p>effects on wildlife. Funding totaled \$75K and included a supplemental in-kind match from NCC, IRC, and OC Parks. Project title: Assessing effectiveness of adaptive recreation management strategies and evaluation of core NCCP habitat areas.</p> <p>Human monitoring access cameras:            Total days scheduled: 47            Total implemented: 43            Total volunteers: 50            Total volunteer hours: 262            Total public participants: 0</p>	<p>Access by entry permit holders will continue to be tracked with an access request and calendar system to reducing scheduling conflicts and avoid excessive activities in particular areas.</p> <p>OC Parks will continue to allocate up to four Rangers to the property. Rangers will be on duty seven days per week 6:30 a.m. to 8:30 p.m. Their hours will flex depending on the unauthorized access monitoring results and the creation of targeted enforcement. OC Parks will continue to document the number of unauthorized interceptions, warnings and citations on a monthly basis.</p>
<p>User Compliance Programs:            - Monitoring and Human Access Management</p>	<p>Designed and implemented a web-based photo database for all trailhead human access camera locations. IRC management and Field Patrol personnel (OCP Rangers) will have direct encrypted access to human access photos as well as a database spreadsheet of unauthorized access. This photo data will provide more effective means for field patrol personnel to target specific days, times and locations for their patrols.</p>	<p>Budget permitting, implement live-feed still-photo camera locations targeted at known areas of high-risk activities, that is to say areas of extensive nighttime use, fire pits, unauthorized vehicles, etc. These cameras will have the ability to relay photos directly to a web-based storage drive and provide instant notification to selected patrol personnel of unauthorized presence in the area.</p>
<p>Educational Outreach:            - Irvine Ranch Conservancy Citizen Science Program</p>	<p>IRC's Citizen Science program is designed to implement scientific research by trained and supervised volunteers. Citizen Science activities in the Irvine Ranch Open Space in 2015 included: wildlife camera trapping, butterfly</p>	<p>Existing Citizen Science Programs will continue in 2016 in the Irvine Ranch Open Space.</p>

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	<p>counts, raptor and other bird monitoring, and vegetation monitoring.</p> <p>Citizen Science Programs:            Total programs offered: 230            Total programs implemented: 210            Volunteers participating: 559            Volunteer hours: 3356            Public participants: 93            Public participant hours: 488</p>	
<p>Educational Outreach:            - Irvine Ranch Conservancy Land Steward and Farm Steward Program</p>	<p>The Irvine Ranch Conservancy conducted one Land Steward training, one Lead Land Steward training, four Native Farm Steward trainings, and several individual trainings for invasive control digital data basing and herbicide use for lead land stewards. Stewardship activities included invasive species control, restoration, and native seed farm maintenance. This program was expanded to include trail closure and staging area community stewardship plantings (recorded under Restoration). Several lead land stewards conducted private solo stewardship activities with great success. A digital invasive control reporting tool continues to be utilized by Lead Land Stewards. An online map link continues to be available for land stewards to view status of invasive control across reserve areas is available upon request. Note that programs offered and implemented include individual private activities and span both NCCP and non-NCCP.</p>	<p>The Land Steward Program will continue to include invasive species removal and restoration. Nursery activities and community stewardships will be added to the program in 2016. A Farm Steward Program - with quarterly trainings - will continue to be operated separately. The Land Steward Manual will be updated accordingly.</p>

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	<p>Invasive Control Programs:  Total programs offered: 53  Total programs implemented: 43  Volunteers participating: 116  Volunteer hours: 546  Public participants: 56  Public participant hours: 177</p> <p>Restoration Programs:  Total programs offered: 51  Total programs implemented: 43  Volunteers participating: 97  Volunteer hours: 381  Public participants: 256  Public participant hours: 771</p> <p>Native Farm Programs:  Total programs offered: 87  Total programs implemented: 82  Volunteers participating: 256  Volunteer hours: 944  Public participants: 428  Public participant hours: 1241</p>	
Educational Outreach (All Areas): - Trail Boss Training Programs	Conducted volunteer Trail Boss Training and implemented the Adopt-A-Trail program to assist with ongoing monitoring and maintenance of trail system. Completed Volunteer Trail Projects: 3	Continue training Trail Boss volunteers, and offer advanced training in specific areas of trail work, i.e.: power equipment, rock armoring, specialty construction techniques.

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	Trail boss training sessions: 1 Trail maintenance projects: 4	
<b>Recreation Facility Construction and Maintenance:</b>		
New Construction or Expansion (All Areas): - Signage	Continued implementation of comprehensive sign program for all managed areas, addressing regulatory, directional and informational signs. Semi-annual UV treatment to maintain trail way-finding signage was conducted on most signs.	Continue implementation of coordinated sign program through refurbishment/replacement of damaged/outdated/missing signs in all areas of land management. Replace/add perimeter "No Trespassing" signs on existing fences/gates/armatures where needed to address vandalism and unauthorized access. Apply semi-annual UV treatment to maintain trail way-finding signage (scope dependant on available staff resources).
New Construction or Expansion (All Areas): - Natural Barriers	Grew native prickly pear and cholla cactus plants for selected field application as a native barrier to limit unauthorized access.	Continue growing stock of native prickly pear cactus in 15 gallon containers and cholla for use in restoration efforts and for trail access management. Native prickly pear cactus plants may be installed on a limited basis, at selected perimeter fence locations or trail turn-back areas to deter unauthorized off-trail access.
Maintenance of Existing Facilities (All Areas): - Existing ranch roads, trails, private drives,	Continued maintenance of roads/trails, erosion control features, and perimeter fencing/gates to maintain authorized access. To maintain trail standards, efforts included:	Conduct maintenance of roads/trails, erosion control features, and perimeter fencing/gates to maintain authorized access. To maintain trail standards, efforts will include:

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<p>bridges, kiosks and perimeter fencing/gates</p>	<ul style="list-style-type: none"> <li>- clearing of fallen trees across ranch roads and trails damaged from rain, wind, and fires (materials from native trees were left in place at the roadside edge);</li> <li>- repair and grading of ranch utility roads (if needed);</li> <li>- mowing the center lines of double track trails (as needed);</li> <li>- trimming and grooming of single track trails;</li> <li>- repair of perimeter fencing and gates when damaged from use or vandalism;</li> <li>- removal of existing interior ancillary wire fencing was continued throughout on a measured basis, dependant on staff resources.</li> </ul> <p>Annual maintenance surveys were conducted of the existing engineered trail bridges. Trail erosion control devices, such as grade dips and reversals, check dams, rock armoring, culverts, and rock buttresses were maintained and additional ones installed to address key problem areas.</p>	<ul style="list-style-type: none"> <li>- clearing of fallen trees across ranch roads and trails damaged from rain, wind, and fires (materials from native trees were left in place at the roadside edge);</li> <li>- repair and grading of ranch utility roads (if needed);</li> <li>- mowing the center lines of double track trails (as needed);</li> <li>- trimming and grooming of single track trails;</li> <li>- repair of perimeter fencing and gates when damaged from use or vandalism;</li> <li>- removal of existing interior ancillary wire fencing was will continued throughout on a measured basis, dependant on staff resources.</li> </ul> <p>Annual maintenance surveys will be conducted of the existing engineered trail bridges. Trail erosion control devices, such as grade dips and reversals, check dams, rock armoring, culverts, and rock buttresses will be maintained and additional ones installed to address key problem areas.</p> <p>As noted in the Trail Implementation Master Plan of the approved Recreation and Resource Management Plan, some existing ranch roads/trails will be removed and reclaimed to native habitat or converted to single track.</p> <p>Budgeting and time-permitting, inspect existing bridge and deck structures; if warranted, replace</p>

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		decking with Alaskan Yellow Cedar Glu-Lam timber deck panels.
Maintenance of Existing Facilities (All Areas): - Trail Use Monitoring: Camera and Trail Counter	Monitored and maintained cameras and trail counters at key gates and trail sections to monitor level and type of activities.	Ongoing camera and trail counter monitoring will continue for both authorized and unauthorized activities.
Maintenance of Existing Facilities (All Areas): - Radio Network	Performed maintenance of ranch-wide radio operation. Additional radios acquired for new vehicles and to replace broken or stolen radios. The radio frequency was reprogrammed in December on all radios to remove a conflict with an unlicensed user interfering with IRC's radios. Replaced existing solar charger controllers with upgraded units, and installed new 60 month sealed-gel deep-cycle solar batteries.	Continue performing annual monitoring of existing solar radio repeaters and ongoing maintenance of radios.
New Construction or Expansion (Weir Cyn.): - Vehicle Pull-outs	N/A	Previously surveyed vehicle pull-outs in Weir Canyon will be marked by appropriate signage. Vehicle pull-outs will be installed/maintained as part of annual road maintenance and shown on area maps for use by authorized personnel conducting patrols and scientific research/field monitoring.
New Construction or Expansion (Weir Cyn.): - Staging Area	At the existing Weir Staging Area (located off-site at Outdoor Education Center) repaired existing bulletin board cases, replaced locks and installed new exhibits. Installed new Corten Steel staging	At Weir Staging Area (located off-site at Outdoor Education Center) install vehicle stops/restroom surround. Budget permitting, replace 2 existing picnic tables with 3 new tables, with at least one

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	area monument sign. Installed new 24" x 36" OC Parks regulatory and mountain lion signage.	compliant with ADA requirements.
Maintenance of Existing Facilities (Weir Cyn.) - Fencing	Repaired short sections of perimeter 4-wire fencing damaged due to falling branches and/or vandalism.	Continue monitoring perimeter fence line between Weir Canyon and Santiago Oaks Regional Park. Repair and replace as needed. Budget permitting, replace sections of old perimeter fencing along Santiago Oaks Park.
Maintenance of Existing Facilities (Weir Cyn.): - Gates	Replaced locking mechanism on gates 2042X and 1744X with new stainless steel multi-padlock mechanism..	Budget permitting, replace locking mechanism on gate 1744Y with new stainless steel multi-padlock mechanism.
Maintenance of Existing Facilities (Weir Cyn.): - Concrete Cistern	Monitored damage to existing concrete cistern and recommended reducing dept of tank to avoid entrapping wildlife that enters tank.	Reduce depth of existing concrete cistern with clean fill (Rip Rap & Gravel) and remove old wooden debris.
Maintenance of Existing Facilities (Weir Cyn.): - Oxcart Monument	Cleared vegetation and performed trail maintenance to the Oxcart Monument. Removed graffiti from brass plaque.	Perform maintenance improvements to the existing pathway to the Oxcart Monument, and formalize the viewing area to minimize impact to the surrounding native vegetation.
Maintenance of Existing Facilities (Weir Cyn.): - Signage	Installed remaining trail directional signs at decision making points. Revised gate signage to reflect area's status as "Nature Preserve". Repaired damaged signs along IROEC trail through the Outdoor Education Center and maintained signs at unauthorized trail to mountain-top flag pole from OEC deter access.	Monitor signage and repair/refresh as needed.
Facility Replacement/Repair	N/A	N/A



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(Weir Cyn.):		
<p>New Construction or Expansion (Fremont Cyn):</p> <ul style="list-style-type: none"> <li>- Staging Area</li> </ul>	<p>Performed maintenance enhancements: Concrete pads for accessible parking, restrooms, and interpretive kiosk. Placed two new accessible portable restrooms. Fabricated and installed new restroom surround wall with locking gate. Relocated existing interpretive kiosk to new concrete pad.</p> <p>Installed new stainless steel multi-padlock mechanism to the existing entry gate 2244X.</p>	<p>Budget permitting, install vehicle stops, native trees, storage locker, and ADA parking stalls striping. Update regulatory and interpretive signs in support of managed access.</p> <p>No native habitat impacts are involved with this improvement.</p> <p>Implement a Tecate Cypress demonstration grove near the Fremont Staging area with approximately 90 local sourced surplus seedlings. The grove will provide interpretive value as well as a protected seed bank for future restoration projects.</p>
<p>Maintenance of Existing Facilities (Fremont Cyn):</p> <ul style="list-style-type: none"> <li>- Waterworks Trail</li> </ul>	<p>Transported approximately 74 tons of concrete box conduits from Gypsum Canyon to the Waterworks work staging area, for use implementing the Waterworks Trail.</p> <p>Performed maintenance vegetation trimming at existing trail alignment.</p>	<p>Budget and schedule permitting, begin enhancements of the Waterworks trail utilizing the existing concrete v-ditch waterway.</p>
<p>Facility Replacement/Repair (Fremont Cyn):</p>	<p>Continued conversion of Pasture Road from a paved road to natural surface single-track trail. Identified and obtained approval from adjacent Irvine Lake Management the implementation of additional management tools to deter unauthorized access into OC Parks land. New tools include an updated map for fisherman showing appropriate access trails, "No Access" areas of sensitive habitat, and improved</p>	<p>Install "No Access – Sensitive Habitat" signs and additional gates/fencing to area adjacent to Irvine Lake to deter unauthorized access by fisherman.</p> <p>Survey and obtain biological review for proposed maintenance alignments of the existing Pasture Road/trail conversion connection to the existing lower lake trail adjacent to the bait shack pad.</p>

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	fencing/gates to deter unauthorized access.	
New Construction or Expansion (Loma Ridge): - Vehicle Pull-outs	Installed previously surveyed and approved vehicle pull-outs. Identified pull-outs with flexible Rhino-Marker delineator posts. Pull-outs have been included on the area Emergency Access Maps for use by authorized personnel conducting patrols and scientific research/field monitoring.	Perform routine maintenance of vehicle pull-outs as needed.
New Construction or Expansion (Loma Ridge): - Fire Hardening	N/A	Along Santiago Road consider installation of fire hardening options at roadway edge to deter fires originating from vehicles, compliant with OCFA and OC Public Works design standards.
New Construction or Expansion (Loma Ridge): - Portable Restroom	N/A	As needed, maintain berm and native planting around portable restroom to screen facility from EOC entry drive.
Maintenance of Existing Facilities (Loma Ridge): - Signage	Repaired and refreshed signage as needed.	Refresh way-finding signage at vehicle turn-outs and on existing sign posts as needed.
Maintenance of Existing Facilities (Loma Ridge): - Radio Repeater	Repeater was reprogrammed to a new digital code to minimize conflict with unauthorized radio user in Riverside. Replaced existing solar charger controller with upgraded unit, and installed new 60 month sealed-gel deep-cycle solar battery. Relocated remote repeater to revised location to increase range and effectiveness of system-wide	Continue performing annual monitoring of existing solar radio repeater.

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Project, Program, Activity	2015 Progress Report	2016 Work Plan
	radio reception/transmissions. New location coordinates 33°43'58.02 x 117°41'54.05	
Maintenance of Existing Facilities (Loma Ridge): - West Loma Road	<p>Performed additional erosion control enhancements to the previously repaired road segment below the Emergency Operations Center.</p> <p>Replaced collapsed CMP pipe with 19" schedule 80 traffic-rated PVC Pipe.</p> <p>Installed approximately 45 tons of local source boulders and rip-rap to mitigate surface run-off from the EOC.</p> <p>Re-routed approximately 1,200 lineal feet of restoration maintenance road in quadrant 2544Z, to abandon non-sustainable existing 28% grade road. Realignment utilized existing historical road alignment maintaining less than a 15% gradient.</p>	Will monitor road condition and will make additional repairs if needed.
Facility Replacement/Repair (Loma Ridge):	N/A	N/A
New Construction or Expansion (Limestone Cyn.): - East Sinks Viewing Area	N/A	Budgeting and time permitting, construct new viewing platform, similar to that built on the western edge of the sinks, to improve the management of visitor access.
New Construction or Expansion (Limestone Cyn.):	N/A	Budget permitting, add vehicle gates at the intersection of Hangmans Tree and Limestone Ridge Trail and to the future intersection of East

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- Vehicle Gates		Loma and Round Canyon (at the Bowerman Landfill access road), to improve management of visitor access during Wilderness Access programs. An additional recreational gate may be added at the current northern terminus of Round Canyon Trail.
New Construction or Expansion (Limestone Cyn.): - Augustine Staging Areas	Performed ongoing maintenance of staging area improvements and grounds, including mowing, weeding, trimming, and fence repairs as needed.	Remove existing parking bot-dots at equestrian parking area. Replace with permanent flexible end-post parking stall delineators and temporary traffic cones for Wilderness Access Day parking delineation. Replace existing equestrian watering trough with smaller unit for reduced maintenance requirements. Budget permitting, implement enhancements to the existing hay barn to include shade screening, maintenance replacement of existing concrete. Replace existing locking mechanisms at gates 2749W and 2648X with new stainless steel multi-padlock locking mechanism. Install steel gates to existing restroom surrounds.
New Construction or Expansion (Limestone Cyn.): - East Loma Ridge Overlook	N/A	Designate small overlook area at Loma Ridge East (near UCI Climate Study area) to focus public viewing to a limited area and deter unauthorized access. The overlook location will be selected to avoid sensitive native habitat.
New Construction or Expansion (Limestone	N/A	Along Santiago Canyon Road, consider installation of fire hardening options at roadway

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Cyn.): - Fire Hardening		edge to deter fires originating from vehicles, compliant with OCFA and OC Public Works design standards. Support efforts by OC Public Works to remove Eucalyptus trees along Santiago Canyon Road.
New Construction or Expansion (Limestone Cyn.): - Agua Chinon Trail Realignment	N/A	Time and resources permitting, survey and evaluate for implementation (consistent with the approved Recreation & Resource Management Plan), an alternative alignment to replace the southern-end of the existing Agua Chinon ranch road. If appropriate, agency review and approval will be requested, detailing proposed alignment options and trail design features.
New Construction or Expansion (Limestone Cyn.): - Fencing	Continued maintenance monitoring and repairs of fencing at the Mustard and Bolero intersection as needed.	Continue maintenance monitoring and repairs of fencing at the Mustard and Bolero intersection as needed.
Maintenance of Existing Facilities (Limestone Cyn.): - Vehicle Gates	N/A	N/A
Maintenance of Existing Facilities (Limestone Cyn.): - Vehicle Pull-outs	Maintained vehicle pull-outs and associated signage at designated areas.	Vehicle pull-outs will be maintained as part of annual road maintenance and shown on area maps for use by authorized personnel conducting patrols and scientific research/field monitoring. Additional signage will be placed on the markers to identify the location of each pull-out.

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<p>Maintenance of Existing Facilities (Limestone Cyn.):</p> <ul style="list-style-type: none"> <li>- West Sinks Viewing Deck</li> </ul>	<p>Monitored visitor use of viewing platform for adherence to authorized access and performed routine maintenance, including replacement of the bench's seating boards and guardrail's top rail. Maintained additional rope barriers along single track trail to viewing platform to deter off-trail use.</p> <p>Installed an equestrian tie/corral area, and mountain bike parking rail adjacent to Limestone Canyon Road adjacent to the viewing deck access trail. Enhancements will provide easier viewing access for visitors on bikes and horses, while providing protection to the adjacent vegetation.</p>	<p>Budgeting and time permitting, replace decking at the viewing deck with Alaskan yellow cedar glu-lam timber deck panels. Interpretive signage, explaining the geological event creating the "Sinks", is being considered.</p>
<p>Maintenance of Existing Facilities (Limestone Cyn.):</p> <ul style="list-style-type: none"> <li>- Fencing</li> </ul>	<p>Repaired fencing at various locations along Santiago Canyon Road, near Goat Gate, and at southern end of Aqua Chinon damaged due to vandalism or vehicle accidents.</p>	<p>Monitor fencing at perimeter and along Santiago Canyon Road. Repair/replace fencing as needed. Budget permitting, replace long sections of old fencing on Santiago Road with new fencing.</p> <p>Consider removal of barbed wire fencing on interior sections of Limestone Canyon if not needed to deter unauthorized access.</p>
<p>Maintenance of Existing Facilities (Limestone Cyn.):</p> <ul style="list-style-type: none"> <li>- Sinks Water Trough</li> </ul>	<p>Monitored existing water pipeline from Box Spring to the Sinks' water trough. Line periodically fails and is carefully "spot" fixed to remove blockage or leaks.</p>	<p>Budget permitting, begin the replacement of the existing water line with " galvanized steel pipe from the Box Springs to the Box Springs Trough. Remove existing equestrian ties from the Box Springs trough location to eliminate duplicate facilities with the new Sinks Viewing deck equestrian tie area.</p>

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Maintenance of Existing Facilities (Limestone Cyn.): - Box Springs Trail	Performed regular maintenance trimming to maintain treadwidth for passive recreational access.	Will trim branches of fallen Oak tree to reopen existing foot path. Will continue to monitor the east terminus Box Spring Trail at the shallow drainage crossing. If deemed necessary, a short-span puncheon bridge may be added for more sustainable access to the trail.
Maintenance of Existing Facilities (Limestone Cyn.): - Raptor Trail	Re-built the lower one-half segment of the trail, implementing eight grade-reversal out-drains to minimize future storm related erosion.	Budgeting and time permitting, replace decking at the Raptor bridge with Alaskan yellow cedar glu-lam timber deck panels
Maintenance of Existing Facilities (Limestone Cyn.): - Hicks Haul Road (paved)	Monitored road for weed abatement. Trimmed and brushed vegetation protruding into shoulder of Hick Haul Road in 2014. Inspected, recorded drainage infrastructure facilities details (including GIS coordinates), and cleaned/repared key drainage pipes and culverts of Hicks Haul Road.	Perform weed abatement/trimming of brush within the paved area of Hicks Haul Road as needed. Efforts to convert of a portion of Hicks Haul Road to a multi-use regional bikeway and trail, between Santiago Road and Loma Ridge may continue in 2016, dependant on future funding commitments.
Maintenance of Existing Facilities (Limestone Cyn.): - Dripping Springs Conversion	Conversion of Dripping Springs Trail to a single track continued. The Dripping Springs Trail remained closed to visitor programs to allow regrowth of the vegetation into a single track. The new single track alignment has been mowed and significant native planting has occurred in degraded areas adjacent to the trail and in the old trail footprint as a bmp to restore habitat and discourage use of retired alignment. Installed a control gate, portal and barrier fencing	Will continue to monitor trail use and maintain Dripping Springs trails according to their authorized trail characters. The triangularly-configured trail intersection between Dripping Springs trail and Limestone Canyon trail will be reworked, creating a single "T" intersection of trails. Conversion of the trail to a single track may include installation of several multi use bridges over existing creek crossings. Budget permitting, begin the final conversion of



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	at the Dripping Spring Spur junction to manage access during future public programs.	the upper segment from the Dripping Springs Spur to Sand Trap (Approximately .9 mile) from road to single-track. Install temporary out-of-bound barrier fencing to protect trail-side areas currently under restoration.
Maintenance of Existing Facilities (Limestone Cyn.): - Dripping Springs Trail Spur	Performed maintenance to trail tread including improving existing bench cut and cleared overhead vegetation as needed.	May implement the repair of a segment of existing stairs and trail pathway at the end of the Dripping Springs Spur Trail. A 40' long segment of the pathway (near the trail end) may be refurbished and stabilized to a 4' wide trail or boardwalk to safely accommodate managed hiking and animal access to the adjacent natural spring.
Maintenance of Existing Facilities (Limestone Cyn.): - Cactus Canyon Trail	Performed routine maintenance on erosion control features (grade-dips and drains) as required to minimize erosion.	Monitor repairs and trail conditions, taking corrective measures to minimize additional damage from future storms.
Maintenance of Existing Facilities (Limestone Cyn.): - East Loma Road Failure At Bowerman Landfill	Repairs to the East Loma Ridge Road are complete where it intersects with the OCTA restoration area at Bee Flat Canyon. The improved drainage has reduced the risk of further erosion of road. Clean boulders were installed down slope at several wash-out areas and under roadbed to prevent further erosion. The road was regraded to allow cross-slope drainage and improve sustainability of the road.	Condition of the roadway and repairs will be monitored, taking corrective measures to minimize additional damage from future storms.
Maintenance of Existing	A major landslide removed a portion of the Loma	Continue assistance to the land owner and OC

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Facilities (Limestone Cyn.): - Loma Ridge Trail	Ridge Trail adjacent to the existing Bowerman Landfill. All access on this portion of the trail has been closed while OC Waste stabilizes the area and rebuilds the trail. Temporary barricades and signage have been installed to alert trail users to the closure. Input on the alignment of the replacement trail has been provided to the land owner, identifying appropriate design standards and erosion control features of a sustainable trail. Additional input is being provided during the reconstruction of the trail.	Waste on the trail's reconstruction. Monitor the progress of the rebuilding effort to assure long-term sustainability of the trail and appropriate installation of native plantings. Monitoring and assistance will continue until the trails' construction and native plant restoration is complete and the trail is reopened for public programs.
Maintenance of Existing Facilities (Limestone Cyn.): - Markel Spur Trail	Performed trail-tread maintenance to improve drainage and prevent storm-related erosion. Continued monitoring the condition of trail-side restoration plantings.	Monitor condition of newly rerouted trail for signs of erosion. Implement repairs and corrective actions to deter future damage to trail. Additional native planting to occur in degraded areas adjacent to the trail and in the old trail footprint as a bmp to restore habitat and discourage use of retired alignment. Limited trail use by the public (via docent-led programs) is planned in 2016 if sufficient vegetation growth occurs from winter rains.
Maintenance of Existing Facilities (Limestone Cyn.): - Signage	Completed installation of remaining key gate and trail signage in Limestone. Continued monitoring existing signage and replaced as needed.	Refresh way-finding signage at gates, vehicle turn-outs, and on existing sign posts as needed.
Maintenance of Existing Facilities (Limestone Cyn.): - Round Canyon	Performed annual mowing and trail maintenance as needed.	Continue to mow and clear vegetation to maintain Round Canyon as a 4' wide multi-use trail.

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Maintenance of Existing Facilities (Limestone Cyn.): - Sand Trap	Identified corrective action to deter further erosion of steep sections of the Sand Canyon Trail (in consultation with County maintenance team). County implemented major repairs, installing new drain-outs and out-sloping of trail components to reduce future trail erosion.	Monitor condition of newly repaired trail for signs of erosion. If needed, implement minor refinements and repairs to deter future damage to trail.
Facility Replacement/Repair (Limestone Cyn.):	N/A	N/A
<b>Infrastructure Construction &amp; Maintenance:</b>		
Maintenance (Limestone Cyn. by Others): - Orange County Rain Gauge	The County of Orange inspected and maintained the rain gauge facility on a regular basis. Access and inspection of the facility was coordinated by the Irvine Ranch Conservancy.	Inspection and maintenance by County of the installation.
Maintenance (Loma Ridge. by Others): - OC Emergency Operations Center Fuel Modification	The OC Sheriff's designated contractor completed a nesting bird survey and performed fuel modification around the Orange County Emergency Operations Center (and the paved access road), using hand-held weed eaters/mowers. The activity was done in compliance with NCCP provisions.	If needed, the OC Sheriff's designated contractor will complete a nesting bird survey of the proposed fuel modification area (if the work is to be performed during the nesting season), and perform fuel reduction measures using hand-held weed eaters/mowers in the designated fuel modification zone. This activity will be monitored by the Irvine Ranch Conservancy for compliance with NCCP provisions.
<b>Habitat Restoration &amp;</b>		

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<b>Enhancement:</b> (Note: Funding Sources noted in first column if other than Land Owner)		
Exotic Plant Eradication: - Program Summary	<p>Key invasive species were searched for and removed/treated across 3641 acres (OCP Fig. 2). Eradication and control projects were implemented by contract labor, volunteers, and staff. See “Educational Outreach” for volunteer participation. Helicopter-facilitated control work was not possible in 2015 because of contractor constraints.</p> <p>In 2015, four new populations of Sahara mustard were found, unfortunately after any control efforts were possible. Drought followed by summer rains resulted in an explosion of Russian thistle and castor bean seedlings. Only the latter was controlled beyond restoration polygons. Because of the decrease in artichoke thistle and the increasing priority of other emerging weeds, artichoke thistle control was significantly reduced relative to previous years.</p>	<p>Eradication and control efforts are ongoing. See below for species-specific details. If funds permit, a limited amount of control work in remote locations will again be completed by helicopter.</p>
Exotic Plant Eradication: - Monitoring and Prioritization	<p>Priority species targeted for eradication (for which all populations will be treated if possible) continue to be: Sahara mustard, yellow starthistle, perennial pepperweed, tree of</p>	<p>Conservancy staff, contractors and volunteers will continue to treat previously prioritized species and populations, with special emphasis on the emerging weeds Sahara mustard, yellow</p>

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	<p>heaven, giant reed, Cape ivy, garland chrysanthemum, Spanish broom, tamarisk. Moderate priority species targeted for control (populations will be strategically treated) are: artichoke thistle, castor bean, Canary Island date palm, Mexican fan palm, pampas grass, fountain grass, and bull thistle. Milk thistle, Italian thistle, tree tobacco and fennel were only treated in key locations.</p> <p>Bee Flat Canyon, Agua Chinon, Lower Silverado Canyon, and West Loma subwatersheds have specific invasive control programs associated with mitigations, which include removal of the above species as well as a few other species.</p> <p>A digital invasive control reporting system estimating both net control and gross control area as well as search area is continuing to be used to track weed control work. A link to an online map of work is available upon request. The map is regularly updated with new control efforts.</p> <p>Staff initiated planning with NCC for a follow-up 2016 aerial weed survey of the Irvine Ranch Open Space and adjacent wildlands.</p> <p>Two conference calls and a coordination / planning meeting were conducted with NCC and Cal-IPC to develop a coordinated region-wide</p>	<p>starthistle, perennial pepperweed, cape ivy and tree of heaven.</p> <p>Staff will continue to work with NCC and Cal-IPC on more systematic regional prioritizations and will plan for a 2016 aerial re-survey of the IROS and adjacent lands.</p> <p>Attention will be expanded to the identification, documentation and control of emerging invasive species.</p>

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	prioritization and strategy for invasive species control.	
Exotic Plant Eradication: - Artichoke Thistle	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>87 gross acres, 0.01 Net (down from 2014)</li> <li>Estimated 6963 plants</li> </ul> <p>Population size and distribution of artichoke thistles decreased from previous years due to drought and successful treatment. Thistles were treated from 19 Jan - 22 May and again beginning 16 Oct. with clopyralid or glyphosate. Nesting bird surveys were conducted during the breeding season in any sensitive bird habitat before each application. Adjacent right-of-ways were not treated by Caltrans.</p>	Sites will continue to be visited unless three successive visits without thistles can be verified. Search areas will be modified based on 2015 treatment results. Aerial survey information will be used to target additional remote and isolated populations for control. IRC will again work to coordinate with Caltrans to facilitate management of adjacent right-of-ways.
- Fennel	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>77 Gross acres, 0.15 Net (up from 2014)</li> <li>Estimated 4657 plants</li> </ul> <p>Target areas for fennel control continue to be West Loma and Silverado Canyon. Treatment was primarily with glyphosate.</p>	Fennel will continue to be treated where it co-occurs with artichoke thistle and in Silverado Canyon. Stands still occur in Santiago Wash that have not been targeted.
- Spanish broom (OCTA Measure M, in part)	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>6.9 Gross acres, 0.03 Net (= to 2014)</li> <li>Estimated 946 plants</li> </ul> <p>Control areas continue to be in Silverado, Black</p>	Spanish broom control efforts will continue within the Santiago, Black Star, and Silverado Creek area.

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Project, Program, Activity	2015 Progress Report	2016 Work Plan
<p>- Milk and Italian Thistle (OCTA Measure M, in part)</p> <p>- Sahara Mustard</p> <p>- Bull thistle</p> <p>- Arundo (OCTA Measure M, in part)</p>	<p>Star, and Santiago Canyon. Santa Ana Watershed Association (SAWA) also controlled Spanish Broom within Santiago Canyon for one days as part of ongoing maintenance of Mountain Park mitigation. Treatment was primarily cut-stump with glyphosate or Pathfinder application.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 37.76 Gross acres, 0.55 net (up from 2014)</li> <li>• Estimated 77,047 plants</li> </ul> <p>Milk and Italian thistle were removed primarily in Bee Flat Canyon, Agua Chinon, Lower Silverado and West Loma as part of mitigation activities. Control was both manual and with glyphosate.</p> <p>Treatment in NCCP:</p> <ul style="list-style-type: none"> <li>• 2.03 Gross acres, 596 Net ft<sup>2</sup> (up from 2014)</li> <li>• Estimated 1698 plants</li> </ul> <p>Sahara mustard population size at Loma Ridge increased from previous year's estimate of 265 plants). An additional sub-population was found approximately 100m from the original site. All plants were hand-pulled at the original site.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 0.06 Gross acres, 64 Net ft<sup>2</sup> (down from</li> </ul>	<p>Both milk and Italian thistle will be continue to be a lower priority for control outside of mitigation due to their broad distributions. Control efforts will continue where they are included in mitigation contracts and key areas along Limestone and Shoestring trail.</p> <p>Monitoring and eradication efforts will continue in 2016, using staff contract and volunteer labor. A separate report will be compiled for control work.</p> <p>Bull thistle will continue to be removed at known accessible locations as resources permit.</p> <p>Arundo removal will continue within Santiago and Silverado Creek. IRC will continue to work with</p>



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- Perennial Pepperweed (OCTA Measure M, part)	<p>2014)</p> <ul style="list-style-type: none"> <li>Estimated 80 plants</li> </ul> <p>Arundo stands within major water ways decreased by nearly half from 2014 estimates. Stands occurred primarily in Santiago and Silverado Creek. SAWA continued follow-up control work around Irvine Lake (data not shown) as part of a mitigation contract. All treatment consisted of cut-stump application of aquatic-safe glyphosate or foliar spray of regrowth.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>0.05 Gross acres, 75 Net ft2 (sim. to 2014)</li> <li>Estimated 35 plants</li> </ul> <p>Perennial Pepperweed was searched for and controlled primarily within lower Silverado Canyon as part of mitigation efforts. Additional plants were targeted in nearby Santiago Canyon. A large stand was found at the mouth of Silverado Creek that will be targeted in 2016. Plants were difficult to find and were therefore likely not all treated.</p>	<p>water districts and SAWA to support follow-up Arundo control around Irvine Lake.</p> <p>Pepperweed will continue to be controlled where it is found. Restoration funding for Silverado Creek will help to fund intensified efforts to control this species. OC Parks control efforts will focus on the new population found at the mouth of Silverado Creek.</p>
- Tree Tobacco (OC Waste and Recycling, part, OCTA Measure, part)	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>18.24 Gross acres, 0.16 Net</li> <li>1279 plants</li> </ul> <p>Tree tobacco was searched for and removed manually or by stump cut with glyphosate.</p>	<p>Tree tobacco removal will continue within the areas targeted previously and with special emphasis in Agua Chinon, supported by mitigation funding from OC Waste and Recycling.</p>

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- Castor Bean (OC Waste & Recycling, part)	<p>Acreage increased because of external funding for control work. Focus areas continue to be Limestone, lower Fremont, Hicks, Bee Flat, Silverado and Agua Chinon Canyons.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 37.7 Gross acres, 1.94 Net (up from 2014)</li> <li>• Estimated 35,703 plants</li> </ul> <p>Matures castor bean was removed primarily by stump cut with glyphosate or Pathfinder. Acreage increased because seedling release caused by restoration site preparation in Agua Chinon as well as by drought and summer rain. Focus areas continue to be Agua Chinon, Santiago, and Silverado Canyon.</p>	<p>Castor bean removal will continue within the areas targeted previously and in any new areas that it is found if resources permit. Special emphasis will be put on Agua Chinon and will be supported by mitigation funding.</p>
- Tamarisk (OC Waste & Recycling, part; OCTA Measure M, part)	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 1.59 Gross acres, 646 ft<sup>2</sup> Net (down from 2014)</li> <li>• Estimated 204 plants</li> </ul> <p>Tamarisk was searched for and treated with stump cut and triclopyr and/or imazapyr. Search and control efforts have increased with riparian mitigation funding.</p>	<p>Tamarisk will continue to be targeted for removal and search efforts will expand further in lower Silverado Canyon and Agua Chinon with supplemental funding.</p>
- Pampas Grass (OC Waste and Recycling, part)	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 1 plant</li> <li>•</li> </ul>	<p>Pampas grass will continue to be targeted for removal. Efforts will focus in Agua Chinon with supplemental mitigation funding and with potential helicopter assistance.</p>

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<p>- Fountain Grass</p> <p>- Mexican Fan Palm</p> <p>- Tree of Heaven</p>	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 0.24 Gross acres, 97 Net ft<sup>2</sup> (up from 2014)</li> <li>• Estimated 31 plants</li> </ul> <p>No Mexican fan palms were removed within NCCP.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 0.27 Gross acres, 172 Net ft<sup>2</sup> (up from 2014)</li> <li>• Estimated 62 plants</li> </ul>	<p>Select fountain grass sites will be treated/re-treated, primarily by the EOC on Loma ridge, along Santiago Canyon, and in more remote areas using helicopter access.</p> <p>Mexican fan palm will continue to be treated opportunistically.</p> <p>Tree of Heaven continue to be treated as new populations are discovered. Existing sites will be revisited annually.</p>
<p>Exotic Animal Control:</p> <p>- Goldspotted Oak Borer Monitoring</p>	<p>Goldspotted Oak Borer beetle was discovered in December 2014 in Weir Canyon. In Spring 2015, the infestation site was carefully monitored by trained staff and volunteers. In total, 444 oaks were surveyed for GSOB in the area immediately around the known infestation. One main outbreak and two satellite outbreaks were found. In total, 74 infested oaks were found and tagged; 82 adjacent seemingly uninfested trees were also tagged. Infested oaks were injected with Emamectin benzoate (TreeAge®) in early spring and sprayed with Carbaryl in April. Adjacent tagged trees were treated with Dinotefuran (Safari®) in May. Twenty moderately to highly infested trees were removed and ground off-site. Beginning October 2015, the area was resurveyed to document treatment success and spread. Final survey results are</p>	<p>Topical treatment of infested and newly discovered infested trees will continue. A small number of highly infested trees may be destructively sampled to estimate current larval population in treated trees (treatment efficacy). Supplemental funding may be needed to continue treatment. A report of treatment results will be completed and provided to NCC and OC Parks.</p>

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	<p>pending. Numerous dead adult GSOB were found in new exit holes, suggesting that surface treatment was effective, but adjacent trees were also found to have exit holes because they had already harbored larvae.</p>	
<p>Exotic Animal Control: - Exotic And Domestic Animal Monitoring</p>	<p>Access cameras captured 166 incidents of unauthorized dogs in OCP land. Problem areas are at the Anaheim Hills Gate (1744X) and Baker Canyon (OCFA grid 2653).</p>	<p>IRC will continue to collect data on exotic animals from existing wildlife cameras. Access cameras may also provide new monitoring locations for exotic animal monitoring. Incidental observations from animal releases will be reported. Guidelines regarding animal release and disposal of carcasses are being drafted.</p>
<p>Exotic Animal Control: - Argentine Ant Monitoring</p>	<p>Bait card surveys of argentine ants (<i>Linepithema humile</i>) were conducted monthly in Agua Chinon in 2015. A standard protocol was used (baiting note cards with syrup and leaving them out in transects or arrays to be checked in a few hours) to monitor the presence of <i>L. humile</i> in relation to the irrigated OCWR restoration polygons.</p> <p>A large scale ant survey was conducted in Agua Chinon to collect baseline data on the species composition and diversity of the existing ant population in Agua Chinon prior to irrigation beginning in the OCTA restoration polygons. Lower, middle and upper areas of Agua Chinon were selected for the survey and 120 baited pitfall (propylene glycol) traps were set for 48 hours and then collected. Ant species composition and</p>	<p>Bait card surveys will be conducted monthly in 2016 to monitor the distribution of <i>L. humile</i> in Agua Chinon.</p> <p>Collaborative work will continue with UC Riverside including monitoring and further distribution of baited poison if deemed necessary.</p>

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	<p>distribution may be influenced by many things including weather, reproductive and seasonal colony trends. To get a true understanding of the ant population in Agua Chinon samples were collected in October 2014, February 2015 and June 2015.</p> <p>Collaborative work began with the Choe Lab at UC Riverside to suppress <i>L. humile</i> in Agua Chinon using poison. A pheromone was developed in the UCR lab that was specifically targeted for <i>L. humile</i>. This pheromone was combined with the pesticide thiamethoxam and a gel to create small gel pieces that were distributed in areas where <i>L. humile</i> were concentrated. The gel bait was distributed in August and October in the lower section of Agua Chinon.</p>	
<p>Habitat Restoration: - Post-Burn Restoration of Nesting Habitat for the Coastal Cactus Wren (Funding by DFG/LAG)</p>	<p>Restoration of cactus patches occurred in 2008-2009.</p> <p>40, 15 m diameter patches of cactus pads were planted in groups of 2-10 in 5 locations in the Central Reserve (Figure 3). Some sites had 5 gallon potted cactus planted as well.</p> <p>The restoration is complete and in its monitoring phase.</p> <p>Cactus Wrens were monitored in the vicinity of</p>	<p>Data on five years of growth in the form of cover from year 1 in 2010 will be summarized, including differences among sites.</p>

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	<p>the restoration sites March 2015 by Robb Hamilton. Unfortunately, only one adult male was seen among the four areas surveyed. Report is available upon request.</p>	
<p>Habitat Restoration: - West Loma I /Hangman's Tree Canyon Restoration and Management Trials (Funding: OC Parks, UCI CEB)</p>	<p>West Loma I /Hangman's Tree Canyon:</p> <ul style="list-style-type: none"> <li>• See Figure 3</li> <li>• 25 polygons/restoration subunits based on desired habitat, aspect, slope, and restoration approach</li> <li>• Majority of the project is in the maintenance phase. Exceptions include three polygons which need to be re-seeded either due to false brome or severe drought just after seeding. Additional seeding will occur in these polygons in the future, but due to limited funds they are currently being mowing once per year prior to seed release.</li> <li>• Approximately 53 total acres</li> <li>• Desired states: CSS, native grassland</li> <li>• Initiated in 2009 with multiple years of site preparation.</li> <li>• Depending on polygon: 1-4 years grow/kill; hand seeding, drill seeding, imprint seeding, hydroseeding, container planting; 4, 6, or 8 week maintenance cycles within growing season, hand weeding, wick, selective herbicide.</li> <li>• The Cost Efficiency manuscript based on this</li> </ul>	<p>Approximately 3,800 container plants will be installed in January 2016.</p> <p>Travis Huxman and Sarah Kimball with CEB at UCI will continue to collect data in collaboration with IRC. In 2016 they will collect data on the resistance of seeded plots differing in levels of native cover to growth of non-native species from the seedbank. No weeding will occur in selected areas until data is collected. Additionally, recruitment of CSS species into gaps between seeded strips will be monitored for areas seeded at West loma restoration in 2012-2012 and for Bee Flat in 2013-2014.</p> <p>A pre-emergent trial will be incorporated into a subset of supplemental planting that will take place to fill in forb and grass strips with native shrubs. Treated and untreated plants will be marked and their success tracked to determine the effectiveness and any potential negative impacts on the plants. Non-treated plants will be hand weeded as would occur normally during restoration maintenance on a larger scale.</p>

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	<p>project is available in the November 2015 Restoration Ecology journal.</p> <ul style="list-style-type: none"> <li>In the maintenance experiment, a number of plots we set up that will not be weeded to test invasibility of native communities.</li> </ul>	
<p>Portola Springs (PA6) Cactus Salvage: West Loma site Funding: NCC, TNC</p>	<p>November 11, 2014, <i>Opuntia littoralis</i> and <i>Cylindropuntia prolifera</i> were transplanted as whole plant clumps at 6 locations selected for their potential suitability for the Coastal Cactus Wren. Each location had 4 clumps for a total of 24 whole plant clumps.</p> <p>In addition, 1000 pads and 100 branches were delivered at planted around these clumps at two locations. Additionally, TNC funded the planting of 14 clumps on easement lands and the delivery of 2 dump trucks of bulldozed cactus segments. These segments were planted to supplement restoration activities at West Loma I.</p>	<p>Plants will be photographed and monitored for survival by IRC staff.</p>
<p>Orchard Hills Cactus and Soil Salvage (Funded by NCC, TNC)</p>	<p>Whole plant mature cacti, approximately 5 feet tall, were transplanted from the Orchard Hills salvage site at the end of October to six sites throughout the Irvine Ranch Open Space. Plants were transplanted in the following areas: West Loma restoration site (NCCP-21 plants, Easement-27 plants), West Loma, Limestone Canyon cactus restoration site (IRC LAG Grant 2008) (12 plants), and at the Portola Orchard cactus restoration site (LAG Grant 2008) (21 plants). Additionally, approximately 600 pads</p>	<p>Planted cactus will be maintained by IRC staff, including periodic checks to determine whether they need watering in their first year. A report summarizing the cactus salvage efforts from both Portola Springs and Orchard Hills will be written by IRC staff and submitted to NCC documenting locations, activities, and general success. Soil salvage sites will also be maintained by IRC and a description of sites included in the report.</p>



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	<p>were planted at the West Loma restoration site.</p> <p>In December, close to 4000 cubic yards of soil was transferred from the upper 4 inches of soil from the donor site and spread at 4 inches depth across three recipient sites. The West Loma receiver site is 2.2 ac, the Hick Haul Site is 2.1 ac, and Portola Staging site is 2.85 ac. All receiver sites were surveyed in November 2015 and areas with patches of visible native vegetation were excluded. Ground surveys for sensitive species within the last 8 years were overlaid using GIS to ensure these species had not been detected on receiver sites. UCI researcher Mia Maltz with Dr. Treseder's lab sampled soil cores from polygons at the donor site and the receiver sites a week prior to salvage transport. All receiver sites were mowed and raked prior to receiving soil. The donor site vegetation was crushed and larger branches pushed aside prior to collecting soil for transport.</p>	
<p>Habitat Restoration:</p> <ul style="list-style-type: none"> <li>- Agua Chinon Subwatershed Restoration (Mitigation funding by OCWR)</li> </ul>	<p>Agua Chinon Subwatershed Restoration:</p> <ul style="list-style-type: none"> <li>• 21 restoration polygons and invasive control buffer area</li> <li>• 17 total restoration acres and 287 total acres of target invasive control</li> <li>• 17 restoration acres currently active, approximately 200 acres of invasive buffer were visited and treated at least once and 25 acres were treated 2-3 times.</li> </ul>	<p>Site Maintenance: 17 acres, irrigation and weed control</p> <p>Monitoring: photo points, yellow pan traps (bees), Argentine ants, invasive species, nesting and sensitive birds, horticultural monitoring</p> <p>Planting/seeding: container plant and live stake replacement and addition, seed replacement</p>

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<ul style="list-style-type: none"> <li>• Approximately 40% complete.</li> <li>• Target vegetation communities: Mulefat Scrub, Mulefat scrub/Sage Scrub, Elderberry Shrubland, Oak Riparian, Coastal Sage Scrub</li> <li>• Year started: 2013; Anticipated completion: 2018</li> <li>• Restoration methods: Planting/Seeding: hand seeding, container planting, live staking; Site Maintenance: hand weeding, spot spraying, mowing overhead irrigation; Invasive control: spot spraying, hand pulling, cut stump herbicide application</li> <li>• Monitoring: photo points, vegetation transects and quadrats, arthropod pitfall traps, yellow pan traps (bees), Argentine ants, invasive species, nesting and sensitive birds, horticultural monitoring, CRAM</li> <li>• Factors most influencing success: rainfall/weather</li> </ul>	<p>Invasive control: spot spraying, hand pulling, mowing, cut stump herbicide application.</p>
<p>Habitat Restoration: - Agua Chinon Mitigation OCTA Project I (OCTA Funding)</p>	<p>Agua Chinon Restoration:</p> <ul style="list-style-type: none"> <li>• 13 restoration polygons</li> <li>• Approximately 20% complete</li> <li>• 6 total acres</li> <li>• 6 acres currently active, site preparation complete</li> <li>• Target vegetation communities: Elderberry Shrubland/Sage Scrub, Mulefat Scrub/Herbaceous Riparian, Oak Riparian</li> </ul>	<p>Planting/seeding: irrigation system installation, container plant and live stake planting, seed planting</p> <p>Site Maintenance: 6 acres: irrigation and weed control</p> <p>Monitoring: photo points, vegetation transects and quadrats, arthropod pitfall traps, yellow pan</p>

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<ul style="list-style-type: none"> <li>• Year started: 2013; Anticipated completion: 2021</li> <li>• Restoration methods: Site Prep: mowing, one year grow/kill with herbicide</li> <li>• Monitoring: Argentine ants, yellow pan traps (bees), invasive species</li> <li>• Factors most influencing success: rainfall/weather</li> </ul>	traps (bees), Argentine ants, invasive species, nesting and sensitive birds, horticultural monitoring, CRAM
Habitat Restoration: - Bee Flat Canyon Subwatershed Mitigation OCTA Project I (OCTA Funding)	Bee Flat Canyon Subwatershed Restoration: <ul style="list-style-type: none"> <li>• 78 restoration polygons</li> <li>• Approximately 65% complete</li> <li>• 84 total acres</li> <li>• 84 acres currently active across two phases of treatment</li> <li>• Target vegetation communities: CSS, Perennial Grassland, Chaparral, Oak Woodland</li> <li>• Year started: 2011; Anticipated completion: 2018</li> <li>• Restoration methods: Site Maintenance: hand weeding, spot spraying, selective and wick herbicide, selective irrigation</li> <li>• Monitoring: photo points, vegetation transects and quadrat, arthropod pitfall traps, invasive species, nesting and sensitive birds, horticultural monitoring</li> <li>• Factors most influencing success: rainfall/weather</li> </ul>	Site Maintenance: 84 acres, irrigation and weed control  Monitoring: invasive species, nesting and sensitive birds, horticultural monitoring.  Planting/seeding: seed planting

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Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration: - Agua Chinon Foothill Restoration Project (Funding: 319h State Water Resources Control Board) NCC Collaboration	This project was withdrawn from the 2015 funding cycle due to complications with grant eligibility and contractual obligations related to business organization structure. If these issues are resolved, the project will be submitted in a future funding cycle.	
Habitat Restoration: - West Loma II, OCTA Project III Mitigation (OCTA Funding)	West Loma II and OCTA Project III Project: <ul style="list-style-type: none"> <li>• See Figure 3</li> <li>• 26 restoration polygons</li> <li>• Approximately 10% complete</li> <li>• 62.47 total acres</li> <li>• Approximately 25 acres currently active (Upland Elderberry Shrubland polygons, Native Grassland polygons)</li> <li>• Target vegetation communities: Coastal Sage Scrub, Elderberry Shrubland, Mulefat Shrubland, Native Grassland, Red Willow Woodland</li> <li>• Year started: 2014; Anticipated completion: 2022</li> <li>• Restoration methods (anticipated): Site Prep: mowing, two year grow/kill with herbicide; Planting/Seeding: hand seeding, imprinting, drill seeding, hydroseeding, container planting, live stakes; Site Maintenance: hand weeding, spot spraying, selective and wick herbicide, drip irrigation</li> </ul>	Site Preparation: 47 acres: mowing and herbicide treatments  Seeding and Planting: container plant and live stake installation, seeding  Maintenance: approximately 15 acres of seeded Elderberry Shrubland polygons  Monitoring: photo points, yellow pan traps (bees), invasive species, nesting and sensitive birds, horticultural monitoring

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	<ul style="list-style-type: none"> <li>Monitoring: photo points, vegetation transects and quadrats, rapid assessment, arthropod pitfall traps, nesting and sensitive birds, horticultural monitoring, Protocol surveys completed for CAGN</li> <li>Factors most influencing success: rainfall/weather</li> </ul>	
<p>Tecate Cypress Restoration Phase I and II (Partial funding by OC Parks, FWS Partners Program, and NCC)</p>	<p>Tecate Cypress Restoration:</p> <ul style="list-style-type: none"> <li>90% complete, initiated in January 2011</li> <li>10.3 acres</li> <li>Approximately 396 tecate cypress were planted in Phase III, 212 survived to October 2016. Survival of watered plants was not significantly different from unwatered plants</li> <li>136 Phase II and 211 Phase I trees survived</li> <li>Monitoring: seedling survival, height, health, number of branches, surrounding vegetation.</li> <li>Factors influencing success: drought, vertebrate herbivory</li> </ul> <p>Results were summarized as a poster co-authored with USFWS at the state CNPS meetings in June 2015.</p>	<p>The site will be maintained 1-2 times in Spring 2015 and survival will be monitored in Summer 2016. Approximately 40 two-year-old seedlings may be planted in January.</p>
<p>Habitat Restoration: - Pilot Cactus Scrub Restoration Study</p>	<p>Cactus pilot restoration sites were not monitored in 2015. Plants are permanently tagged to be measured at 3-year intervals (next monitoring 2017). Two of four pilot cactus restoration study sites,</p>	<p>A more detailed summary of results will be compiled if time permits. Cacti will be measured again in 2017.</p>

### Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

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	<p>initiated in the winter of 2008/2009, occur in OC Parks. Cactus transplant size and vigor have been monitored annually from planting in 2009 until 2014, in order to determine the effect of microsite on establishment and growth of prickly pear pads and transplants and the speed of transplant growth of cholla and prickly pear. Prickly pear joints had grown to an average of 16.5 joints and 36 cm height. Cacti are permanently marked and will be measured at three-year intervals moving forward.</p>	
<p>Habitat Restoration: - Native Seed Farm</p>	<p>A 12 acre section of agricultural land continued to be managed as a native seed farm by NIRC. In Year 7, 10 native shrubs, 35 native forbs, and 6 native grasses were successfully planted/maintained to serve as a source of local seed for future restoration, occurring primarily in the Central Reserve. Plants were started and maintained by staff, volunteer, and contract help. Harvests included arroyo lupine, chick lupine, silver lupine, California poppy, owls clover, cobweb thistle, blue wild rye, miniature plantain, cliff aster, white pincushion, yellow pincushion, popcorn flower, common Eucrypta, heart-leaf penstemon, wishbone bush, California figwort, golden yarrow, cudweed aster,</p>	<p>Eight acres will be planted in at the new "Gateway" seed farm site in 2016, consisting of 24 forb species, 4 perennial grass species, and 9 perennial shrub species to be used for future restorations in the Central Reserve. Two and a half acres will be used to establish a volunteer staging area, nursery, and seed processing facility. Infrastructure development will be phased in from 2016-2020.</p>

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	<p>mugwort, white sage, black sage, coast golden bush, California sage, California buckwheat, California bush sunflower. Farm harvested seed served as the primary source for restoration seeding.</p> <p>Farm staff focused their efforts on relocating the seed farm to a new 15- acre site in north Irvine. A design concept for the new site was completed.</p>	
Miscellaneous Activities:	N/A	N/A
<b>Fire Management Activities:</b>		
	<p>Trained and outfitted approximately 36 new volunteers bringing the program total to 178 volunteers ready to monitor “high risk” areas on the border of the wildlands. There were 6 “high risk” days in 2015 that necessitated Fire Watch deployment on OC Park’s Irvine Ranch Open Space. This program was conducted in conjunction with the Greater Laguna Canyon Fire Safe Council, Inter-Canyon League Fire Safe Council, Trabuco Canyon Defense Against Wildfire, Modjeska Canyon Fire Watch, the</p>	<p>Continue the Orange County Fire Watch Program. This program was conducted in conjunction with the Greater Laguna Canyon Fire Safe Council, Inter-Canyon League Fire Safe Council, Trabuco Canyon Defense Against Wildfire, Modjeska Canyon Fire Watch, the Orange County Fire Authority, OC Parks and Crystal Cove State Park to create a network of Fire Watch programs. IRC will work with NCC to support completion of the Fire Management Plan.</p>

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	<p>Orange County Fire Authority, OC Parks and Crystal Cove State Park to create a network of Fire Watch programs.</p> <p>Fire Watch Coordinator led 10 public outreach events to educate the public on wildland/urban interface risks and conducted the first-ever July 4<sup>th</sup> Fire Watch deployments at two OC Parks facilities.</p>	<p>Discussions continue about expanding the Fire Watch program into other Orange County wilderness areas.</p>
<p>Post-Fire Management: - General Approach</p>	<p>IRC and OC Parks are collaborating to ensure that small fires perimeters are digitized and that fire severity and wildlife mortality are recorded in a consistent manner. Each fire is surveyed, assessed for resource damage, and recommendations for repair are made.</p>	<p>Survey forms will continue to be used for fires as guides for data collection and an assessment report will be written for each fire. Small fire perimeters and dozer lines will be digitized and larger fire perimeters will be obtained from OCFA.</p>
<p>Post-Fire Management: - Specific fires</p>	<p>241 Fire: IRC staff surveyed the extent of the 241 Fire that occurred on 13 July 2015 and was accidentally set by CalTrans mowing equipment off Santiago Canyon Rd. The fire burned 214 acres by Conservancy estimates. The fire perimeter and all dozer and hand lines were digitized and entered into the Conservancy's geodatabase. Fire severity, repair efforts and damage to sensitive resources were assessed. A summary report was provided to OC Parks.</p> <p>IRC contractors and staff controlled artichoke</p>	<p>The Baker Fire site as well as 241 Fire site will be monitored and treated again in the spring of 2015 for emergent weeds and potential soil erosion.</p>



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	thistle within the perimeter of the Santiago Hills fire of 2013 and 2014 and castor bean within the perimeter of the 241 Fire in Fall 2015.	
Maintenance of Fuel Breaks/Modification Zones:	N/A	N/A
<b>Miscellaneous Activities and Management Programs - IRC:</b>		
UNHEALTHY OAK SURVEY	<p>Given the discovery of Goldspotted Oak Borer in Weir Canyon, in January, the IRC designed a survey to check dead or significantly thinning (&gt;25%) oak trees for signs of GSOB or other life threatening pests or diseases. Only trees greater than 14 inches dbh were included. Focal trees were first identified using aerial imagery from Eagle Aerial, then a 200 foot radius surveyed on the ground for additional unhealthy trees on the ground. A couple of outliers with GSOB were discovered in Weir Canyon this way. The results of identifying focal trees with aerial imagery was shared with OC Parks for Santiago Oaks and Irvine Regional Park. Around focal trees in Weir Canyon, it was estimated that 23% had thinning 15-50% thinning, 17% had &gt;50% thinning, and 7% were dead. These were all outside the boundaries of the GSOB infestation.</p>	In 2016 this survey will continue in major canyons outside of Weir Canyon.

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Long-term Oak Survey at Limestone Canyon UCI (part)	UCI and IRC collaborated to begin a long-term survey of several thousand oaks that were surveyed in Limestone/Santiago Canyon 2002-2003 in order to track their survival and recruitment.	UCI students will conduct surveys under UCI staff supervision as time permits.
Monitoring Habitat Stability and Resilience through Long-term Vegetation Transects	The IRC has been conducting long-term vegetation monitoring for coastal sage scrub about every three years since 2009. We coordinate with TNC and their monitoring on easement lands. TNC monitoring focuses on describing the overall status of the vegetation over space and time, while the IRC focuses on a series of transects across a gradient of invasive species cover. Monitoring of vegetation along long-term transects did not take place in 2015.	With the wet winter expected in 2016, vegetation monitoring is expected to occur in the spring of 2016.
Passive Restoration Trial UCI (part)	Initiated 2010. Purpose: Assess the efficacy of using a passive restoration approach to restoring degraded coastal sage scrub communities. The following data continues to be collected annually: cover and density in smaller germination quadrats. In 2015, plots were maintained for their fifth year by IRC and monitored by the Huxman lab into their fourth year, and the new sites in Gypsum and Crystal Cove were monitored in their first year. Arthropods were sampled in 2014. Graduate study Emily Griffoul has summarized data thus far and found significant treatment effects over time with respect to native and non-	In 2016, passive weed control treatments will continue with winter spot spraying and spring hand weeding/wicking. Monitoring will continue as well. Emily Griffoul has drafted a manuscript that should be submitted for publication in 2016.

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	native cover, richness, and germination, with generally greater effects in the coastal reserve sites vs. the central.	
Restoration Database : - OC RESTORE	IRC worked with NCC to review changes and video tutorials for the tool, help to develop the batch upload function, and organize IRC weed treatment data for uploading to OC RESTORE.	IRC will continue to work with NCC on inputting data into the tool and review its progress.
Habitat Restoration: - Agua Chinon Oak Irrigation Trial	55 oaks were planted in Agua Chinon by staff and volunteers in Dec 2013.  Survival, stress and growth (height in cm) of the surviving oaks were recorded in January, May and October of this year.	Survival, stress and growth (height in cm of the surviving oaks will be recorded in January, May and October.
Habitat Restoration: - Agua Chinon Piezometers and Cuttings Trial	A new planting of 14 <i>Baccharis salicifolia</i> and eight <i>Salix lasiolepis</i> were watered a total of 50 gallons over four months while the same number of poles were watered a total of 30 gallons over four months.  The purpose of this trial was to investigate how the quantity of water given to pole cuttings in the winter and spring months influences stress and survival through the summer months, with not additional water. This could help determine amounts of water needed to establish pole cuttings during a time when the availability of	Cuttings from previous plantings will be monitored and data summarized. We are hoping that with expected rains, we may be able to get standing water readings on our deeper piezometers (10-20 ft).

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	<p>water may be getting scarcer.</p> <p>Plants received water as planned, but due to late spring and summer rains, we weren't able to "test" our method of water and rain limitations to the winter and spring.</p>	
Development of Biological Database	The IRC completed a geodatabase known sensitive plant and animal records compiled within the greater historic Irvine Ranch. The geodatabase will continue to be maintained and updated for Conservancy-managed areas.	Both fauna and flora databases will continue to be updated.
Long-lived Shrub Trial	<p>Within the West Loma I (Hangman's Tree Canyon restoration) and West loma II restoration areas, paired faces and gullies were identified on slopes with different aspects. This project spans NCCP and Easement lands. 100 plants each of several long-lived shrubs/trees (<i>Sambucus nigra</i>, <i>Rhus integrifolia</i>, <i>Quercus agrifolia</i>, <i>Malosma laurina</i>) were planted across these topographic conditions in December 2013 to better understand their tolerance to areas likely differing in soil moisture. Due to the severe drought in 2014, plants were periodically given supplemental water by hand.</p> <p><i>M. laurina</i> grew the tallest among the species and was taller on ridgelines than any other topographic area. Other species did not show consistent patterns among topographies.</p>	Additional monitoring would be valuable in 2016 to look at longer term survival and growth.

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	Survival after 1 year was lowest for <i>S. nigra</i> , and similar among other species around 40%. There was substantial erosion from heavy rains after drought that washed out several drainage plants perhaps explaining why the drainages had the lowest survivorship (whereas those that did survive, didn't have substantially lower height values).	
Soil Characteristics of Restored Grassland Sites EASEMENT AND NCCP UCI (part)	The IRC has conducted restoration seedings of <i>S. pulchra</i> over multiple acres and across two sub watersheds. The success of these seedings has varied, both at the hillside scale with aspect, but also within a hillside. It is suspected that soil differences may account for these within hillside differences, but the resolution of USGS soil maps is too coarse. IRC worked with citizen scientist volunteer Alan Chui, also a UC Irvine student, to collect soil samples among 45 sites differing substantially in <i>S. pulchra</i> cover. 2 sampling depths were collected per site. Measurements of bulk density, soil texture, soil water content, and organic matter were made in collaboration with the Huxman, Goulden, and Druffel labs at UC Irvine.	Final measurements of soil water retention will be made to create a soil water potential curve in collaboration with the Huxman lab in January and February. IRC staff and Alan Chui will summarize study results.
IRC Science Brief Series: Efficacy of Water Supplementation for Coast Live Oak Restoration	IRC initiated a "Science Brief" series in 2015 to help document trials and summarize information pertinent to maintaining a program of adaptive management. The first brief summarizes two studies from two subwatersheds where water was manipulated during acorn plants and tracked for at least a year. This brief was published in	Information from this brief will be used to guide plantings of acorns across the variety of soil types, terrain, and project timelines across IRC managed lands.

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<p>IRC Selective Herbicide Trial: Triclopyr Dosage on Early Establishment Stages of <i>Stipa pulchra</i> and <i>Brassica nigra</i></p>	<p>UCCE Wildflowers bulletin.</p> <p>Data were summarized from a fall 2014 trial on Triclopyr, a post-emergent broad-leaf herbicide, to determine whether different dosages have differing impacts on the growth of <i>Stipa pulchra</i> during 3 different stages of growth (1, 2, and 3 weeks after germination). We also looked at these dosages and stages on its effectiveness at killing <i>Brassica nigra</i>. No substantial impacts were found on <i>Stipa</i> from the dosages applied, but applications on 1week-old seedlings over .65 oz/gal did show lower survival and height. Waiting until week 2 achieved the most effective control of <i>B. nigra</i> with minimal impact on <i>S. pulchra</i>. Waiting until 3 weeks greatly reduces dosage impacts on <i>B. nigra</i>.</p>	<p>This trial is complete and information has been used to determine dosages of Triclopyr when restoring <i>S. pulchra</i>.</p>
<p>Rare Plant Surveys</p>	<p>No rare plant surveys were completed in 2015.</p>	<p>Citizen Science-based rare plant monitoring may begin in 2016 but contracted surveys are not planned unless planned trail or other disturbance warrants it.</p>
<p>Trail Condition Monitoring</p>	<p>In July through September 2015, Bren graduate student intern Eliza Berry carried out annual monitoring on the condition of trails and trail-side vegetation using 45 long-term trail monitoring transects scattered throughout the Irvine Ranch Open Space. She also compared trail and road width data collected over the last five years for evidence of significant change. She found that</p>	<p>The condition of trails and trail-side vegetation will be monitored again in the summer of 2016.</p>

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	<p>single-track trails are not widening significantly, suggesting proper design and management of trails on the Irvine Ranch Open Space. In contrast, there was a significant increase in utility road width over the same time period (an average of 1.06 m wider since 2010), suggesting a need to look more closely at the impact of periodic grading activities. Widening was not correlated with the trail user abundance. Another key finding was that the cover of vegetation adjacent to trails and roads declined in 2015 from 2013 and 2010, as did overall and native plant species richness. While both native and non-native species cover declined, non-native species cover declined relatively more. These declines are likely the result of recent drought and not recreation activity since they are not correlated with levels of human activity, nor was there physical evidence of trampling. Eliza also researched and tested ways to improve our method for estimating changes in trail and road depth using both new field techniques and analyses of aerial imagery. These improved methods will be integrated into the 2016 monitoring program.</p>	
Raptor Nest Surveys	IRC partnered with Bloom Biological Inc. (BBI) to	Raptor surveys will continue in 2016 across the

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(including an expanded volunteer survey area)	<p>conduct spring raptor breeding surveys across the Irvine Ranch Natural Landmarks (Figure 4). Monitoring occurred regularly from March 9<sup>th</sup> through May 29<sup>th</sup> 2015.</p> <p>A total of 141 historic (i.e. used in previous years) or new nest sites were surveyed. Of these:</p> <ul style="list-style-type: none"> <li>• 92 nests (65%) were determined to be inactive in 2015 (i.e. no attempts at nesting were made). This represents the second year in a row of well-below average breeding activity, although not as low as 2014.</li> <li>• 49 nests (35%) were considered active in 2015. Thirty-two of these successfully fledged young while 11 ultimately failed. The fate of the remaining six active nests was unknown.</li> <li>• Of the 32 successful nests, 3 were osprey, 1 bald eagle, 2 red-shouldered hawk, 20 red-tailed hawks, 2 Cooper's hawks, 2 barn owls, and 2 great horned owls.</li> <li>• 6 additional nests were given a status of unknown.</li> <li>• The final report was careful not to blame low nest occupancy and success entirely on drought because previous droughts have not been associated with such low reproductive activity across so many traditionally active territories. The authors suggest that other factors may be involved and/or interacting with drought, including disease (e.g. West Nile Virus) and exposure to anticoagulants in</li> </ul>	IRNL.



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	<p>pest control products. The full draft report can be made available upon request.</p> <ul style="list-style-type: none"> <li>• Within OC Parks property, 65 nests were monitored, of which 18 were active, and 5 were successful.</li> </ul> <p>The full report is available upon request.</p>	
Cactus Wren Artificial Nest Box Structures	A total of 13 cactus wren artificial nest boxes remain in place across the Irvine Ranch Open Space. In 2015, all nest boxes were surveyed for nesting activity. No nesting activity was detected in nest boxes on OC Parks property in 2015.	All nest boxes will be monitored again for nesting activity in the spring of 2016.
Wildlife Monitoring	<p>Wildlife activity in the central and coastal reserve has been monitored since 2007 using remote infra-red-triggered cameras, operated by IRC staff and volunteer citizen scientists.</p> <p>Forty-seven remote cameras are currently operating, 33 of which occur on OC Parks land. Data from photographs is entered manually. The database currently contains more than 107,085 entries.</p> <p>Quarterly data (March, June, September, and December) is analyzed for species trends on an annual basis.</p> <p>Analyses from a LAG-funded project in 2012 suggest large mammals avoid humans and the</p>	<p>Camera trapping will continue as a tool for monitoring wildlife and human activity in 2016. Additional cameras may be installed if deemed necessary.</p> <p>A second DFG-LAG grant funded study is planned for 2016 to further investigate the relationship between human access and wildlife activity. Results of the study will be summarized in the 2016 NCC report.</p> <p>All wildlife cameras will be tested in the beginning of 2016 for proper function using a protocol developed in 2013 by IRC staff and volunteers.</p>

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	<p>number of trail users affects the activity of wildlife in the short term. Long-term effects on wildlife activity and population viability remain unclear.</p> <p>A new camera location was added at the intersection of Markel Spur and Limestone Ridge. The camera was added to capture wildlife activity and it successfully captured mountain lion and coyote activity within the first week of deployment.</p> <p><b>Trends in Wildlife Activity by Species</b></p> <p>Analysis of camera data from January through December, 2015 indicate:</p> <p><u>Deer:</u></p> <ul style="list-style-type: none"> <li>• Activity has fluctuated significantly across years, but has increased since 2013.</li> <li>• Strong peak in activity during late summer (September) and drop in winter and spring.</li> </ul> <p><u>Coyote:</u></p> <ul style="list-style-type: none"> <li>• Annual activity has increased slightly since 2013</li> <li>• Activity is greatest in winter (December) and lowest in summer (September) but fluctuates widely.</li> </ul> <p><u>Grey fox:</u></p> <ul style="list-style-type: none"> <li>• Activity decreased significantly following the</li> </ul>	

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	<p>2007 Santiago fire and has not recovered. Only 24 grey fox images were captured in 2015.</p> <ul style="list-style-type: none"> <li>• Weir Canyon, specifically Lower Weir, gets the highest grey fox activity on the reserve.</li> <li>• No seasonal pattern of activity detected from camera traps.</li> </ul> <p><u>Bobcat:</u></p> <ul style="list-style-type: none"> <li>• Annual activity has bounced back since the lowest in 2013 but remains fairly constant.</li> <li>• No seasonal pattern of activity detected from camera traps.</li> </ul> <p><u>Mountain lion:</u></p> <ul style="list-style-type: none"> <li>• Annual activity continues to fluctuate but has increased since 2013 when the lowest activity was recorded.</li> <li>• No seasonal pattern of activity detected from camera traps.</li> </ul> <p><u>Large Event/Wildlife Response Analysis:</u> In July through September 2015, UCSB Bren School graduate student Nico Alegria completed an analysis of Limestone Canyon camera data from 12 wilderness access days as well as 10 days bracketing each event in order to assess the effects of large events on wildlife activity relative</p>	

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	<p>to background human activity. The student found that wildlife was significantly less likely to occur on wilderness access days than on days prior or after events. He found that wildlife activity rebounded quickly but that the joint probability of wildlife co-occurring on the same day as a human was significantly less than expected, suggesting an antagonistic effect of humans on wildlife. Wildlife activity also shifted into nighttime hours during wilderness access days. Recommendations included continuing to cluster human activity and to end events well before sunset to allow for wildlife to use evening hours.</p> <p><u>Irvine Mesa Trail Monitoring:</u> On January 26, three trail-side wildlife cameras were installed along the single track section of the Irvine Mesa Trail in Baker Canyon area. The cameras are intended to collect baseline data on unauthorized trail use and wildlife activity prior to the planned opening of the trail to docent-led activities in the fall/winter of 2015. Data analysis showed a total of 29 photographs of bobcat, 79 coyote, 46 mule deer, 86 humans, and 4 photos of dog were captured from January to September. There were no photos of mountain lions or California Gray Fox although they are frequently photographed in</p>	

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Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>the nearby Limestone area. The species activity is lower compared to wildlife patterns within similar open space in the Limestone area. However, this could be due in part because the Irvine Mesa trail is not an obvious wildlife corridor due to high traffic roads on either end of the trail unlike neighboring Limestone Canyon. The camera located next to the utility road captured the most photographs of vehicles and humans. Based on the orientation of trail users in photographs, it appears that most were accessing the closed single track trail from the Irvine Mesa utility road rather than from Santiago Canyon Road.</p>	
Trap-door Spiders	<p>Three marked trap-door spider colonies were again monitored. Due to more bare ground being exposed due to drought again in 2014, several new burrows were found. Colony size estimates (=questionable/live burrows) were: Hicks Hall – 6, Limestone – 57, and MWD – 3 burrows.</p>	<p>Monitoring of trapdoor colony demography will continue in 2016. If additional colonies are found, they will be marked and monitored as time permits.</p>
Pollinator Restoration and butterfly monitoring	<p><u>Citizen Science Butterfly Count.</u> Monthly butterfly surveys were conducted for a fourth full year along four fixed trail routes in Limestone Canyon. Surveys were conducted from January through December and included staff, trained IRC volunteers, and select trained members of the</p>	<p>All activities are ongoing. Citizen Science training may be developed for butterfly monitoring to expand the program.</p>

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>public. Surveys have recorded over 43 butterfly species to date. All survey data are now being submitted to the Butterflies and Moths of North America butterfly monitoring online database (PollardBase). The name of the monitoring group was changed from Irvine Ranch Conservancy to Orange County Butterfly Monitoring Network. A presentation of survey results was given to the Orange County chapter of the North American Butterfly Association.</p> <p><u>IRC Native Seed Farming.</u> The seed farm continued to target seed multiplication of native plant species that are valuable as pollinator magnets and as larval host plant for butterflies. These species will be planted in wildland restoration sites.</p> <p><u>Bee monitoring.</u> Bees are being surveyed for at riparian restoration sites (Silverado and Agua Chinon) using yellow pan traps. Surveys should identify current native bee diversity and future trends with restoration.</p>	
Climate Change	Climate change research at Loma Ridge by Goulden et. al. (UCI) is ongoing. Additional weather stations were installed by UCI at Gypsum, Bee Flat, and West Loma Ridge; data are available online for land manager partner use. IRC staff is participating in a vulnerability assessment for southern California through	UCI studies are ongoing. IRC will continue to participate in EcoAdapt's vulnerability assessment into 2016.

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	EcoAdapt for the USFS and CA Landscape Conservation Cooperative. The process will provide an assessment and modified management strategies for identified habitats and species based on their sensitivities, exposures, and adaptive capacities.	
Wildlife Corridors and Connectivity	<p>IRC's habitat mitigation plan for West Loma II funded by OCTA (see West Loma II above under habitat restoration) includes a requirement for improvements in the area of wildlife connectivity.</p> <p>IRC staff members are currently in discussions with OCTA and the Wildlife Agencies aimed at determining the best strategy to fulfill this required component of the mitigation project.</p>	IRC will identify and evaluate different options for improving wildlife connectivity within the scope of the West Loma II project plan and budget.
Alternative Pest Management	IRC hosted a Science Friday where Scott Thomas presented information he has gathered on rodenticides and their impacts on wildlife. OC Mosquito and Vector Control Michael Hearst informed IRC that they are no longer utilizing rodenticide for their control measures.	IRC will continue to stay informed on current research and policy changes. IRC will also continue to look for opportunities to use their monitoring data from camera traps and raptor nests to identify potential harmful impacts or patterns from urban edges.
Christmas Bird Count and Partners in Flight Count	The Christmas Bird Count occurred on 20 December but was partially impacted because of road closures due to rain. Quarterly PIF Point Count bird surveys were conducted by Sea and Sage Audubon as well as through the	Ongoing.

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	Conservancy's Citizen Science program.. As of 2008, Audubon is providing IRC with CBC and PIF data specifically for Reserve areas.	
Conservation Capacity	<p>Conservation capacity is being maintained on the IROS as outlined below:</p> <ol style="list-style-type: none"> <li>1. <b>Implementing landscape-scale restoration.</b> The purpose of restoration efforts is to increase habitat resilience to disturbance, enhance diversity, and support wildlife and ecosystem processes. Since 2012, implementation has been funded largely by external mitigation contracts, but also includes Land-owner funded restoration.</li> <li>2. <b>Implementing landscape-scale invasive control.</b> The purpose of targeted invasive control is to remove the threat of future habitat degradation by highly invasive pests. Implementation is funded primarily by land management agreement as well as by external mitigation funding and NCC funding for emerging invasives. It is informed by current monitoring and collaborative prioritization. Efforts expanded and will continue to expand to the evaluation of new threats, such as Gold Spotted Oak Borer and Shothole Borer.</li> <li>3. <b>Maintain current geospatial database for sensitive species and habitats.</b> The purpose of maintaining and adding to the geodatabase is to inform conservation</li> </ol>	Conservation capacity will continue to be re-evaluated annually.



## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>priorities and management actions with the purpose of maintaining and enhancing these resources. Activities include developing long-term and regional monitoring programs.</p> <p>4. <b>Partner with other organizations to achieve landscape-wide conservation goals.</b> In 2015, activities included: (1) participating in the NCC TAC, Land Management Committee, and several regional working groups, (2) providing regional expertise on regional conservation and land management issues where appropriate, (3) Working closely with OCFA to minimize fire risk, implement fire response consistent with protection of sensitive natural resources, and support organization, (4) Collaborating on a regional prioritization of invasive weeds through Cal-IPC and NCC, (5) Successfully initiating Year 1 of a LAG-funded study on recreation and wildlife response analysis, (6) Maintaining four externally funded landscape-level subwatershed restoration projects, and (6) Successfully collaborating with NCC to implement soil salvage from Orchard Hills development.</p> <p>5. <b>Providing opportunities for collaboration, internships, scholarship, and research on the Reserve.</b> Research partnerships continued with UC Irvine and were initiated with UC Riverside. Several student interns</p>	

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>completed work supporting conservation efforts. These included two summer UCSB Bren School graduate student interns and three undergraduate UCI students.</p> <p>6. <b>Working with collaborators to obtain funding for important conservation actions.</b> In 2015, funding was obtained for soil salvage through NCC and applied for to the Orange County Parks Foundation to enhance the new native seed farm operation. LAG funding for wildlife monitoring analysis funded one graduate Bren School intern.</p> <p>7. <b>Engaging volunteers in resource management.</b> Stewardship and citizen science activities continued to be offered, which increased conservation capacity and enriched the volunteer experience through direct interaction with staff.</p>	
<b>Miscellaneous Activities and Management Programs - Non-IRC Research:</b>		
Steven Allison, Nameer Baker, Jennifer Martiny, Claudia Weihe, Kathleen Treseder, Adam Martiny. UC Irvine.	Purpose: Controls over decomposition by microbial communities under climate change. Activities included: 1. litter collection for sterilization outside treatment plots; 2. litter collection for inoculation inside ambient plots; 3. distribution of litter bags into ambient plots and	Will continue survey of grassland leaf litter and collection of litter bags. Researchers will analyze decomposition rates and microbial communities for comparison across a climate gradient in southern California.

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	collection of survey grass litter from those plots.	
Kathy Baumberger, USGS, TNC	Purpose: Western spadefoot ( <i>Spea hammondi</i> ) breeding habitat assessment, Irvine Mesa.	Project will be initiated in 2016. Pond depth will be monitored, spadefoot will be measured and tagged.
Erin Boydston, USGS	Purpose: Landscape genetics of mule deer in Southern California; Initiated 2015. Fecal samples were collected to evaluate genetic structure and gene flow from the inland areas to coastal areas which are divided by I-5 and I-405. The focal study region centers on wildlife habitat in Chino Hills State Park, Prado Basin, and Santa Ana Mountains along the Santa Ana River.	The focal study region centers on wildlife habitat in Chino Hills State Park, Prado Basin, and Santa Ana Mountains along the Santa Ana River. We will also sample the San Joaquin Hills to evaluate genetic structure and gene flow from the inland areas to coastal areas which are divided by I-5 and I-405.
Dr. Jennifer Funk, Chapman University	Purpose: Limiting similarity as a tool for native plant restoration. Purpose: Experiment assessing the competitive abilities of native plant functional groups and invasive species.	Ongoing.
Dr. Winston Vickers, University of California, Davis	Purpose: Mountain Lion monitoring and movement. Two publications: 1) 2015, PLOS ONE, DOI:10.1371/journal.pone.0131490.	Ongoing.
Dr. Phil Rundel, University of California, Los Angeles	Purpose: The contribution of substrate specific soil moisture regimes to vegetation patterns.	None at present, though research remains active.
Dr. Ann Sakai and Dr. Steven Weller, University of California, Irvine (funding from UCI Center)	Purpose: Impacts of changing precipitation patterns on invasive fountain grass populations in coastal sage scrub and grassland communities.	Ongoing.

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

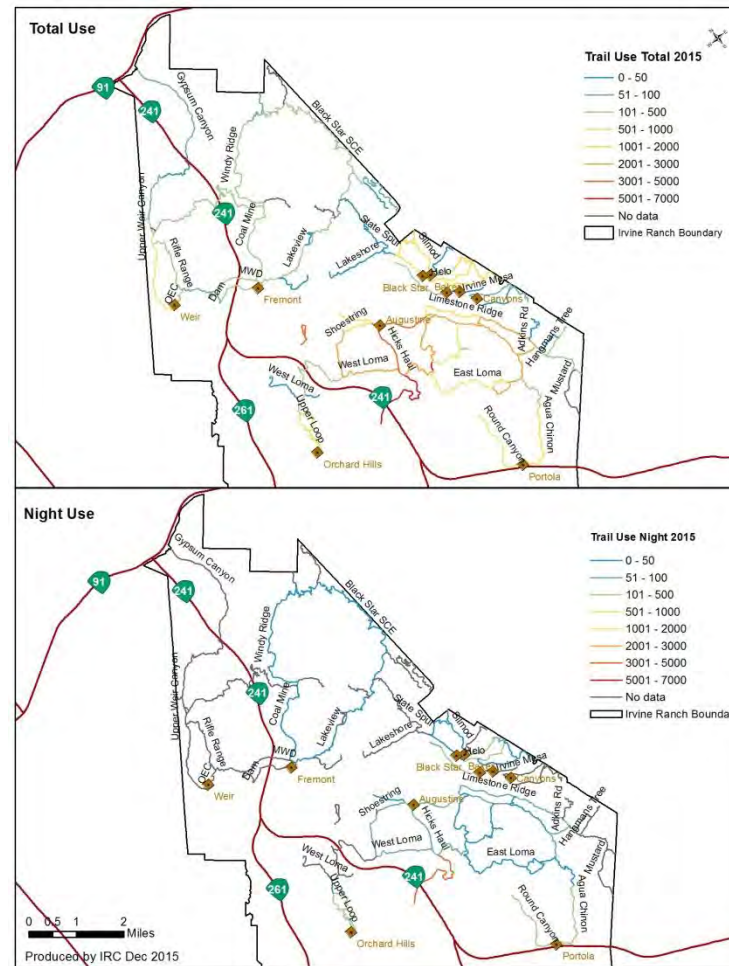
Project, Program, Activity	2015 Progress Report	2016 Work Plan
Dr. Michael Goulden, University of California, Irvine	Purpose Climate Change Experiment: Understand changes in vegetation due to changing rainfall and nitrogen deposition patterns.	Ongoing.
Mia R. Maltz Milan J Mitrovich Adithi R. Iyer Kathleen K. Treseder	Invasive plant management alters arbuscular mycorrhizal fungi.	Project completed. Manuscript submitted to Ecological Restoration. Currently in review
Dr. Sarah Kimball and Dr. Travis Huxman, University of California, Irvine, CEB	Native Seed Farm Study Purpose: Compare competitive ability of natives with and without annual weed competition. Data were collected and mean trait values for each species were calculated in 2015.	In 2016, trait values will be used to understand patterns at the West Loma restoration experiment; such as how mean trait values calculated from community composition data from the un-weeded plots in 2016 relate to the abundance of non-natives, or the relationship between trait values and performance on N vs. S-facing slopes, or survivorship through the drought.
Dr. Sarah Kimball, and Dr. Michael Goulden; University of California, Irvine, CEB	Weather station gradient. Purpose: Use observational stations to quantify Orange County's weather gradient, focusing on a north- south transect that spans the original Irvine Ranch from Crystal Cove State Park to Gypsum Canyon. (Also COI)	Ongoing.
Dr. Peter Bloom and Scott Thomas, Bloom Biological	Raptor monitoring and movement. Determine raptor nesting activity among several canyons and how they vary over time as well as possible factors driving activity numbers.	Ongoing.

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
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## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

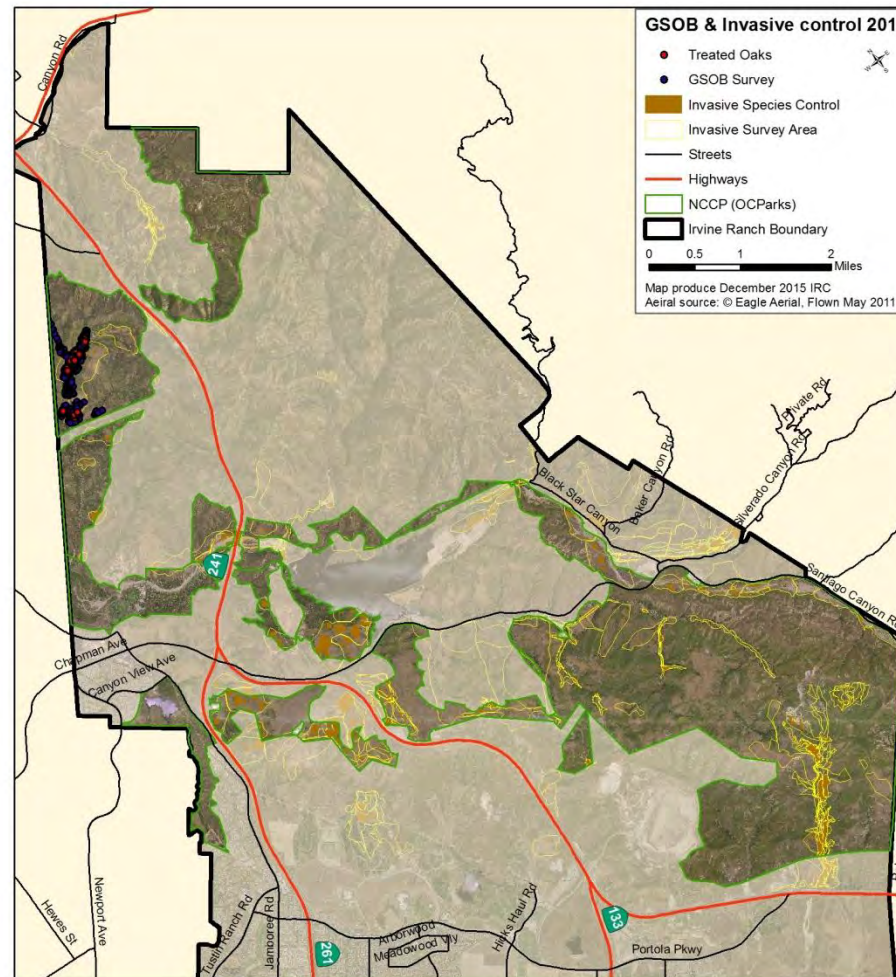
Project, Program, Activity	2015 Progress Report	2016 Work Plan
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OCP Fig. 1

## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
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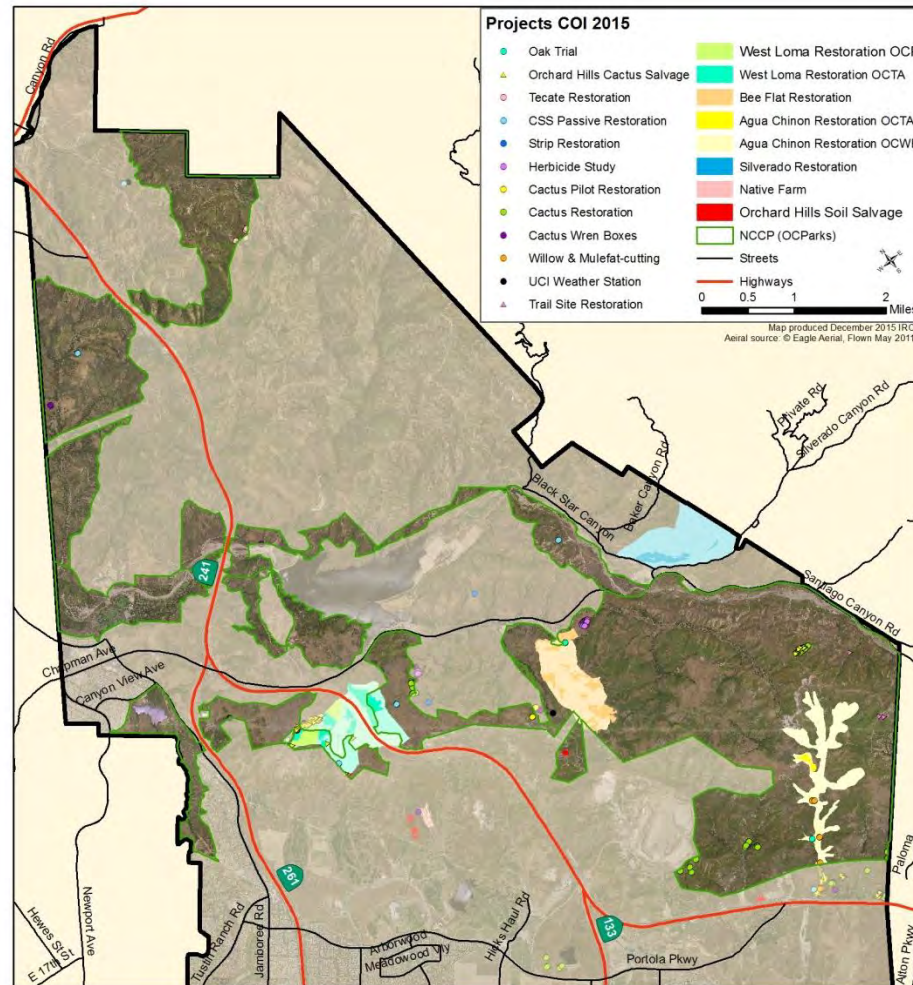


OCP Fig. 2



## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
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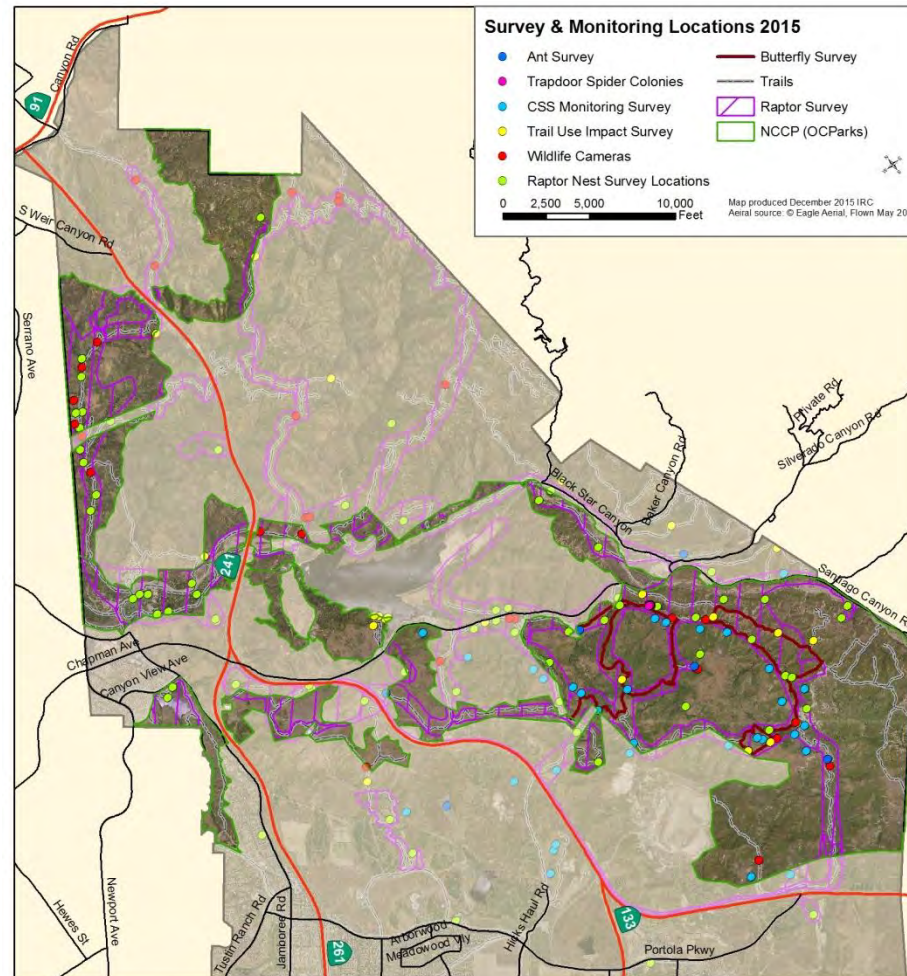


OCP Fig. 3



## Irvine Ranch Open Space - Central/Coastal Orange County Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
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OCP Fig. 4

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>OC Parks-managed Wildlands</b>		
<b>General Management Programs &amp; Activities: (All facilities)</b>		
General Use Policies:	Designated trails open to mountain biking, hiking and equestrian use. Dogs allowed on 6-ft. leash on designated trails (including all Regional Trails). Special uses/events allowed with OC Parks permit. All permit requests reviewed by park staff.	
Closure Policies:	Majority of NCCP parks open from 7:00 am to sunset. Parks may close for up to 72 hours following rain events. Parks are evacuated and closed in emergency situations such as fire, flooding and mountain lion incidents.	
Ordinance Enforcement:	Park Rangers obtain compliance with Orange County Codified Ordinances and use progressive enforcement, utilizing citation authority as "last resort." Volunteer Park Ranger Reserves supplement park patrols throughout the year.	
Fire Watch Volunteer Program	Park volunteers monitor for fire and suspicious activity in majority of NCCP facilities on Red Flag days.	
Defensible Space Zone Management Plan Development	Developing OC Parks Defensible Space Zone Management Plan through contract in collaboration with OC Fire Authority, Irvine Ranch Conservancy, local fire departments, NCC and other partners.	
Tree Monitoring Program Development	Developing partnerships and action plan to monitor tree health throughout OC Parks facilities.	

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Maintenance Best Management Practices Development	Developing BMP brochures and training for OC Parks staff, focusing on reducing maintenance impacts to natural resources in parks.	
ALISO AND WOOD CANYONS WILDERNESS PARK		
Recreation Use, Monitoring & Management:		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails while utilizing outreach and progressive enforcement to gain user compliance.	Ongoing.
Educational Outreach: - Parks & Laguna Canyon Foundation Educational Programs	Conducted school tour programs beginning in March. Continued LCF programs in Spring. Kept public updated on Arundo removal project through LCF, OCCC and OC Parks. Maintained native plant garden with interpretive signs.	Ongoing.
Recreation Facility Construction & Maintenance:		

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Maintenance of Existing Facilities: - Park Office and Entrance Improvements	County Design Group implemented main park entrance improvements as outlined in the park's Resource Management Plan (RMP).	Continue planning and implementation to improve park office per RMP.
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants	Utilized labor resources including staff and volunteers and special groups to remove targeted species including Pampas grass, hemlock and Arundo. Mowed non-native grasses in lower meadows to deplete seed bank.	Ongoing.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants (Natural Communities Coalition, OC Parks, Prop. 50)	Targeted Arundo, Pampas grass and tree tobacco with County contractor in coordination with NCC contractor. Entered Year 2 maintenance phase of Prop. 50 Arundo treatment project targeting approximately 30 acres of Aliso Creek.	Ongoing. Continue maintenance phase of Aliso Creek Arundo control project.
Exotic Animal Control: - Cowbird Trapping (Natural Communities Coalition)	Continued trapping in two areas along Aliso Creek East.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration: - Mathis Canyon Trail Mitigation	Mathis Canyon Trail repair required 0.12-acre wetland and 0.22-acre riparian mitigation. Mitigation installed in 2012-13. Completed third year of maintenance and monitoring with County contractors.	Ongoing to 2018. Contractors to continue maintaining site and reporting to OC Parks on future plantings, non-native plant removal and disturbances caused by humans/wildlife.
Habitat Restoration: - Wildlife Corridor "C"	Maintained wildlife corridor "C" improvements to reduce wildlife fatalities on Alicia Parkway.	No further action.
Habitat Restoration: - Army Corp of Engineers Aliso Creek Restoration (ACOE Funding)	ACOE proposing largescale restoration project of lower Aliso Creek. No action in 2015.	Additional stakeholder presentations and surveys to be completed by ACOE before selecting restoration design.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program:	See "General Management Programs & Activities."	Ongoing, as needed.
Fire Prevention: - City of Laguna Beach Fuel Modification	Continued permitted grazing with City of Laguna Beach contractor per agreement with city.	Ongoing.
Post-Fire Management:	N/A	N/A
<b>Miscellaneous Activities &amp; Management Programs</b>		
N/A	N/A	N/A

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>EL MODENA OPEN SPACE (SANTIAGO OAKS REGIONAL PARK)</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	N/A	Install trail counter to monitor after-hours usage.
Educational Outreach:	N/A	N/A
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion: - Signage - Trashcans	No action.	Install entrance and rule signs and trashcans at key locations in facility.
Maintenance of Existing Facilities: - Weed Abatement	Continued performing weed abatement via mowing and line trimming per County Agricultural Commissioner postings along areas adjacent to NCCP boundaries.	Ongoing.
<b>Habitat Restoration &amp; Enhancement:</b>		

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Exotic Plant Control: - Manual Treatment of Non-native, Invasive Plants	N/A	N/A
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants	No action.	Plan herbicide treatment in Winter 2015-16.
Exotic Animal Control:	N/A	N/A
<b>Fire Management Activities:</b>		
Fire Prevention:	N/A	N/A
Post-Fire Management:	N/A	N/A
Maintenance of Fuel Breaks/Modification Zones:	Staff and contractor maintained fuel modification zones identified by City of Orange Fire and OC Fire Authority.	Ongoing.
<b>Miscellaneous Activities &amp; Management Programs:</b>		
N/A	N/A	N/A

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>IRVINE REGIONAL PARK</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Maintained one camera and installed trail counter along Regional Trail to monitor recreation use.	Continue to monitor and analyze data.
Recreation Monitoring: - Attendance Tracking	Contracted Park Attendants provided monthly attendance statistics and volunteers tracked visitor attendance at Nature Center.	Ongoing.
Recreation Monitoring: - Public Surveys	Continued public satisfaction surveys at four locations in park. Results charted by OC Parks Communications for Balanced Scorecard Reports to County Board of Supervisors.	Ongoing.
User Compliance Programs: - Paws for Pink	Continued contracted special event to educate public about keeping dogs leashed.	Ongoing.



## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Educational Outreach: - OC Parks Public Programs	Continued opening Nature Center to public on weekends and weekdays with volunteer staffing. Continued weekend hikes. Held programs throughout year, including Bark Patrol, Paws for Pink, 2 <sup>nd</sup> Saturday Trail Day (monthly), Night Hike Series and California History for 4 <sup>th</sup> Graders. Added movie nights and Kids' Fishing Clinic.	Ongoing. Obtain additional volunteers to staff Nature Center and lead hikes.
Educational Outreach: - OC Parks Nature on the Go	Purchased trailer in 2014 for travel to various parks and multi-agency events. Trailer complete.	Develop and implement programs.
Educational Outreach: - OC Department of Education "Inside the Outdoors" School Field Trips	ITO naturalists continued to provide educational interpretive programs during school year.	Ongoing.
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion: - Park Front Entry Redesign	Continued developing plans to improve park entrance for user traffic flows, drainage and signage.	Continue in coordination with Project Managers.

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
New Construction or Expansion: - Restrooms 9 and 11	Continued developing projects to replace existing restrooms with new, structurally sound unisex restrooms. Restroom 11 on hold pending funding.	Complete restroom 9 in 2016.
Maintenance of Existing Facilities: - Signage	Began replacement of aged signage throughout park for clarity and consistency.	Complete new signage installation.
Maintenance of Existing Facilities: - Roadways	No action.	Slurry and stripe all roadways for maintenance.
Maintenance of Existing Facilities: - Fencing	Developed scope of work to replace fencing along park perimeter.	Complete installation of fencing.
Maintenance of Existing Facilities: - Tree Trimming	Continued annual tree trimming with County contract outside of nesting season.	Ongoing.
Maintenance of Existing Facilities: - Water Conservation	Reduced irrigation by 28% and identified turf zones to be type converted to drought-tolerant landscapes.	Convert identified turf zones to drought-tolerant landscapes.

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Maintenance of Existing Facilities: - Gopher and Ground Squirrel Control	County contractor performed rodent control for public safety and aesthetics.	Ongoing.
Maintenance of Existing Facilities: - Lake Dredging	Lower park lake wet dredged to remove built up sediment and debris.	No further action.
Maintenance of Existing Facilities: - Trail Maintenance	All trails/roads graded, brushed and maintained to reduce erosion.	Ongoing.
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Invasive Non-native Plants	Volunteers and Juvenile Work Program crews hand-removed non-native, invasive species including tree tobacco, castor bean, mustard, fennel, fountain grass, Pampas grass and white bladder-flower.	Ongoing.

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Exotic Plant Control: - Herbicide Treatment of Invasive Non-native Plants	Santa Ana Watershed Association treated variety of non-native species near Roadrunner Loop Trail. No treatment by County contractor in 2015 due to low numbers of invasive species from drought conditions.	Ongoing. Plan treatment for 2016 in winter of 2015-16.
Exotic Animal Control: - Cowbird Trapping (NCC Funding)	NCC contractor monitored and maintained three traps.	Ongoing.
Habitat Restoration & Revegetation: - OC Parks Projects	Volunteers continued to maintain 100 one-gallon native coastal sage scrub plants purchased from Tree of Life Nursery along Hardy Nature Trail. Outdoor Education Center staff donated and planted native species along Santiago Creek Trail.	Volunteers to continue Hardy Trail planting maintenance. Plant 24 coast live oak trees as mitigation for eight oak trees removed for maintenance yard construction. Outdoor Education Center to continue Santiago Creek Trail planting maintenance.
Habitat Restoration & Revegetation: - Snag Retention	Began practice of retaining identified dead trees within park for habitat enhancement for wildlife. Project sponsored by Southern California Bluebird Club and Cavity Conservation Initiative.	Ongoing.
<b>Fire Management Activities:</b>		

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.
Post-Fire Management:	N/A	N/A
Maintenance of Fuel Breaks & Fuel Modification Zones:	N/A	N/A
<b>Miscellaneous Activities &amp; Management Programs:</b>		
Study: - Bluebird Nest	Monitoring by Sea & Sage Audubon Society volunteers continued in Spring.	Ongoing.
Study: - Yellow Jacket	Research not conducted by UC Cooperative Extension Agriculture & Natural Resources and UC Riverside in 2015.	Resume research.
Study: - Emerald Ash Borer Monitoring	USDA continued beetle trap monitoring.	Ongoing.
Study: - Raptor Research	Pete Bloom surveyed nesting sites in June.	Ongoing.

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Study: - Native trees	Trees surveyed for presence of polyphagous shot hole borer and goldspotted oak borer. None detected.	Continue working with partners to develop monitoring, reporting and action protocols for woodland pests and pathogens.
<b>LAGUNA COAST WILDERNESS PARK</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails while utilizing outreach and progressive enforcement to gain user compliance. Volunteers monitored photos from remote wildlife cameras and reported unauthorized use to staff. Monitored Lizards, 9 to 5 and Drunken Sailor Trails with trail counters and wildlife cameras.	Ongoing.
Recreation Monitoring: - Attendance Tracking	Tracked total park, Nix Nature Center, program and cell phone tour attendance. Tracked public and school programs and quarterly newsletter mailings.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
User Compliance Programs:	<ul style="list-style-type: none"> <li>- Staff and volunteers continued utilizing wildlife calendars to monitor presence of dogs in park and informed visitors with dogs about park policy.</li> <li>- Determined areas to patrol for homeless encampments and unauthorized access/use.</li> <li>- Targeted after-hours (night) access violations.</li> </ul>	Ongoing.
Educational Outreach: - OC Parks & Laguna Canyon Foundation Docent Programs	Conducted school and public programs throughout year. Updated two Nix Nature Center exhibits.	Ongoing.
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion: - Lizards Trail	Completed trail improvements to previously unauthorized Lizards Trail following coordination and stakeholder meetings through NCC, Coastal Greenbelt Authority, Laguna Canyon Foundation and OC Parks. Initiated rehabilitation planning to permanently close surrounding unauthorized trails. Opened trail to public and monitored use through trail counters and wildlife cameras. Wildlife camera has picked up grey fox and coyote activity and one human use in six months.	Maintain closure of unauthorized trail network surrounding Lizards Trail. Continue monitoring via trail counters and wildlife cameras.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<p>New Construction or Expansion:</p> <ul style="list-style-type: none"> <li>- Little Sycamore Bridge &amp; Trail Improvements</li> <li>- Laguna Ridge and Trail Improvements</li> <li>- Old Emerald Trail Improvements</li> <li>- New Gate at Parcel 5 (Laguna Laurel)</li> </ul>	<p>Completed minor trail reroutes and replaced one 16-foot bridge at Little Sycamore to maintain existing trail following 2010 storm damage. Evaluated segments of Laguna Ridge and Old Emerald Trails for sustainability, maintenance and recreational issues. Gate installed to prevent unauthorized access.</p>	<p>Replace one 16-foot bridge in Little Sycamore to maintain existing trail. Complete trail maintenance improvements to Laguna Ridge and Old Emerald Trails. Assess all trail conditions post- El Niño.</p>
<p>Maintenance of Existing Facilities:</p> <ul style="list-style-type: none"> <li>- Unauthorized Trail Closure</li> <li>- Gates breached by vehicles</li> </ul>	<p>Closed Marie Callendars and additional unnamed unauthorized trails (approximately ¾-miles in length) with volunteer groups. Ridge Park Road leading to Bommer Ridge Gate 9 breached by vehicle for third time in two years, leading to vehicle extraction.</p>	<p>Ongoing, as needed.</p>
<p><b>Habitat Restoration &amp; Enhancement:</b></p>		



### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Exotic Plant Control: - Manual Removal of Invasive Non-native Plants (Laguna Canyon Foundation funded 4 acres of removal; Irvine Ranch Conservancy removed non-native invasive plants in the Laguna Canyon strip)	Utilized park staff, LCF volunteers, CCC crews and Irvine Ranch Conservancy to control target species including Tamarix, poison hemlock, mustard, non-native grasses, veldt grass, Pampas grass, tocalote and Italian thistle, castor bean, perennial pepperweed, Sahara mustard and areas with mixed invasive species. Methods included hand removal, weed eating, mowing and tractor.	Ongoing.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants (Natural Communities Coalition, OC Parks, Caltrans Funding)	NCC and OC Parks contractors treated target non-native, invasive plants including Tamarix, veldt grass, Arundo and fountain grass and mixed invasive species.	Ongoing.
Exotic Animal Control:	No action.	No action.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration & Revegetation: - OC Parks Projects (OC Parks & Laguna Cyn. Foundation Funding)	<ul style="list-style-type: none"> <li>- Nix Nature Center: Continued monitoring for non-native, invasive species and weeding as needed. Planted additional grasses.</li> <li>- Camarillo Canyon: Maintained and further enhanced riparian restoration.</li> <li>- Willow: Plant approximately ½-acre between trailer and parking lot.</li> </ul>	<ul style="list-style-type: none"> <li>- Nix Nature Center- Maintain.</li> <li>- Camarillo Canyon- Monitor, seed and weed.</li> <li>- Barbara's Trail- Seed trail edge with volunteers. Willow- Supplement planting with native seed.</li> </ul>
Habitat Restoration & Revegetation: - Unauthorized Trail Rehabilitation (OC Parks & Laguna Cyn. Foundation Funding)	Actively closed, rehabilitated and monitored unauthorized trails 9-5 and Drunken Sailor in conjunction with opening Lizards Trail and establishing sustainable trail network. Installed trail counters and wildlife cameras to monitor process.	Ongoing monitoring.
Habitat Restoration & Revegetation: - Laguna Canyon Road (OC Public Works & Caltrans Funding)	OCPW contractor maintained 17-acre riparian mitigation along Laguna Canyon Road.	Completion of mitigation project, pending sign-off by regulatory agencies. Issues with habitat type success criteria.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Post-Fire Management: - 2015 Laguna Fire	July 3 14-acre fire adjacent to Laguna Canyon Road initiated by SCE powerline. Burned primarily coastal sage scrub with some degraded habitat. Installing erosion control measures.	Monitor and maintain BMPs for site.
Maintenance of Defensible Space / Fuel Modification Zones: - Nix Nature Center	Continued planting and maintaining (outside of nesting season) OCFA-mandated plant palette in 170-foot fuel mod zone around Nix Nature Center. Planted additional bunchgrasses.	Ongoing.
Maintenance of Defensible Space / Fuel Modification Zones: - City of Laguna Beach Fuel Modification	Continued grazing permit with City contractor, Laguna Beach Fire Department.	Ongoing.
<b>Miscellaneous Activities &amp; Management Programs:</b>		
Proposed Introduction: - Pacific Pocket Mouse	OC Parks reviewed and approved Pacific Pocket Mouse Reintroduction Plan by USFWS.	Coordinate with USFWS as project nears implementation.
Encroachment: - Marijuana Grove	Discovered two sites encompassing 45 acres of approximately 2,000 plants via flyover in Los Trancos and Muddy Canyon. Removed majority of debris from sites.	Continue monitoring sites and reporting suspicious activity. Continue removing debris as access allows.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>PETERS CANYON REGIONAL PARK</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring & Management: - General Development Plan (GDP) - Resource Management Plan (RMP)	Initiated developing both plans with stakeholder input.	Continue developing plans.
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails while utilizing outreach and progressive enforcement to gain user compliance. Maintained two trail counters to monitor visitor usage.	Ongoing.
Educational Outreach: - OC Parks Programs	Continued hosting monthly Restoration Sundays volunteer event to remove non-native, invasive plants and restore native vegetation. Held programs for several community schools and conducted Bark Patrol to increase awareness of responsible dog ownership in parks.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion: - IRWD Water Treatment Station	IRWD initiated work to install approximately 200 yards of pipeline along Peters Canyon Trail to Jamboree and expand footprint of treatment station.	IRWD to complete project.
Maintenance of Existing Facilities: - East Ridge View Trail	Initiated planning to reroute portion of East Ridge View Trail currently subject to steep grade, severe erosion and peripheral habitat loss of coastal sage scrub.	Install reroute. Actively close and restore degraded segment of trail along nearby unauthorized spider trails.
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants	Volunteers, staff and contractor removed target non-native species, including artichoke thistle, tocalote, Russian thistle, castor bean, fennel and black mustard during monthly restoration days. Removed fan palms and eucalyptus with contract.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants (Natural Communities Coalition, OC Parks Funding)	No action.	Ongoing. Plan 2016 weed treatment in Winter of 2015-16.
Exotic Animal Control: - Cowbird Trapping (Natural Communities Coalition)	Natural Communities Coalition monitored and maintained three traps.	Ongoing.
Habitat Restoration & Revegetation: - OC Parks Projects	Continued planting and maintaining coastal sage scrub species and prickly pear cacti at main park entrance.	Continue planting and maintaining.
Habitat Restoration & Revegetation: - Peters Canyon Wash Mitigation (OC Public Works Funding)	OCPW contractor continued project initiated on October 24, 2011 to restore 25 Acres of coastal sage scrub, oak woodland and riparian habitat along Peters Canyon Creek. Removed temporary fencing and replaced with signage.	Ongoing through 2016.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Post-Fire Management:	N/A	N/A
Maintenance of Defensible Space / Fuel Modification Zones:	Park staff maintained fuel modification zones identified by OC Fire Authority and Country Agricultural Commissioner.	Ongoing.
<b>Miscellaneous Activities &amp; Management Programs:</b>		
N/A	N/A	N/A
<b>SANTIAGO OAKS REGIONAL PARK</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails while utilizing outreach and progressive enforcement to gain user compliance. Continued monitoring for after-hours use.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Educational Outreach: - OC Parks Programs & Special Events	Hosted Mountain Bike Skills Clinics, SHARE Poker Ride, Non-dot Adventures Race, Into The Wild Race, Moonlight Stroll Night, Volunteer Habitat Restoration and Trail Work Days. Conducted Bark Patrol to increase awareness of responsible dog ownership in parks.	Ongoing.
Educational Outreach: - OC Department of Education "Inside the Outdoors" School Field Trips	Hosted ITO field trips with habitat themes March-May.	Ongoing.
Educational Outreach: - Trail Etiquette	No action.	Develop outreach materials to educate all user groups about trail safety and etiquette.
<b>Recreation Facility Construction &amp; Maintenance:</b>		
Maintenance of Existing Facilities: - Nature Center	Replaced windows and fire-resistant siding.	No further action.
Maintenance of Existing Facilities: - Arizona Crossing Repair	Posted Mitigated Negative Declaration as part of permit approvals process.	Pending permit approval, begin construction phase to remove and replace old structure.



## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Maintenance of Existing Facilities: - Trail Maintenance	Continued trail washout repairs and maintenance throughout park.	Ongoing.
Maintenance of Existing Facilities: - Road Maintenance	Slurried and striped park roads.	No further action.
Maintenance of Existing Facilities: - Orange Grove	Continued maintenance.	Develop grove management BMPs and refine irrigation.
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants	Utilized staff, volunteers and contracts to opportunistically remove small patches of non-native plants throughout park, including artichoke and Russian thistles, Pampas grass, Arundo and palm trees.	Ongoing.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants	No action due to lack of annual invasive species from drought conditions.	Ongoing.
Exotic Animal/Pest Control: - Polyphagous Shot Hole Borer	Identified one sycamore and one cottonwood infested with PSHB. UC Extension staff sprayed trees with pesticide to prevent spread.	Continue monitoring for PSHB presence.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration & Revegetation: - OC Parks Projects	Staff and volunteers maintained habitat restoration sites on Bobcat Meadow Trail, Sage Ridge and Wilderness Trail.	Ongoing.
Habitat Restoration & Revegetation: - Oak Woodland Mitigation (OC Waste & Recycling Funding)	OCWR contractor continued monitoring and maintaining oak woodland mitigation project installed in 2011.	Ongoing. OCWR contractor will maintain coast live oaks through 2021.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.
Post-Fire Management: - Windy Ridge Fire Response Plan	Followed Best Management Practices (BMP's) recommended by contractor at high-priority sites.	Ongoing. Monitor channels and slopes after extreme weather events.
Maintenance of Defensible Space / Fuel Modification Zones:	County contractor conducted fuel load reduction along Weir Canyon developments.	Ongoing.
<b>Miscellaneous Activities &amp; Management Programs:</b>		

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Study: - Park Trees	Contractor and UC Cooperative Extension monitored trees for disease, post-fire stress and presence of beetles. Except for emergency situations, all tree work performed outside of nesting season.	Ongoing.
Study: - Archeology Sites	Completed OC Parks study to document rock art throughout park.	No further action.
Encroachment: - Chen Property	No action. Habitat restoration pending conclusion of negotiations with OC Parks Real Estate and homeowner.	Initiate habitat restoration, pending conclusion of negotiations.
Encroachment: - Lower Santiago	No action. Habitat restoration pending conclusion of negotiations with OC Parks Real Estate and homeowner.	Initiate habitat restoration, pending conclusion of negotiations.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>TALBERT NATURE PRESERVE (NORTH COASTAL FACILITIES)</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails.	Ongoing. Increase patrols.
Educational Outreach: - Educational Programs	Continued 1st Sundays habitat restoration program run by park volunteers.	Ongoing.
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion:	N/A	N/A
Maintenance of Existing Facilities:	Standard facility maintenance.	Ongoing.
<b>Habitat Restoration &amp; Enhancement:</b>		

### OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants	No action.	Plan in Winter 2015-16.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants	No action.	Treat Pampas grass resprouts and other non-native species as needed.
Exotic Animal Control:	N/A	N/A
Habitat Restoration & Revegetation: - OC Parks Projects	No action.	To be determined.
Habitat Restoration & Revegetation: - OC Parks Habitat Restoration Plan	Initiated stakeholder input to develop Habitat Restoration Plan for park.	Continue developing plan to completion.
Habitat Restoration & Revegetation: - South Talbert Wetland Enhancement Project (California Resources Agency Coastal Impact Assistance Program Funding)	No action.	Complete work plan and submit to NCC and California Resources Agency, pending OC Parks Design action.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration & Revegetation: - OC Flood Control District Mitigation (OCFCD Funding)	OCFC contractor continued to monitor and maintain project initiated in 2009. Riparian mitigation monitoring showed high plant mortality due to high salt content in soils; contractor experimented with planting native halophyte species and improving irrigation.	Ongoing.
<b>Fire Management Activities:</b>		
Fire Prevention:	N/A	N/A
Post-Fire Management:	N/A	N/A
Maintenance of Defensible Space / Fuel Modification Zones:	N/A	N/A
<b>Miscellaneous Activities &amp; Management Programs:</b>		
N/A	N/A	N/A
<b>UPPER NEWPORT BAY NATURE PRESERVE (NORTH COASTAL FACILITIES)</b>		

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails. Continued brushing and blocking unauthorized trails while utilizing outreach and progressive enforcement to gain user compliance.	Ongoing.
Educational Outreach: - OC Parks Programs	<ul style="list-style-type: none"> <li>- Early College High School Service Learning Project- Worked for ninth year with ECHS freshman on year-long Service Learning Project learning about and performing habitat restoration over 3-acre site.</li> <li>- Held 2<sup>nd</sup> Sundays Habitat Restoration &amp; Specialty Volunteer Restoration Events monthly at various restoration sites throughout Bay.</li> <li>- Hosted Coastal Cleanup, Earth Day and Bay-cation educational events.</li> </ul>	Ongoing.
Educational Outreach: - OC Parks Partnerships	Partnered with local organizations including YMCA, Newport Bay Conservancy, Newport Aquatic Center, Irvine Ranch Conservancy, UC Irvine, One OC, OC Public Libraries, ECHS, San Bernardino Community College and Orange Coast College. Continued partnership with Cal State Fullerton.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Educational Outreach: - Park Signage	Partnered with City of Newport Beach, Department of Fish and Wildlife and Newport Bay Conservancy to create interpretive panels for placement in strategic locations throughout the Bay.	Continue partnership to finalize and place interpretive panels.
Educational Outreach: - OC Department of Education "Inside the Outdoors" School Field Trips	Hosted increased ITO field trips with habitat themes during school year.	Ongoing.
<b>Recreation Facility Construction &amp; Maintenance:</b>		
New Construction or Expansion:	N/A	N/A
Maintenance of Existing Facilities: - FEMA Site Repairs: Site 1, PW# 2916 Storm Repair Project 2004/05, Bayview Bridge Erosion Repair	Cultural and Paleontological Resource Phase I Survey Report completed. Draft F&G Section 1600 application and COE 404 permit / 401 certification completed. Engineers recommended bridge closure during heavy rain events. No action.	No action, pending Mitigated Negative Declaration. Continue to close bridge during heavy rain events.
Maintenance of Existing Facilities: - Parking Lot	Resurfaced parking lot with dg and sealer for maintenance.	Ongoing, as needed.



## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants (OC Parks, California Coastal Commission ROOTS)	Volunteers, staff and partners removed target non-native species, including Brazilian pepper trees, ice plant, mustard, tocalote, Spanish sunflower and bristly ox-tongue.	Ongoing.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants	No action due to lack of annual invasive species from drought conditions.	Ongoing. Plan herbicide treatment in Winter 2015-16.
Exotic Animal Control:	N/A	N/A
Habitat Restoration & Revegetation: - OC Parks Projects (OC Parks, California Coastal Commission ROOTS, UCI)	Marsh Loop, Constellation, Plateau, Mesa Drive, Bayview Restoration Site, Banner Point and Parking Lot Sites- Continued maintaining sites where non-native species were removed and approximately 5 acres of coastal sage scrub and estuarine species planted. Maintained sites with manual weed removal and first-year monthly summer watering. Expanded planting along perimeters of existing sites.	Ongoing.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration & Revegetation: - Westbay Habitat Restoration Project (American Oil Trader Spill Settlement)	8-acre coastal sage scrub and grassland habitat restoration project declined, following end of maintenance period with County contractor. Native vegetation matured and began to self-propagate in many areas; however, vegetation declined in areas with renewed erosion issues.	Facility staff to enter project into Project Portal for prioritization and assignment to a Project Manager.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.
Post-Fire Management:	N/A	N/A
Maintenance of Defensible Space / Fuel Modification Zones:	N/A	N/A
<b>Miscellaneous Activities &amp; Management Programs:</b>		
Study: - Climate Change and Native Plant Genetics	UC Irvine researchers completed genetics study on approximately 0.25 acres near Muth Interpretive Center. UCI students contacted park staff about possible 2015 research projects on same site.	Review permits as submitted. Meet with UCI researchers regarding potential projects on Climate and Genetics Study site.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>WHITING RANCH WILDERNESS PARK</b>		
<b>Recreation Use, Monitoring &amp; Management:</b>		
Recreation Monitoring: - Trail Monitoring	Patrolled regularly to monitor for new unauthorized trails and after-hours unauthorized access. Continued brushing and blocking unauthorized trails while utilizing progressive enforcement to gain user compliance. Maintained two trail counters and monitored three trail cameras for wildlife activity and ordinance violations.	Ongoing.
Recreation Monitoring: - Event Monitoring	Partnered with NCC to complete biological surveys pre-, during and post- bike race event.	Implement feedback from biologist recommendations into planning for bike race events.
Educational Outreach: - OC Parks Programs & Special Events	Assisted O'Neill Regional Park with Acorn Day and volunteer events. Held annual mountain bike Poker Ride event and Non Dot race and conducted individual interpretive programs as requested.	Ongoing. Initiate volunteer group for back country projects, including maintenance and interpretive programs.
<b>Recreation Facility Construction &amp; Maintenance:</b>		

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
New Construction or Expansion: - Edison Viejo Mitigation Bank	Edison initiated negotiations to annex approximately 101-acre "Edison Viejo" mitigation bank to Whiting Ranch.	Continue negotiations.
New Construction or Expansion: - Park Office and Bird of Prey Center	No action.	Consider options for relocating park office and/or Bird of Prey Center to Glenn Ranch Road park entrance parking lot.
New Construction or Expansion: - Development Adjacent to Park along Glenn Ranch Road	Baldwin & Sons initiated grading for residential development adjacent to secondary park entrance and Edison Viejo parcel. Trail/road access to park via Coyote Brush Road closed.	Work anticipated to continue until completion. Coyote Brush Road to be rerouted along OC Parks easement upon project completion.
Maintenance of Existing Facilities: - Borrego Trail	Applied for permits to restore Borrego Creek entrance and trail after major storm damage sustained in 2010. Posted Mitigated Negative Declaration.	Initiate project pending permits.
Maintenance of Existing Facilities: - Mustard Road Stabilization	Road repair and stabilization complete.	No further action.
Maintenance of Existing Facilities: - Storm Prep	Prepare for forecasted El Niño conditions with pre-storm photopoints, sandbag installation and dead tree removal.	Monitor conditions and repair roads/trails as needed.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Habitat Restoration &amp; Enhancement:</b>		
Exotic Plant Control: - Manual Removal of Non-native, Invasive Plants	Continued removal of approximately ½-acre of exotic plants, including tree tobacco, artichoke thistle, horsenettle and mustard with Juvenile Work Crews, volunteers and staff.	Ongoing.
Exotic Plant Control: - Herbicide Treatment of Non-native, Invasive Plants	No activity due to low invasive species emergence from drought conditions.	Ongoing. Plan weed control in Winter 2015-16.
Exotic Animal Control:	N/A	N/A
Habitat Restoration & Revegetation: - Glass Creek Cactus and Duff Salvage (OC Parks, Natural Communities Coalition, City of Lake Forest)	Maintained duff material and prickly pear cacti salvaged from intact coastal sage scrub habitat slated for development in 2012. Natural Communities Coalition recipient sites are approximately 4 acres; OC Parks recipient site is approximately 1.5 acres.	Ongoing. Continue to control non-natives and monitor.
Habitat Restoration & Revegetation: - Bolero	Seeded, planted and maintained approximately ½-acre for slope stabilization with coastal sage scrub – grassland species in 2014.	Ongoing. Continue to control non-natives and monitor.

## OC Parks - Central/Coastal OC NCCP Wildlands

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Habitat Restoration & Revegetation: - Portol Center Cactus Salvage (Natural Communities Coalition)	Determined recipient site along Concourse Road to receive prickly pear cactus salvaged from Baldwin & Sons development. Completed site restoration plan, site preparation and cactus pad planting.	Ongoing. Monitor and maintain site.
<b>Fire Management Activities:</b>		
Fire Prevention: - Fire Watch Program	See "General Management Programs & Activities."	Ongoing, as needed.
Post-Fire Management:	N/A	N/A
Maintenance of Defensible Space / Fuel Modification Zones:	N/A	N/A
<b>Miscellaneous Activities and Management Programs:</b>		
Survey: -Christmas Bird Count	Sea and Sage Audubon conducted annual Christmas bird count in mid-December.	Ongoing.

**OC Parks - Central/Coastal OC NCCP Wildlands**

<b>Project, Program, Activity</b>	<b>2015 Progress Report</b>	<b>2016 Work Plan</b>
Adjacent Development: - Glenn Ranch Road	No action.	Development activities to begin adjacent to Glenn Ranch Road park entrance and Aliso Creek Regional Trail / Edison Viejo. Cacti will be salvaged for projects in Whiting Ranch and other Orange County open spaces.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
<b>Recreational Use Monitoring &amp; Management:</b>		
<p>Current Use Policies:</p>	<p>Self-guided access seven-days per week from 7:00 am to sunset on the Bommer Meadows Trail, Nature Loop Trail, Bommer Pass Trail, West Fork Trail and Turtle Ridge Trail beginning from the new Bommer Canyon Trailhead up to the current seven-day trailhead at Ridge Park and Turtle Ridge. Quail Hill Loop Trail and Quail Trail also have self guided access seven-days per week from 7:00 am to sunset beginning from the Quail Hill Trailhead. The Quail Trail connects to the seven day per week access configuration on Serrano Ridge in Laguna Coast Wilderness Park.</p> <p>Docent-led hiking, mountain biking, trail running and equestrian tours for the public with once per month managed wilderness access days is the current access configuration for all other trails not mentioned above. The maximum limit for docent-led activities is 25 participants with a minimum of 2 "IRC-Certified" volunteers.</p> <p>Public access days in the south portion of the preserve (Bommer Canyon, Shady Canyon) are managed with Irvine Ranch Conservancy staff and an array of "IRC-Certified" volunteers. These</p>	<p>IRC plans to continue to offer the same recreational access configurations throughout COI as long as compliance with the NCCP/HCP can be rigorously maintained.</p> <p>Sensitive areas or areas experiencing impacts from recreational use will be fenced off or planted with native plants including shrubs and cactus to assist in managing self guided access over time. Irvine Open Space Patrol and volunteer patrols will be deployed to monitor the public user groups.</p>



## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>are offered once per month.</p> <p>The public notice procedure for rain and wildfire closure was updated to include use of signs, phone and web-based information to improve public compliance to weather closures.</p> <p>Public access on all Irvine Open Space Preserve trails is cancelled on Red Flag Warning conditions and/or Santa Ana Winds as determined by the Orange County Fire Authority and the National Weather Service, and for a minimum of 72 hours following a rainfall event greater than one-half inch. Multi-day wind events, prolonged rainfall periods, or major rainfall events in excess of one inch can cancel access for extended periods of time. Note: In the following sections, the term “activities offered” refers to the number of programs publicized for public participation and the term “activities implemented” refers to the number of programs that occurred, accounting for cancellations due to conditions noted above.</p> <p>The Irvine Police Open Space Patrol is a group of non-sworn officers that patrol the open space during scheduled programs and other times of need (when possible).</p>	
Recreational Monitoring: - Use & Access (Public Access managed by the Irvine	The Irvine Ranch Conservancy offers an array of programs on the Irvine Open Space Preserve. The following totals include recreation, education, trail maintenance, restoration, citizen science,	Access policies shall remain the same for 2016. Volunteer programs are likely to grow as popularity increases.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
Ranch Conservancy January 1 to December 31, 2015)	<p>volunteer-only activity and more.</p> <p>Total activities offered: 650  Total activities implemented: 597  Total volunteers: 2,559  Total volunteer hours: 8,141  Actual participants: 6,358  Public participant volunteer stewardship/trail boss hours: 818</p> <p>The following public recreation, fitness activities and interpretive programs were offered. Some programs were cancelled due to Red Flag Warnings, rain closures and Santa Ana wind events.</p> <p>Total recreation programs offered: 350  Total recreation programs implemented: 318  Total volunteers: 1,371  Total volunteer hours: 4,647  Actual participants: 5,805</p> <p>Total trail boss public programs offered: 28  Total trail boss public programs implemented: 28  Total volunteers: 68  Total volunteer hours: 313  Public participants: 21  (Note: The Trail Boss Program trains volunteers to lead or assist in managing trail/habitat maintenance &amp; restoration projects.)</p> <p>Estimated Annual 7 Day Access of Trails (COI</p>	<p>Hiking and mountain biking on the Hicks Haul Road will continue in 2016.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>Fig. 1):  Bommer Meadow: 62,481 (based on average use from an infrared trail counter)</p> <p>Bommer Pass: 9,549 (based on average use from cameras with 4 second delay)</p> <p>Turtle Ridge: 11,085 (Minimum use based on average use from cameras with one minute delay)</p> <p>West Fork: 6,471 (Based on average monthly use from infrared trail counter)</p> <p>Quail Trail: 26,126 (based on average monthly use from infrared trail counter; Note trail requires a minimum 6 mile round trip for most users)</p> <p>The permanent Orchard Hills Staging Area was constructed. For much of 2015 Orchard Hills Programs were staged from a temporary staging area and moved to the new staging area in November 2015.</p>	
Recreational Monitoring: - Private Programs, Outreach Programs and Patrols	Private Programs, Outreach Programs and Patrols have been integrated into the Use and Access numbers identified above.	Will continue to offer private programs, outreach programs and volunteer patrols upon request.
Recreation Monitoring: - City of Irvine Community	The City of Irvine's Community Services department offers programs to the public	The City will continue to offer programs in and around the Cattle Camp area.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
Services programs	<p>including classes, summer camps, badge programs, family campouts (Cattle Camp) and outreach.</p> <p>2015 youth day camps provided themed activity weeks such as “Naturally Native”, “Trail Blazers”, “Ocean Observers”, and “Earth Defenders”.</p> <p>Programs offered: 16 weeks of camp  Programs implemented: 16 weeks of camp  Actual participants: 829</p>	
User Compliance Programs: - Access Monitoring	<p>Camera sites, video surveillance, trail counters and patrols were conducted to identify and monitor levels of unauthorized access and unauthorized trail use. This allowed the Irvine Ranch Conservancy to establish unauthorized use patterns and focus resources to manage the issue.</p> <p>IRC continued its human access monitoring. Data monitoring volunteers collected and processed access camera data bi-weekly throughout the year.</p> <p>Total Days Scheduled 25  Total days implemented: 23  Access monitoring volunteers: 43  Volunteer hours: 90.5</p> <p>In an effort to reduce unauthorized public access, targeted enforcements were implemented based on use patterns of unauthorized public access. Enforcement activities included patrols, visual</p>	<p>Continue use of camera sites, video surveillance, trail counters and patrols to identify and monitor levels of authorized and unauthorized access and trail use.</p> <p>Aggressively deter unauthorized access through a number of means. These include closures of unauthorized trails, gate and fence management, signage, increased patrols, citation and other enforcement activities.</p> <p>Additional trail counters may be implemented and rotated throughout the Irvine Open Space to compile user pattern data for unauthorized use of both the sanctioned and non-sanctioned trails. Some of these counters may be placed at camera trap sites to obtain the most accurate possible data about unauthorized use.</p> <p>Data will continue to be compiled into a matrix to</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>deterrence and warnings issued by the Irvine Open Space Patrol.</p> <p>Data was compiled into a matrix, and distributed to the City of Irvine Open Space Patrol personnel and IPD personnel via a secure cloud-based document website. Authorized personnel have direct access to data matrix spreadsheets and photographs of unauthorized uses of the Open Space Preserve.</p> <p>The following Irvine Police enforcement activities were conducted:  Total hours details assigned: 2,491  Number officers assigned: 2 Open Space Rangers, 1 Sergeant, and 3-5 officers who assist periodically on bike patrol.  Educational Policing Contacts: 2,672 (emphasized an education first mentality)  Citations issued: 37  Warning issued: 2,672  Arrests issued: 0</p> <p>The location in the document is <b>5.8.3 Public Access and Recreation Policies</b> and states:</p> <p>6. Recognizing the importance of appropriately managing recreational use within the reserve in order to protect habitat areas from intrusions, reserve managers shall take the following steps to increase enforcement capabilities and thereby minimize impacts of</p>	<p>be distributed to the City of Irvine Open Space Patrol personnel to help keep them informed of use patterns in the NCCP areas outside of the scheduled docent led programs, the operating hours of the area, the use of any non-authorized trails, and entry of dogs into the area.</p> <p>The City of Irvine Police Department and Animal Control Services will continue to issue citations when deemed necessary for unauthorized use and dog infractions. The enforcement step is necessary to address problems created from a change in the human access configuration. This step also aligns with the guidelines identified in the NCCP document.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>recreational use on reserve habitat values:</p> <ul style="list-style-type: none"> <li>• Trail user groups shall be encouraged to participate in "self monitoring and policing" programs to minimize instances of off-trail activities and other abuses to habitat resources within the reserve;</li> <li>• If allowed by state and local regulations, park rangers shall be given the authority to issue citations for misuse of trail or other park facilities;</li> <li>• Fines levied for abuse of park facilities resulting in harm to species or sensitive habitat shall be sufficient to discourage repeat occurrences;</li> <li>• Repeated offenses by multiple users shall provide the grounds for temporary closure of trail segments and, where necessary, entire parks as a means of avoiding unacceptable adverse impacts to habitats/species within the reserve. Such temporary closures also will serve to educate users concerning the need to obey park and reserve rules and regulations, thereby reducing future recreational impacts on the biological resource of the Reserve System.</li> </ul>	
<p>User Compliance Programs: - Monitoring and Human Access Management</p>	<p>Nine remote wildlife cameras are currently being maintained to concurrently monitor wildlife and human activity. Two permanent trail counters continue to be operated at West Fork and Quail</p>	<p>Wildlife cameras will continue to be operated using Scoutguard cameras. Wildlife response will be closely monitored to identify long-term changes in usage patterns relative to human</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>Trail to more accurately estimate 7-day access patterns.</p> <p>Thirteen trail transects have now been installed in the COI-OSPS and were monitored in 2015 to track trail condition and trail use impacts on trail dimensions, erosion, and trailside invasive species cover. A draft report of trail condition changes is available upon request. A UCSB Bren School Graduate Intern assisted in monitoring and report writing.</p> <p>Trail use is recorded digitally via post program reports for managed access and, in part, using remote cameras. Seven day access areas are monitored primarily using trail counters and remote cameras.</p> <p>An estimate of 2015 COI-OSPS trail use is provided in COI Fig. 1. Data are comprised of public program records for all restricted trails and trail counter or remote camera data for 7-day access trails.</p> <p>CDFW LAG funding was received by NCC in collaboration with IRC to study recreation and its effects on wildlife. Funding totaled \$75K and included a supplemental in-kind match from NCC, IRC, and OC Parks. Project title: Assessing effectiveness of adaptive recreation management strategies and evaluation of core NCCP habitat areas.</p>	<p>activity.</p> <p>Trail transects will be surveyed again in 2016.</p> <p>USFW Local Assistance Grant (LAG) funding will be used to collaboratively continue a three year evaluation of wildlife activity patterns in relation to recreational and total human trail use. Management hypotheses developed in 2012 will be tested and an evaluation of core wildlife areas will begin.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
<p>User Compliance Programs:</p> <ul style="list-style-type: none"> <li>- Monitoring and Human Access Management</li> </ul>	<p>Continued implementation of a web-based photo database for all human access camera locations. IRC management and Field Patrol personnel (COI Open Space Patrol Rangers and IPD Officers) will have direct encrypted access to human access photos as well as a database spreadsheet of unauthorized access. This photo data will provide more effective means for field patrol personnel to target specific days, times and locations for their patrols.</p>	<p>Budget permitting, implement live-feed still-photo camera locations targeted at known areas of high-risk activities, such as areas of extensive nighttime use, fire pits, unauthorized vehicles, etc. These cameras will have the ability to relay photos directly to a web-based storage drive and provide instant notification to selected patrol personnel of unauthorized presence in the area.</p>
<p>Educational Outreach:</p> <ul style="list-style-type: none"> <li>- Irvine Ranch Conservancy Citizen Science Program</li> </ul>	<p>IRC's Citizen Science program is designed to implement scientific research by trained and supervised volunteers. Citizen Science activities in the Irvine Open Space Preserve in 2015 included: wildlife camera trapping, both public and volunteer-only invasive and restoration monitoring, and select research projects.</p> <p>Total citizen science programs offered: 103  Total citizen science programs implemented: 94  Citizen science volunteers: 182  Volunteer hours: 574  Public participants: 12  Total public hours: 28</p>	<p>Citizen Scientists will continue to collect camera trap data to monitor wildlife activity in relation to human access, assess the type and level of unauthorized access, and track trends in wildlife diversity and abundance over time and space. The program will continue to include invasive species and restoration monitoring in the City of Irvine Open Space.</p>
<p>Educational Outreach:</p> <ul style="list-style-type: none"> <li>- Irvine Ranch Land Steward/Lead Land Steward Program</li> </ul>	<p>The Irvine Ranch Conservancy conducted one Land Steward training, one Lead Land Steward training, four Native Farm Steward trainings, and several individual trainings for invasive control digital data basing and herbicide use for lead</p>	<p>The Land Steward Program will continue to include invasive species removal and restoration. Nursery activities and community stewardships will be added to the program in 2016. A Farm Steward Program - with quarterly trainings - will</p>



## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>land stewards. Stewardship activities included invasive species control, restoration, and native seed farm maintenance. This program was expanded to include trail closure and staging area community stewardship plantings (recorded under Restoration). Several lead land stewards conducted private solo stewardship activities with great success. A digital invasive control reporting tool continues to be utilized by Lead Land Stewards. An online map link continues to be available for land stewards to view status of invasive control across reserve areas is available upon request. A small native plant nursery has been established at the Quail Loop Trailhead maintenance facility, supporting community stewardship programs with locally sourced plants. Note that programs offered and implemented include individual private activities and span both NCCP and non-NCCP.</p> <p>Invasive Control Programs:  Total programs offered: 32  Total programs implemented: 20  Volunteers participating: 46  Volunteer hours: 208  Public participants: 23  Public participant hours: 92</p> <p>Restoration Programs:  Total programs offered: 49  Total programs implemented: 40  Volunteers participating: 73</p>	<p>continue to be operated separately. The Land Steward Manual will be updated accordingly.</p> <p>Lead land stewards will continue to conduct the majority of invasive control work within COI-OSPS in areas where NCC has retired its weed control program. More restoration activities will become available with the initiation of cactus scrub restoration work at Mule Deer.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	Volunteer hours: 199 Public participants: 195 Public participant hours: 392  Native Farm Programs: Total programs offered: 13 Total programs implemented: 12 Volunteers participating: 36 Volunteer hours: 127 Public participants: 39 Public participant hours: 117	
Educational Outreach (All Areas): - Trail Boss Training Programs	Conducted volunteer Trail Boss training and implemented the Adopt-A-Trail program to assist with ongoing monitoring and maintenance of trail system. Completed Volunteer Trail Projects: 6 Trail boss training sessions: 1 Trail maintenance projects: 11	Continue training Trail Boss volunteers, and offer advanced training in specific areas of trail work, i.e.: power equipment, rock armoring, specialty construction techniques.
<b>Recreation Facility Construction &amp; Maintenance</b>		
New Construction or Expansion (Loma Ridge): - Orchard Hills Trailhead	Per the City's approved plans, the Irvine Company constructed a new staging area for the Orchard Hills Loop trails. The Staging Area was completed and programs began staging from it in November 2015.	

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
Maintenance of Existing Facilities (Loma Ridge): - Signage	Wayfinding signage was replaced on both of the Orchard Hills Loop trails.	Signage will be monitored and maintained as necessary.
Maintenance of Existing Facilities (Loma Ridge): - Orchard Hills Loop Trails	<p>Reopened trails in advance of new staging area construction completion. This included involving the public in vegetation trimming work program.</p> <p>A human access monitoring camera was placed on the Orchard Hills lower loop to monitor unauthorized access.</p> <p>Drainage was improved on the upper loop by reinforcing a natural drainage with boulders.</p> <p>Performed vegetation management of the trail tread to reduce invasive grasses with the use of low-dose glyphosate. This process reduces the requirement for multiple mowing/string trimming passes during the growing season.</p>	<p>Continue vegetation management with low-dose glyphosate as well as mowing/string trimming when necessary. Monitor and perform repairs on existing trail as needed.</p> <p>With concurrence of City of Irvine, remove dead eucalyptus trees adjacent the trail system as needed.</p> <p>Continue ongoing maintenance to Orchard Hills Trail system.</p> <p>Possibly install additional cameras to monitor unauthorized access.</p>
Facility Replacement/Repair (Loma Ridge): Radio Repeater	The radio repeater located on West Loma was moved to a new location on East Loma which is 400' higher and provides better radio reception for programs	<p>Radio repeater cabinet to be stripped, primed and repainted.</p> <p>A social trail stemming from Changala's pass up to the repeater location will be closed, restored, and monitored.</p>
New Construction or Expansion (Limestone)	N/A	N/A

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
Cyn.): - Portola Staging Area		
Maintenance of Existing Facilities (Limestone Cyn.): - Portola Staging Area	<p>Performed general cleanup, weeding and maintenance.</p> <p>Within the existing staging area footprint the following visitor enhancements were completed: Expansion of two cement pads for the portable restrooms, and construction of two lockable restroom surrounds to screen the restrooms from the adjacent staging area and provide ADA access.</p> <p>24x36" Mountain Bike Skills Area sign installed on kiosk at the north end of the Portola Staging Area parking lot.</p> <p>The beginner raised deck at the bike skills area was extended over the existing Arizona crossing to simplify the crossing for users and provide a more open drain.</p>	<p>General cleanup, weeding and maintenance will continue at this staging area in 2016.</p> <p>Continue refinements of the bike skills area with minor additions of signage, training features, fencing and shade components.</p>
New Construction or Expansion (Bonita Cyn.):	N/A	N/A
Maintenance of Existing Facilities (Bonita Cyn.):	Monitored area for unauthorized activities and trails.	Continue to monitor area for unauthorized activities and trails.
Facility Replacement/Repair (Bonita Cyn.):	N/A	N/A

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
New Construction or Expansion (Bommer Cyn.):	<p>Facilitated coordination of construction of Bommer Nature Garden; an interpretive native plant garden within the historic boundaries of the cattle camp operations at the Bommer Cattle Camp. This included ensuring the plant material used for the project was locally sourced, that the existing natives on site were protected and that the public access in the vicinity of the project remained in a safe condition.</p> <p>After construction the project was managed by IRC which included weeding, improving fencing and replanting the unsuccessful sections of the Garden.</p>	<p>Continue to weed and plant in bare spots in the garden. Monitor and maintain fencing. Coordinate with City on maintenance and repairs of adjacent facilities in Cattle Camp.</p> <p>Monitor signs and repair/replace as needed.</p>
Maintenance of Existing Facilities (Bommer Cyn.): - Bommer Trailhead	<p>Replaced chain gate providing access to transformer with triple cable assembly to mitigate users stepping over the chain and using Bommer Cyn Rd to access the Canyon.</p> <p>Coordinated with City staff to re-plant trailhead area native plants that were removed by landscapers.</p>	<p>A radio charging station is to be placed at the Bommer Canyon Trailhead. The station will contain six radios to be utilized by the program docents during public programs.</p> <p>Continue to coordinate with City staff when necessary regarding trailhead maintenance.</p>
Maintenance of Existing Facilities (Bommer Cyn.): -Bommer Meadow, Nature Loop, Ridge Route, Cattle Camp, Turtle Ridge, Bommer Pass, West Fork	All Trails - Performed vegetation management of the trail tread to reduce invasive grasses with the use of low-dose glyphosate. This process reduces the requirement for multiple mowing/string trimming passes during the growing season.	All Trails - Continue vegetation management with low-dose glyphosate as well as mowing/string trimming when necessary. Monitor and perform repairs on existing trail as needed, especially clearing and improving drainage features.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>Bommer Meadow - Monitored and repaired fences closing shortcut trails and added drain.</p> <p>Nature Loop - Monitored condition of decomposed granite trail surface.</p> <p>Ridge Route - Monitored for creation of social trails connecting Ridge Route with Bommer Pass. Built several new drains and removed ruts on lower portion of trail.</p> <p>Cattle Camp Area - Painted and serviced vehicle and pedestrian gates around Cattle Camp.</p> <p>Turtle Ridge - Monitored fire pit location.</p> <p>Bommer Pass - Performed routine maintenance repairs to the trail tread to improve drainage. Monitored and maintained 11 social trails closed in 2013 including regular watering and the addition of new shrubs and cacti.</p>	<p>Bommer Meadow - Continue to monitor and close any additional unauthorized social trails that appear.</p> <p>Nature Loop - Repair decomposed granite trail surface where necessary.</p> <p>Ridge Route - Continue to monitor and close social trails connecting Bommer Pass &amp; Ridge Route.</p> <p>Cattle Camp Area - A small radio repeater is planned for the Cattle Camp area (near the existing staff trailer) to further enhance program and emergency radio coverage within the Open Space Preserve.</p> <p>Turtle Ridge - Perform trail enhancements including rock armoring, removal of existing trail adjacent power poles, installation of trailside benches using reclaimed lumber from power poles. Continue monitoring fire pit location. Implement a live-feed still-photo camera at the unauthorized fire pit location.</p> <p>Bommer Pass - Continue to water social trail restoration plantings as needed. Re-build trail tread to original width. Plant additional shrubs to discourage off trail use.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	West Fork - Performed vegetation trimming at the upper and lower connections of the trail to maintain vehicle width for emergency access. Repaired ruts and restored drainage structures after winter rains.	West Fork - Monitor and perform repairs on existing trail as needed. Upon City approval, relocate the existing upper West Fork gate to the upper terminus trail connection at Pacific Ridge/Laguna Coast Wilderness Park.
Maintenance of Existing Facilities (Bommer Cyn.): - Gates	Painted and serviced vehicle and recreation gates. Replaced locking mechanisms with stainless steel version on the West Fork upper vehicle gate and the lower Ridge Route, lower East Fork and Cattle Camp Corral recreation gates.	Monitor locks on gates to ensure only authorized parties have access.  Continue to replace existing gate locking mechanisms with lower maintenance stainless steel locking mechanisms.  Install locks on vehicle gate at entrance to Cattle Camp to reduce trespassing in Cattle Camp.
Maintenance of Existing Facilities (Bommer Cyn.): - Radio Repeater	Monitored existing solar radio repeater.	Continue performing semiannual monitoring of existing solar radio repeater.
Maintenance of Existing Facilities (Bommer Cyn.): - Signage	Monitored signage and replaced/updated signs as needed.	Continue to monitor sign condition and replace as needed.
Maintenance of Existing Facilities (Bommer Cyn.): - Bridges	Performed semi-annual maintenance checks on existing bridges.	Continue semi-annual maintenance checks.
Maintenance of Existing Facilities (Bommer Cyn.): - Fencing	Installed and repaired existing fencing where needed.	Fence will be monitored and repaired as needed.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
Facility Replacement/Repair (Bommer Cyn.):	N/A	N/A
New Construction or Expansion (Shady Cyn.):	N/A	N/A
<p>Maintenance of Existing Facilities (Shady Cyn.):</p> <ul style="list-style-type: none"> <li>- Quail Trail, Cattle Crest, Rabbit Run, Fox Run and Shady Oaks</li> </ul>	<p>All Trails - Performed routine trimming and tread maintenance to keep trails open and control erosion. Performed vegetation management of the trail-tread to reduce invasive grasses with the use of low-dose glyphosate. This process reduced the requirement for multiple mowing/string trimming passes during the growing season.</p> <p>Quail Trail - Maintained restoration plantings in abandoned road bed. Cleared silt from and re-shaped lowest three drains on steep section. Repaired damage due to broken irrigation line (from Shady Canyon HOA).</p> <p>Rabbit Run – Monitored and improved section of trail rerouted in 2014 including closed section.</p> <p>Cattle Crest: Performed maintenance repair to 12' puncheon bridge. Monitored closed section associated with 12/2013 reroute to ensure restoration to natural habitat.</p> <p>Shady Oaks Road Closure – Reinforced closure</p>	<p>All Trails - Continue to monitor and perform repairs on existing trail as needed. Install enhancements to trail tread such as rock armoring, drainage, rock boxes, berms and check dams.</p> <p>Quail Trail - Continue restoration planting in abandoned road bed. Monitor drain and tread surface and repair as necessary.</p> <p>Rabbit Run - Monitor and reinforce closed section to ensure restoration to natural habitat.</p> <p>Cattle Crest - Monitor and reinforce closed section associated with 12/2013 reroute to ensure restoration to natural habitat.</p> <p>Shady Oaks Road Closure - Monitor.</p>



## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>by replacing faded A frame signs with post &amp; rope fencing with hanging signs indicating closure.</p> <p>Shady Oaks Single Track – Cleared culvert at southern end.</p>	
<p>Maintenance of Existing Facilities (Shady Cyn.):</p> <ul style="list-style-type: none"> <li>- Bridges</li> </ul>	<p>Performed semi-annual maintenance checks on existing bridges.</p>	<p>Continue semi-annual maintenance checks. Clean and perform application of water based stain to all bridge surfaces with Valspar chestnut stain to match existing wood components in the area.</p>
<p>Maintenance of Existing Facilities (Shady Cyn.):</p> <ul style="list-style-type: none"> <li>- Shady Oaks restoration</li> </ul>	<p>Performed a semiannual maintenance check of the closed restoration site, and performed bi-weekly camera monitoring at the upper terminus of the abandoned road where it intersects Quail Trail and Serrano Ridge.</p>	<p>Monitor signage at all trail intersections with closed Shady Oaks Road Restoration Site.</p>
<p>Maintenance of Existing Facilities (Shady Cyn.):</p> <ul style="list-style-type: none"> <li>- Signage</li> </ul>	<p>Monitored signage and updated and replaced where necessary.</p>	<p>Monitor signage &amp; kiosks and replace as necessary.</p>
<p>Facility Replacement/Repair (Shady Cyn.):</p>	<p>N/A</p>	<p>N/A</p>
<p>Maintenance of Existing Facilities (City of Irvine parcels in City of Newport Beach, Veeh Creek):</p>	<p>Performed initial surveys of parcels and periodic patrols to inspect fences and monitor condition of the land.</p>	<p>Continue to patrol parcels. Report unusual conditions to City and make minor repairs where appropriate.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
<b>Infrastructure Construction &amp; Maintenance:</b>		
Removal of Inactive Field Research Materials	No removal initiated.	IRC will evaluate all active and inactive field studies and mitigation sites and remove field markers no longer deemed active or necessary.
<b>Habitat Restoration &amp; Enhancement:</b> (Note: Funding Sources noted in first column if other than Land Owner)		
Exotic Plant Eradication: - Program Summary (NCC, in part)	<p>Priority invasive species were searched for across 1678 acres, and removed/treated across 261 acres within NCCP and an additional 154 acres of non-NCCP open space within City property and pending property (currently TIC) boundaries. IRC continued management of the NCC-funded component of the COI-OSPS invasive control program. Artichoke thistle remained the primary target species due to past effort invested and the ability of this species to rebound without control. Invasive control activities were conducted by staff, contractors and volunteers.</p> <p>Sahara mustard continued to absorb the majority</p>	<p>Eradication and control efforts are ongoing. See below for species-specific details.</p> <p>NCC will again be contracting IRC to oversee its invasive control activities within the City of Irvine Open Space Preserve – South. A regional annual coordination meeting is planned to update neighboring land owners and managers on control efforts and prioritization.</p> <p>The exotic plant eradication program may change pending recommendations by Cal-IPC regarding prioritization and strategy.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>of control effort in COI-OSPN and were funded in part by NCC.</p> <p>NCC-funded invasive control work focused primarily on artichoke thistle in Shady Canyon and Quail Hill management areas. A final report was submitted in January 2016 to NCC and is available upon request.</p>	<p>An aerial weed survey may be conducted in late Spring 2016 to track distribution of target weeds and control program success.</p>
<p>Exotic Plant Eradication: - Monitoring and Prioritization (NCC in part)</p>	<p>Control efforts within COI-OSPN continued to be based on past prioritization from the 2011 aerial weed survey prioritization in the Central Reserve and new emergent weed observations. Particular effort was placed on Sahara mustard control in Orchard Hills and Area R. Species prioritized for reserve-wide control included Sahara mustard, yellow starthistle, perennial pepperweed, giant reed, garland chrysanthemum, Spanish broom, tamarisk, pampas grass, bull thistle, artichoke thistle, castor bean, and tree of heaven. Several emergent invasive species identified by the Back Country Council and OC-CNPS have not yet been observed within the COI-OSP but are continuing to be monitored for on an incidental basis. A new population of garland chrysanthemum was re-treated in Shady Canyon.</p> <p>A collaborative aerial weed survey that documented the distribution and abundance of 35 invasive plant species across the Coastal Reserve in 2014 began to guide control efforts.</p>	<p>IRC will continue to focus on control / eradication of species targeted in previous years. Planned control efforts will include monitoring and treatment of previously treated areas and expansions to other areas with emergent artichoke thistle.</p> <p>A population of Sahara mustard and of perennial pepperweed identified by aerial invasive survey will be ground-truthed and treated if found.</p> <p>Cal-IPC will work with land managers and NCC to prioritize target species regionally across land owners for eradication and control.</p>

# City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>Volunteer-led invasive species patrols were conducted in Bommer Canyon, Turtle Ridge, and along Ridge Route, Quail Trail, Serrano Ridge, and Mule Deer.</p>	
<p>Exotic Plant Eradication:</p> <ul style="list-style-type: none"> <li>- Artichoke Thistle (NCC in part)</li> </ul>	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 185 Gross acres, 0.5 Net (down from 2014)</li> <li>• Estimated 7094 plants</li> </ul> <p>Treatment outside of NCCP:</p> <ul style="list-style-type: none"> <li>• 132 Gross acres, 2.1 Net (down from 2014)</li> <li>• Estimated 74,337 plants</li> </ul> <p>Artichoke thistles were treated with clopyralid, glyphosate, or manually removed by stump cut. A report of NCC-funded activities will be provided to NCC and are available upon request.</p> <ul style="list-style-type: none"> <li>• Artichoke thistle removal within Bommer Canyon and Quail Hill was done primarily by volunteers with some staff assistance using manual removal (multiple cut) and herbicide.</li> <li>• No artichoke thistle plants were observed to set seed in seed in Quail Hill in 2015.</li> </ul>	<p>Artichoke thistle control will continue as funds permit as a high priority in 2016. Special emphasis will be placed on adjacent non-NCCP open space and neighboring HOA acreage supporting refugial populations as well as on new populations identified by helicopter surveys.</p>
<ul style="list-style-type: none"> <li>- Sahara Mustard (NCC-funded, in part)</li> </ul>	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 17.6 Gross acres, 0.19 Net (more than 2014)</li> <li>• Estimated 65,052 plants (72 bags)</li> </ul> <p>Treatment outside of NCCP:</p>	<p>Year 6 of Sahara mustard eradication efforts in Orchard Hills and Area R will continue in 2016 with support from NCC. An interim report will be completed and will be available upon request.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
<p>- Garland Chrysanthemum</p> <p>- Fennel</p> <p>- Fountain Grass</p>	<ul style="list-style-type: none"> <li>9.9 Gross acres, 0.02 Net (more than 2014)</li> <li>Estimated 10,330 plants (11 bags)</li> </ul> <p>An approximately 165 acre area at Orchard Hills was searched for Sahara mustard. A new subpopulation was found within a CSS island of the orchard. An additional 28 acres area was searched at Agua Chinon Area R. Steep slopes and site accessibility make full control difficult.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>0.74 Gross acres, 0.01 Net (down from 2014)</li> <li>Estimated 1,000 plants</li> </ul> <p>Treatment outside of NCCP:</p> <ul style="list-style-type: none"> <li>None</li> </ul> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>4.93 Gross acres, 17 Net ft<sup>2</sup> (down from 2014)</li> <li>395 plants</li> </ul> <p>Treatment outside of NCCP:</p> <ul style="list-style-type: none"> <li>9.92 Gross Acres, 515 Net ft<sup>2</sup> (up from 2014)</li> <li>Estimated 1861 plants</li> </ul> <p>Fennel was removed manually, with glyphosate or with Triclopyr.</p> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>0.16 Gross Acres, 8 Net ft<sup>2</sup> (up from 2014)</li> <li>Estimated 10 plants</li> </ul>	<p>Garland Chrysanthemum will continue to be treated where it has been found.</p> <p>Fennel control will continue opportunistically.</p> <p>Fountain grass control will be opportunistic and prioritized if sufficient resources are available.</p>

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Program, Project, Activity	2015 Progress Report	2016 Work Plan
<p>- Milk and Italian Thistle</p> <p>- Bull Thistle</p> <p>- Tree Tobacco</p> <p>- Castor Bean</p> <p>- Pampas Grass</p> <p>-Tamarisk</p>	<p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 1.40 Gross acres, 355 Net ft2 (sim. to 2014)</li> <li>• Estimated 986 plants</li> </ul> <p>Bull thistle was not found in the Preserve.</p> <p>Documented Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 11.36 Gross acres, 13,508 Net ft2 (up from 2014)</li> <li>• Estimated 1016 plants</li> </ul> <p>Treatment outside of NCCP:</p> <ul style="list-style-type: none"> <li>• 0.79 Gross acres, 47 Net ft2 (down from 2014)</li> </ul> <p>Treatment within NCCP:</p> <ul style="list-style-type: none"> <li>• 38.6 Gross acres, 3.71 Net (up from 2014)</li> <li>• Estimated 45300 plants</li> </ul> <p>Treatment outside of NCCP:</p> <ul style="list-style-type: none"> <li>• 1.54 Gross acres, 57 Net ft2 (down from 2014)</li> <li>• Estimated 91 plants (mostly seedlings)</li> </ul> <p>No pampas grass was treated within the COI-OSP in 2014.</p> <p>No tamarisk was treated within the COI-OSP.</p>	<p>Milk and Italian thistle control will continue opportunistically as a lower priority.</p> <p>Bull thistle control will continue where it is observed.</p> <p>Tree tobacco control will continue in areas previously identified and as resources permit.</p> <p>Castor bean control will continue in areas they have been identified as resources permit.</p> <p>Pampas grass identified in coastal weed survey will be treated as resources permit.</p> <p>Tamarisk identified in coastal weed survey will be treated as resources permit.</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
- Artichoke Thistle Removal Trial	Project complete. Results are available upon request.	
Exotic Animal Control: Exotic Animal Monitoring	<p>Wildlife cameras: 54 domestic dogs were observed on trails where dogs are prohibited. Most occurred on the Turtle Ridge trail and the camera bordering the Shady Canyon neighborhood.</p> <p>Access cameras: 36 domestic dogs were observed in the COI-OSPS land but they occurred at the Bommer Pass camera facing the parking lot.</p> <p>A total of only one African clawed frogs were captured and removed from the turtle pond in 2015.</p> <p>Surveys of argentine ants (<i>Linepithema humile</i>) were conducted again in select areas in 2015. A standard protocol for argentine ants was used baiting note cards with cookies and syrup and leaving them out in Areas that are infested have already suffered significant loss of native ant species. Areas surveyed in 2015 include: Agua Chinon (Area R).</p>	<p>Enforcement of 'no dog' policy will continue within the Preserve.</p> <p>Invasive amphibians will again be removed from the Turtle pond.</p> <p>IRC will continue to collect data on the presence of argentine ants in areas with planned planting activities. Monitoring and treatment of argentine ants will be more intensive at Agua Chinon. The IRC is working with researchers at UC Riverside to investigate treatment methods.</p>
Invasive Pest: Polyphagous and Kuroshio Shot hole Borer	During the spring of 2015, IRC developed an information brief, summarizing existing information on the biology, distribution, and treatment options for the polyphagous shothole	IRC staff will conduct the field portion of the survey they developed in 2015. All checked trees will be gps'd and maintained in a database. Infested trees will be verified by UC Riverside

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>borer. During the summer and fall of 2015, the complex spread rapidly. IRC staff received lecture and field training from UCCE specialist John Kabashima and attended symposiums and meetings held at UCI, by the Southern California Committee for the CA Forest Pest Council, and the OC Task Force for Invasive Pests. IRC staff also developed a survey and datasheet (reviewed by John Kabashima) for COI lands. Initial surveys were conducted in Bommer Canyon and the Quail Hill parking area, and more extensive surveys will begin in January 2016. Writing up of review and survey plan in 2015. Workshop held with UCCE.</p>	<p>specialists and data made available to land managers and researchers tracking and managing infected trees. Any plans to treat trees, preventatively, or otherwise will be reviewed by specialists because information on the complex and its treatment is developing rapidly.</p>
Habitat Restoration: Program and prioritization	<p>IRC used GIS and aerial imagery to check approximately 1000 degraded polygons in need of restoration. The formation of these polygons was originally based on ground level mapping through a handful of IRC and NCC surveys. This database formed the basis for the restoration prioritization model. Polygons were classified based on cover of natives, aspect, slope, and whether over 40% of the polygon was composed of black mustard (having lower conservation value than grassland). These degraded polygons were assigned a restoration approach (passive or active) and level of accessibility (difficult or easy/moderate). Polygon with difficult access were greater than 500 ft from a road, or had a barrier to large equipment due to if steep slopes or intact habitat.</p>	<p>Cost and benefit values and functions will be developed in the earlier part of 2016, followed by draft and final runs of the model.</p>



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Restoration Database : - OC RESTORE	IRC worked with NCC's contractor Sara Jo Dickens to test the tool, provide feedback on website video tutorials, help with the shape file upload function, and organize our invasive control data to upload to OC Restore.	IRC will continue to work with NCC on inputting data into the tool and review its progress.
Habitat Restoration & Revegetation: Restoration Planning- Bommer Canyon and Quail Hill	IRC is in the process of designing and running an COI-OSP-wide habitat restoration prioritization model to assist in selecting future restoration sites. IRC used GIS and aerial imagery to check and categorize approximately 1,000 polygons of degraded land identified as in need of habitat restoration. The polygons were originally delineated based on ground level mapping through past IRC and NCC surveys. This database formed the basis for a habitat restoration prioritization model. Categories included in the included: cover of natives, aspect, slope, and intersection with dense stands of the problematic invasive species black mustard ( <i>Brassica nigra</i> ). These polygons of degraded land were assigned a restoration approach (passive or active) and level of accessibility (difficult or easy/moderate). Factors and associated values for restoration costs, benefits, and likelihood of success will be developed next quarter and incorporated into the GIS model to produce a spatially explicit habitat restoration prioritization. IRC staff met with the Natural Communities Coalition (NCC, formerly NCC) biologist and their contractors to coordinate our	IRC expects preliminary results from the prioritization model in the winter of 2016 to help guide forthcoming restoration efforts in the IOSP.

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	prioritization with the update of the NCC Restoration and Enhancement Plan.	
Habitat Restoration & Revegetation: - Stewardship Work Days	IRC is under contract with the City to conduct a minimum of 15 stewardship work days per year. In total, 20 stewardship work days were held in 2015. Of these, 10 occurred at Quail Hill; three were devoted to habitat restoration activities on a 1.8 acre site in the southeast portion of the reserve and another seven was devoted to artichoke thistle control. The remaining 10 stewardships took place at the mule deer restoration area. Several additional days were dedicated to invasive species control within the Preserve by lead land stewards, primarily in the Bommer Canyon and Quail Hill areas (COI Fig. 2). Stewardship activities along the Turtle Ridge trail were continued, as well as trailside planting events to curtail unauthorized trail use.	Stewardship work days will continue for the sites and programs worked on in 2015. Public invasive control and restoration stewardships will be conducted at Quail Hill, Bommer Canyon, and Mule Deer (Shady Canyon).
Habitat Restoration & Revegetation: - Cactus Wren Habitat Linkage Restoration-East Canyon Sites	Cactus Wren Habitat Linkage Restoration: <ul style="list-style-type: none"> <li>• Goal: Extend the area of NCC's cactus linkage project by adding two additional cactus patches. These sites are the northern-most linkages which connect patches of cactus in a line-of sight arrangement in an effort to enhance movement opportunities for the Cactus Wren.</li> <li>• See Figure 3</li> <li>• 2 polygons</li> <li>• 95% complete</li> </ul>	The east canyon sites will be monitored in 2016 but no activities are planned unless an additional year of invasive control is expected to substantially enhance cactus and/or other native vegetation. This could include either spring weed-eating of flowering heads or low dose herbicide in the early winter after germinating rains in areas where there are not native annuals.

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	<ul style="list-style-type: none"> <li>• Total project area: 0.63 acres</li> <li>• Goal vegetation types: Cactus (<i>Opuntia littoralis</i>)</li> <li>• Year started: 2010, Anticipated completion: 2015</li> <li>• Restoration methods: Sites evaluated in 2010, patches planted in 2010 and 2011 with salvaged pads from Siphon Reservoir area. Low-dose Fusillade (grass-specific herbicide) has been used since 2011 to control non-native grasses around plantings.</li> <li>• Maintenance in 2015 consisted of treating exotic annual grasses around cactus plantings using a low dose fusillade.</li> </ul>	
Habitat Restoration & Revegetation: - Native Seed Farm	A 12 acre section of agricultural land continued to be managed as a native seed farm by NIRC. In Year 7, 10 native shrubs, 35 native forbs, and 6 native grasses were successfully planted/maintained to serve as a source of local seed for future restoration, occurring primarily in the Central Reserve. Plants were started and maintained by staff, volunteer, and contract help. Harvests included arroyo lupine, chick lupine, silver lupine, California poppy, owls clover, cobweb thistle, blue wild rye, miniature plantain, cliff aster, white pincushion, yellow pincushion, popcorn flower, common Eucrypta, heart-leaf penstemon, wishbone bush, California figwort, golden yarrow, cudweed aster, mugwort, white sage, black sage, coast goldenbush, California sage, California buckwheat, California bush	Eight acres will be planted in at the new "Gateway" seed farm site in 2016, consisting of 24 forb species, 4 perennial grass species, and 9 perennial shrub species to be used for future restorations in the Central Reserve. Two and a half acres will be used to establish a volunteer staging area, nursery, and seed processing facility. Infrastructure development will be phased in from 2016-2020.

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	<p>sunflower. Farm harvested seed served as the primary source for restoration seeding.</p> <p>Farm staff focused their efforts on relocating the seed farm to a new 15- acre site in north Irvine. A design concept for the new site was completed.</p>	
<p>Habitat Restoration &amp; Revegetation:</p> <ul style="list-style-type: none"> <li>- Dudleya Restoration</li> </ul>	<p>Many-stemmed dudleya (<i>Dudleya multicaulis</i>) plants that were planted were not surveyed during drought conditions in 2013-2015.</p>	<p>Planted <i>Dudleya</i> will be checked in the spring. Reference sites will also be visited to compare phenology such as the time of blooming.</p>
<p>Habitat Restoration:</p> <ul style="list-style-type: none"> <li>- Agua Chinon Foothill Restoration Project (Funding: State Water Resources Control Board) NCC collaboration</li> </ul>	<p>This project was withdrawn from the 2015 funding cycle due to complications with grant eligibility and contractual obligations related to business organization structure. If issues are resolved, the project will be submitted in a future funding cycle.</p>	
<p>Habitat Restoration &amp; Revegetation:</p> <ul style="list-style-type: none"> <li>- Stewardship Restoration Trial</li> </ul>	<p>A small restoration trial was initiated at Quail Hill in late 2008 using public participation to establish and evaluate restoration success of four shrub species, native grass, native thistle, and wildflower species across mustard, artichoke thistle, and non-native grass substrates.</p> <p>Results suggest poor seedling and shrub survival under mustard substrate relative to thistle and grass substrate and better survival of coast golden bush indicates the area may be better suited to grassland restoration. Legacy effects</p>	<p>The Stewardship Restoration Trial will be retired in 2016 and the site will be adopted by Community Programs, who will continue planting and maintaining the site with the help of volunteers.</p>

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	<p>persisted in that native shrub cover and survival was significantly greater in grass and thistle-covered microsites. Total native cover was greatest in microsites originally covered with thistle. The UCI Treseder lab completed a complementary study of mycorrhizal activity and grass growth in soil subtending mustard versus other cover.</p> <p>The site was thoroughly weeded and monitored one final time in 2015. During the weeding effort, one rare plant (<i>Phacelia ciliata</i>) was found.</p>	
<p>Habitat Restoration &amp; Revegetation: - Cactus Restoration Pilot</p>	<p>Two of four pilot cactus restoration study sites, initiated in the winter of 2008/2009, occur in COI-OSPS. Cactus transplant size and vigor have been monitored annually from planting until 2014, in order to determine the effect of microsite on establishment and growth of prickly pear pads and transplants and the speed of transplant growth of cholla and prickly pear. After six years, single cholla joints had grown to an average of 42 joints and 50 cm height. Prickly pear joints had grown to an average of 16.5 joints and 36 cm height.</p> <p>Plants are permanently marked and will be measured at three-year intervals.</p>	<p>A more detailed summary of results will be compiled if time permits. Cacti will be measured again in 2017.</p>
<p>Habitat Restoration &amp; Revegetation: - Strip Restoration Trial</p>	<p>Three sites were established in winter 2009 as part of a long term study to determine the establishment rate of restored strips of vegetation into unseeded buffers of different widths. A</p>	<p>Data will be collected on the cover of native species within strips and recruitment into gaps should time permit in 2016.</p>

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	combination of drought years and and urgent projects, such as the discovery of invasive beetles and the opportunity to use soil salvage from Orchard Hills, postponed the collection of data on this study.	
Habitat Restoration & Revegetation: - Portola Springs Salvage Cactus to Mule Deer Restoration Site: (Funded by NCC)	In November of 2014, 12 prickly pear and cholla were planted at the Mule Deer Site. To date, all transplants have survived and appear healthy.	IRC will maintain and photograph salvaged cactus along with other restoration activities at Mule Deer.
Habitat Restoration & Revegetation: - Orchard Hills Cactus and Soil Salvage (Funded by NCC)	<p>Whole plant mature cacti, approximately 5 feet tall, were transplanted from the Orchard Hills salvage site at the end of October to six sites throughout the NCCP lands. Within the COI-OSP, plants Portola Orchard cactus restoration site (21 plants), and Mule Deer Restoration Site (see above).</p> <p>In December, close to 4000 cubic yards of soil were transferred from the upper 4 inches of soil from the donor site and spread at 4 inches depth across three recipient sites. The Portola Staging site in Area R is 2.85 ac; others occurred in OC Parks. All receiver sites were surveyed in November 2015 and areas with patches of visible native vegetation were excluded. Ground surveys for sensitive species within the last 8 years were overlaid using GIS to ensure these species had not been detected on receiver sites. UCI researcher Mia Maltz with Dr. Treseder's lab</p>	Planted cactus will be maintained by IRC staff, including periodic checks to determine whether they need watering in their first year. A report summarizing the cactus salvage efforts from both Portola Springs and Orchard Hills will be written by IRC staff and submitted to NCC documenting locations, activities, and general success. Soil salvage sites will also be maintained by IRC and a description of sites included in the report.

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	<p>sampled soil cores from polygons at the donor site and the receiver sites a week prior to salvage transport. All receiver sites were mowed and raked prior to receiving soil. The donor site vegetation was crushed and larger branches pushed aside prior to collecting soil for transport. A trial on salvage efficacy was initiated jointly between IRC, UCI and NCC.</p>	
<p>Habitat Restoration &amp; Revegetation:</p> <ul style="list-style-type: none"> <li>- Cactus Wren Linkage Restoration Mule Deer site in the City of Irvine</li> </ul>	<ul style="list-style-type: none"> <li>• Mule Deer Cactus Scrub Restoration</li> <li>• Figure 3</li> <li>• 8 restoration polygons</li> <li>• Approximately 60% complete</li> <li>• 2.32 total acres</li> <li>• 0.7 acres actively being seeded and planted with CSS; 1.41 acres actively being seeded with native grasses and forbs; 0.21 acres of grassland being passively restored through weed removal only.</li> <li>• Target vegetation communities: cactus scrub, coastal sage scrub &amp; native grassland</li> <li>• Year started: 2012, Anticipated completion: 2017</li> <li>• Restoration methods: Site preparation for all areas included initial site mowing in fall 2012 followed by a one year grow &amp; kill cycle.               <ul style="list-style-type: none"> <li>○ Active cactus scrub: Ten, 15x15 m patches of cactus were planted in 2013. Each patch contained 4500 single pads, 4 large salvaged cacti, and 2 Mexican elderberry plantings.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Weeding activities are planned every 6-8 weeks in 2016 and are to be carried out by staff, volunteers, UCI students, and some contract workers if required.</li> <li>• Spring-time vegetation monitoring is planned.</li> </ul>

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	<ul style="list-style-type: none"> <li>○ In 2014, 12 large (2 m tall) salvaged chollas from a planned development site were planted in 3 patches on site.</li> <li>○ Active CSS polygons: planted in strips with shrub containers in 2013 and hand seeded in strips in 2014.</li> <li>○ Active grassland polygons: A second grow &amp; kill cycle was used in 2013 followed by drill and hand-seeding of <i>Stipa pulchra</i> in late 2014. Establishment was fair and patchy across the site.</li> <li>○ Weeding activity occurred every 6-8 weeks in 2015 by staff, volunteers and contractors.</li> <li>○ Native forb species were seeded in the 1.41 acre grassland polygon in November of 2015.</li> <li>• Vegetation is monitored annually using line transects to estimate percent cover of natives and non-native shrubs, grasses and forbes.</li> <li>• Factors most influencing success: Significant drought. Drought in 2013 and 2014 led to postponement of seeding CSS polygons in 2013 and 2014. Despite drought, almost all shrubs (.7 acres) planted in 2013 established, aided by monthly watering during the spring and summer of 2015.</li> </ul>	
Habitat Restoration & Revegetation: - Quail Hill Pilot Plantings	<ul style="list-style-type: none"> <li>• 2 restoration polygons</li> <li>• Approximately 20% complete</li> <li>• 1.8 total acres; 0.4 acres actively being seeded and planted with CSS; 1.2 acres</li> </ul>	The IRC will seed a mix of native forbs, grasses and shrubs in a 1.2 acre area previously treated extensively for weed control, particularly artichoke thistle.



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	<p>actively being seeded and planted with native grasses and forbes</p> <ul style="list-style-type: none"> <li>• Target vegetation communities: native grassland &amp; coastal sage scrub</li> <li>• Year started: 2014, Anticipated completion: 2017</li> <li>• Restoration methods: Site preparation included the eradication of dense stand of artichoke thistle and mustard using primarily herbicide application.</li> <li>• Container plants were installed across about 0.7 acres of the site, many by IRC volunteers and UC Irvine students.</li> <li>• Seed of native bunchgrass and forbs were sown by hand across 1.4 acres of land in late November 2015.</li> </ul> <p>The remaining restoration areas continued to receive as-needed invasive control via hand-weeding and herbicide application.</p>	<p>Site maintenance, including weed removal and additional seeding are expected to take place in 2016.</p>
<p>Habitat Restoration: - Passive Restoration Trial (UC Irvine, part)</p>	<p>Initiated 2010. Purpose: Assess the efficacy of using a passive restoration approach to restoring degraded coastal sage scrub communities. The following data continues to be collected annually: cover and density in smaller germination quadrats.</p> <p>In 2015, plots were maintained for their fifth year by IRC and monitored by the Huxman lab into their fourth year, and the new sites in Gypsum and Crystal Cove were monitored in their first year. Arthropods were not sampled in 2015. Graduate study Emily Griffoul has summarized</p>	<p>In 2016, passive weed control treatments will continue with winter spot spraying and spring hand weeding/wicking. Monitoring will continue as well. Emily Griffoul has drafted a manuscript that should be submitted for publication in 2016</p>

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	<p>data thus far and found significant treatment effects over time with respect to native and non-native cover, richness, and germination, with generally greater effects in the coastal reserve sites vs. the central.</p>	
<p>Habitat Restoration &amp; Revegetation:</p> <ul style="list-style-type: none"> <li>- Shady Canyon Turtle Pond Mitigation Site Maintenance</li> </ul>	<p>The Shady Canyon Turtle Pond was created in 2001 to mitigate for impacts to southwestern pond turtles (<i>Actinemys marmorata pallid</i>) from nearby development. The pond currently supports an estimated 75 turtles.</p> <p>Harmsworth Associates, under contract by IRC, conducted summer trapping for exotic frogs, a primary threat to their persistence at this site. Only 1 African clawed frog was detected and trapped and removed from the pond in 2015. While African clawed frogs persist in the pond, their numbers remain low and manageable. No bull frogs were discovered or captured during these trapping efforts.</p> <p>IRC staff maintained water level in the pond throughout the year. IRC staff also trimmed vegetation on three days to provide adequate turtle basking areas and pathways to upland nesting habitat.</p> <p>IRC submitted a plan to the City and the resource agencies to remove accumulated sediment from the pond and prevent future sedimentation through installing gabion structures. The plan</p>	<p>In 2016, IRC will carry out gabion installation (planned for late summer 2016) and sediment removal in early Fall. Prior to removing sediment, all turtles will be trapped and taken to a temporary holding facility at the Santa Ana Zoo.</p> <p>In the process of trapping turtles and removing sediment, we will generate very precise estimate of the current turtle population in the pond and perhaps rid the pond of exotic frogs.</p> <p>A copy of the plan is available upon request.</p>

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	<p>was approved in late fall by the City, USFWS, CDFW, ACOE, and the Regional Water Quality Control Board.</p> <p>Project implementation will occur in 2016.</p>	
<p>Habitat Restoration &amp; Revegetation:</p> <ul style="list-style-type: none"> <li>- Western Spadefoot Ponds</li> </ul>	<p>IRC collaborated with USGS in late 2009 to create 15 breeding pools for the western spadefoot (<i>Spea hammondi</i>) in NCCP areas surrounding the COI Open Space Preserve. Results from January and February 2011 indicate that a couple of the created pools in Bommer Ridge and Upper Boat Canyon, in addition to several natural pools, held water for more than 30 days. The only created pools that were occupied by the spadefoot were in Upper Boat Canyon and the spadefoot occupied all natural pools or road rut pools holding water. Ponds were not checked in 2013-2015.</p>	<p>With heavy rains expected in 2016, ponds for toads if resources permit.</p>
<p><b>Fire Management Activities</b></p>		
<p>Post-Fire Management:</p> <ul style="list-style-type: none"> <li>- Specific fires</li> </ul>	<p>Tow small wildfires occurred on COI Preserve property.</p>	<p>Any wildfires occurring on the Preserve will be surveyed.</p>
<p>Maintenance of Fuel Breaks/Modification Zones:</p>	<p>Centerlines of all existing roads were mowed in order to reduce the risk of fire from authorized vehicle access.</p>	<p>In collaboration with City agencies, OCFA, transportation agencies, and academic partners, land manager will initiate an evaluation of wildland edges and internal localities for potential</p>

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	Existing vehicle turn outs, and fire personnel safe zones along Serrano Ridge were mowed and graded as required.	actions that may reduce fire ignitions (e.g., roadside barriers and removal of alien plants).
Fire Prevention: - Irvine Ranch Conservancy Fire Watch Program	Trained and outfitted approximately 36 new volunteers bringing the program total to 178 volunteers ready to monitor "high risk" areas on the border of the wildlands. There were no "high risk" days in 2015 that necessitated Fire Watch deployment on City of Irvine Open Space Preserve lands. This program is performed in conjunction with the Greater Laguna Coast Fire Safe Council, Inter-Canyon League Fire Safe Council, Trabuco Canyon Defense Against Wildfire, Modjeska Canyon Fire Watch, OC Parks, State Parks, Orange County Fire Authority and more.	Deployment of volunteers and staff on Red Flag Warning days and/or during Santa Ana wind events to deter fire ignition will continue.  Continued expansion of the Fire Watch program by increasing the number of trained volunteers and engaging the services of other agencies and volunteer organizations such as the CERT programs (Community Emergency Response Teams).
<b>Miscellaneous Activities and Management Program:</b>		
Sensitive Plant Monitoring	Fred Roberts completed a sensitive plant survey of Bommer Canyon Management Unit. A draft report is available upon request.	Roberts will visit Bommer Canyon one more time and complete the final sensitive plant survey report. Additional surveys will be conducted on new lands entered into the management agreement.
Trail Condition Monitoring	In July through September 2015, Bren graduate student intern Eliza Berry carried out annual monitoring on the condition of trails and trail-side	The condition of trails and trail-side vegetation will be monitored again in the summer of 2016.

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	<p>vegetation using 45 long-term trail monitoring transects scattered throughout central and coastal NCC. She also compared trail and road width data collected over the last five years for evidence of significant change. She found that single-track trails are not widening significantly, suggesting proper design and management of trails across the NCC. In contrast, there was a significant increase in utility road width over the same time period (an average of 1.06 m wider since 2010), suggesting a need to look more closely at the impact of periodic grading activities. Widening was not correlated with the trail user abundance. Another key finding was that the cover of vegetation adjacent to trails and roads declined in 2015 from 2013 and 2010, as did overall and native plant species richness. While both native and non-native species cover declined, non-native species cover declined relatively more. These declines are likely the result of recent drought and not recreation activity since they are not correlated with levels of human activity, nor was there physical evidence of trampling. Eliza also researched and tested ways to improve our method for estimating changes in trail and road depth using both new field techniques and analyses of aerial imagery. These improved methods will be integrated into the 2016 monitoring program.</p>	
Wildlife Monitoring	Wildlife activity in the City of Irvine has been monitored since 2007 using remote infra-red-	Camera trapping will continue as a tool for monitoring wildlife and human activity in 2016.

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	<p>triggered cameras, operated by IRC staff and volunteer citizen scientists:</p> <ul style="list-style-type: none"> <li>Forty-seven remote cameras are currently operating on IRC managed lands, 9 of which occur on City of Irvine open space. Data from photographs is entered manually. The database currently contains more than 107,085 entries.</li> <li>Quarterly data (March, June, September, and December) is analyzed for species trends on an annual basis.</li> <li>Analyses from a LAG-funded project in 2012 suggest large mammals avoid humans and the number of trail users affects the activity of wildlife in the short term. Long-term effects on wildlife activity and population viability remain unclear.</li> </ul> <p><b>Trends in Wildlife Activity by Species</b></p> <p>Reserve-wide wildlife camera study results from January through December, 2015 indicate:</p> <p><u>Deer:</u></p> <ul style="list-style-type: none"> <li>Activity has remained consistent with previous years data.</li> <li>Turtle Pond receives high deer activity possibly due to the constant water source.</li> <li>Strong peak in activity during late summer</li> </ul>	<p>Additional cameras may be installed if deemed necessary.</p> <p>A second DFW-LAG grant funded study is supporting further investigation of the relationship between human access and wildlife activity. Results of the study will be summarized in the 2016 NCC report.</p> <p>All wildlife cameras will be tested in the beginning of 2016 for proper function using a protocol developed in 2013 by IRC staff and volunteers.</p>

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	<p>(September) and drop in winter and spring.</p> <p><u>Coyote:</u></p> <ul style="list-style-type: none"> <li>• Annual activity for coyotes continues to remain low from previous years.</li> <li>• Coyotes occur at 7 of the 9 cameras in the COI-OSPS and do not show location preferences.</li> <li>• Activity is greatest in winter (December) and lowest in summer (June)</li> </ul> <p><u>Grey Fox:</u></p> <ul style="list-style-type: none"> <li>• No gray fox were observed in the COI-OSPS.</li> </ul> <p><u>Bobcat:</u></p> <ul style="list-style-type: none"> <li>• Annual activity for bobcats remains low as with previous years.</li> <li>• No specific location preference has been seen from the data.</li> <li>• No seasonal pattern of activity detected from camera traps.</li> </ul> <p><u>Mountain lion:</u></p> <ul style="list-style-type: none"> <li>• There remain no confirmed reports of mountain lions within the COI-OSPS.</li> </ul>	
Development of Biological Database	The IRC completed a geodatabase known sensitive plant and animal records compiled within the greater historic Irvine Ranch. The geodatabase will continue to be maintained and updated for Conservancy-managed areas.	Both fauna and flora databases will continue to be updated.

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Raptor Surveys	<p>IRC partnered with Bloom Biological Inc. (BBI) to conduct spring raptor breeding surveys across the Irvine Ranch Natural Landmarks (Figure 4). Monitoring occurred regularly from March 9<sup>th</sup> through May 29<sup>th</sup> 2015.</p> <p>A total of 141 historic (i.e. used in previous years) or new nest sites were surveyed. Of these:</p> <ul style="list-style-type: none"> <li>• 92 nests (65%) were determined to be inactive in 2015 (i.e. no attempts at nesting were made). This represents the second year in a row of well-below average breeding activity, although not as low as 2014.</li> <li>• 49 nests (35%) were considered active in 2015. Thirty-two of these successfully fledged young while 11 ultimately failed. The fate of the remaining six active nests was unknown.</li> <li>• Of the 32 successful nests, 3 were osprey, 1 bald eagle, 2 red-shouldered hawk, 20 red-tailed hawks, 2 Cooper's hawks, 2 barn owls, and 2 great horned owls.</li> <li>• 6 additional nests were given a status of unknown.</li> <li>• The final report was careful not to blame low nest occupancy and success entirely on drought because previous droughts have not been associated with such low reproductive activity across so many traditionally active territories. The authors suggest that other factors may be involved and/or interacting with drought, including disease (e.g. West</li> </ul>	Raptor surveys will continue in 2016 across the IRNL.



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	<p>Nile Virus) and exposure to anticoagulants in pest control products. The full draft report can be made available upon request.</p> <ul style="list-style-type: none"> <li>• Within the City of Irvine Open Space, 13 nests were monitored, of which five were active, and three were successful (fledged young).</li> <li>• The full report is available upon request.</li> </ul>	
<p>Cactus Wren Foraging Analysis (Partial funding by UCI Center for Environmental Studies and NCC)</p>	<p>Project goal:</p> <ul style="list-style-type: none"> <li>• To assess the importance of arthropod abundance, community composition, and habitat structure as determinants of habitat quality for Cactus Wren.</li> <li>• All field sampling of arthropods and their identification completed.</li> <li>• Analysis of barcoded diet data is in process</li> </ul> <p>Preliminary results show that:</p> <ul style="list-style-type: none"> <li>• Arthropod communities differ among common habitat elements (i.e. plant species).</li> <li>• The abundance of large spiders and caterpillars are positively correlated with wren reproductive output.</li> <li>• Percent cover of native bunch grasses within territories is also strongly correlated with wren reproductive output.</li> </ul>	<p>Taxonomic identification of arthropods from sequence data is scheduled to be completed in by the summer of 2016.</p> <p>Final analyses and reporting to be conducted in 2016.</p>
<p>Cactus Wren Artificial Nest Box Structures (Partial Funding by DFW)</p>	<p>A total of 8 cactus wren artificial nest boxes remain in place across the City of Irvine Open Space Preserve. All nest boxes were surveyed</p>	<p>Nest boxes will be surveyed again at the end of the breeding season in 2016.</p>

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	for nesting activity. Nest material was found at several locations and a roost nest was built at the Strawberry Farms (IRWD road) location. Nest building activity was detected in a single nest box located by the Serrano Ridge access gate in 2015. However, it was apparently predated and not successful,	
Climate Change	IRC staff is participating in a vulnerability assessment for southern California through EcoAdapt for the USFS and CA Landscape Conservation Cooperative. The process will provide an assessment and modified management strategies for identified habitats and species based on their sensitivities, exposures, and adaptive capacities.	IRC will continue to participate in EcoAdapt's vulnerability assessment into 2016. In addition, areas considered refugia for sensitive habitats will be incorporated into IRC's restoration prioritization model of COI OSP lands.
Conservation Capacity	<p>Conservation capacity was increased as noted below:</p> <ol style="list-style-type: none"> <li>1. <b>Build Capacity.</b> A new Land Management Agreement with expanded scope was signed between COI and IRC. Changes allow for more capacity to implement restoration and maintain a western pond turtle pond. The scope also increases the acreage that is being managed.</li> <li>2. <b>Expand restoration planning.</b> The purpose of restoration efforts is to increase habitat resilience to disturbance, enhance diversity, and support wildlife and ecosystem</li> </ol>	Ongoing.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>processes. Several restoration projects have been initiated, in part with external funding. New potential projects include OC Waste and Recycling-funded restoration.</p> <p>3. <b>Implement landscape-scale invasive control.</b> The purpose of targeted invasive control is to remove the threat of future habitat degradation by highly invasive pests. Implementation is funded primarily by land management agreement and, more recently informed by collaborative prioritization. Efforts to coordinate efforts regionally are ongoing and now facilitated by Cal-IPC. As new threats emerge, such as Sahara mustard and the polyphagous and other shot-hole borers, increasing effort must be placed on early detection and rapid response.</p> <p>4. <b>Collect sensitive species occurrence data and maintain geospatial data for sensitive species and habitats.</b> The purpose of maintaining and adding to the geodatabase is to inform conservation priorities and management actions with the purpose of maintaining and enhancing these resources. Activities include developing long-term and regional monitoring programs.</p> <p>5. <b>Partner with other organizations to achieve landscape-wide conservation goals.</b> In 2015, activities included: (i) participating in the NCC TAC, several regional working groups, and participating in monthly update meetings with the City, (ii)</p>	

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>providing regional expertise on regional conservation and land management issues where appropriate, (iii) Working closely with OCFA to minimize fire risk, implement fire response consistent with protection of sensitive natural resources, and support organization, (iv) Collaborating on a coastal weed prioritization with Cal-IPC and other partner organizations, (v) Collaborating with NCC on a LAG-funded study of recreation and wildlife response, and (vi) successfully partnering with NCC, TNC, and OC Parks to execute soil and cactus salvage from Orchard Hills development.</p> <p>6. <b>Provide opportunities for collaboration, internships, scholarship, and research on the Reserve.</b> Several interns completed work supporting conservation efforts. These included three summer UCSB Bren School graduate student interns, several undergraduate interns managed primarily by UCI, and IRC volunteers. Research projects primarily by UCI were facilitated, advised, and in some cases collaborated on.</p> <p>7. <b>Work with collaborators to obtain funding for important conservation actions.</b> IRC is partnering on two separate externally funded projects benefiting the Preserve: State LAG funding for study of the interaction of recreation and wildlife and its facilitation and coordination of both soil and cactus salvage, funded by NCC and made available by the</p>	

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	<p>Irvine Company.</p> <p>8. <b>Engage volunteers in resource management.</b> Stewardship and citizen science activities continued to be offered, which increased conservation capacity and enriched the volunteer experience through direct interaction with staff.</p>	
<b>Miscellaneous Activities and Management Programs - Non-IRC Research:</b>		
Phil Rundel (T. Brooks), UCLA	Grassland-soil co relational studies. Data collection was completed.	Data analysis in progress.
Dr. Sarah Kimball, Dr. Mike Goulden, University of California, Irvine, CEB	Purpose: Use observational weather stations to quantify Orange County's weather gradient, focusing on a north-south transect that spans the original Irvine Ranch from Crystal Cove State Park to Gypsum Canyon. (Also OC Parks)	Ongoing
Dr. Sarah Kimball and Dr. Travis Huxman, University of California, Irvine, CEB	Native Seed Farm Study. Purpose: Compare competitive ability of natives with and without annual weed competition. In 2015 data were collected and mean trait values for each species were calculated.	In 2016, trait values will be used to understand patterns at the West Loma restoration experiment; such as how mean trait values calculated from community composition data from the un-weeded plots in 2016 relate to the abundance of non-natives, or the relationship between trait values and performance on N vs. S-facing slopes, or survivorship through the drought.

## City of Irvine - Open Space Preserve

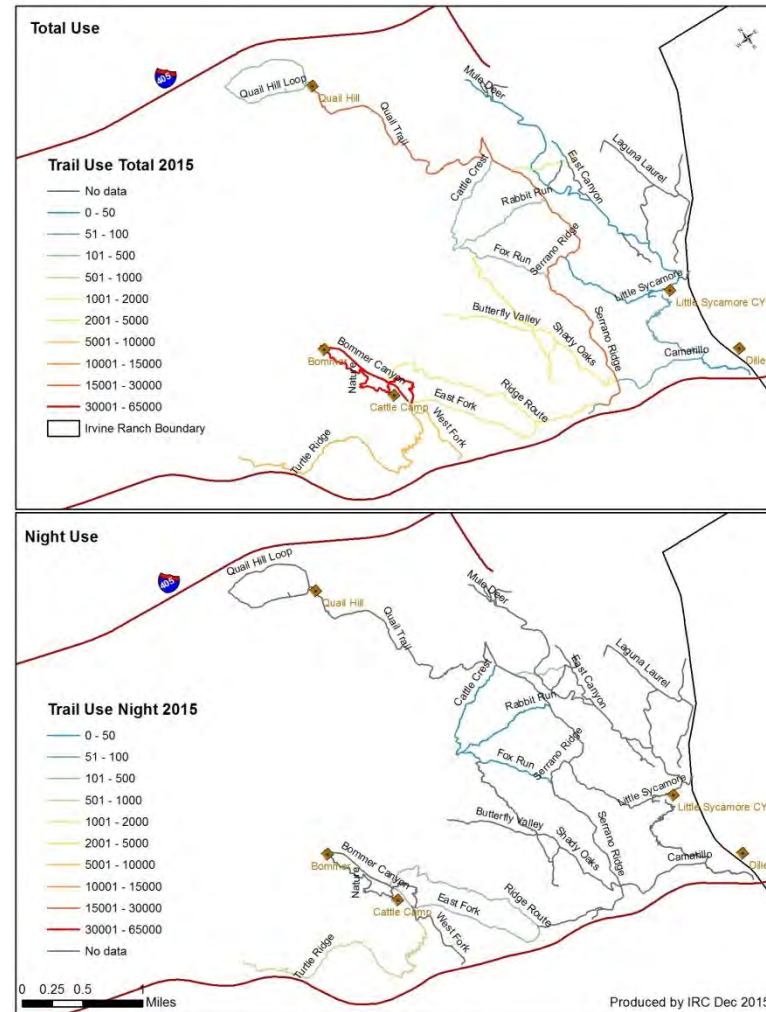
Program, Project, Activity	2015 Progress Report	2016 Work Plan
Dr. Ann Sakai and Dr. Steven Weller, University of California, Irvine, CEB	<p>Impacts of changing precipitation patterns on invasive fountain grass populations in coastal sage scrub and grassland communities.</p> <p>One undergraduate, Katharine Cary, who completed an Excellence in Research undergraduate paper entitled 'Invasive potential of fountain grass (<i>Cenchrus setaceus</i>) in central Orange County' in the School of Biological Sciences Undergraduate Research Journal in 2013. Another student performed follow-up work on seed germination in 2015. Work has not been reported in past annual reports.</p>	Ongoing.
Dr. Kailen Mooney, University of California, Irvine, CEB	Cactus wren foraging and arthropod abundance across vegetation types.	Fieldwork complete, but active.
Dr. Peter Bloom and Scott Thomas, Bloom Biological	Purpose: Raptor monitoring and movement.	Ongoing
Dr. Diane Pataki and Tara Trammell, University of Utah, University of Delaware	<p>Ecological Homogenization of Urban America. Initiated 2013.</p> <p>Purpose: Measure and compare residential lawns with native ecosystems to test the theory that maintenance of similar management practices among cities leads to homogenization in ecological structure and functions relevant to ecosystem carbon and nitrogen dynamics.</p> <p>2015: As part of our large project, we collected</p>	<p>Complete. Publication: Landscape Ecol. Hall et al. 2015. DOI 10.1007/s10980-D15-0297-y. There are several manuscripts on vegetation and soil data that are in various stages of preparation (two papers in review, all others in preparation).</p>

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
	microclimate data using Hobo and Decagon data loggers. The last microclimate sensors were removed in March 2015. The results of this part of the project are published.	
Dr. Kathleen Treseder and Mia Maltz, University of California, Irvine, CEB	Purpose: Fungal Facilitators of Ecosystem Services in the Irvine Ranch.	Ongoing
Dr. Sarah Kimball, and Dr. Michael Goulden; University of California, Irvine, CEB	Weather station gradient. Purpose: Use observational stations to quantify Orange County's weather gradient, focusing on a north-south transect that spans the original Irvine Ranch from Crystal Cove State Park to Gypsum Canyon. (Also OC Parks)	Ongoing

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
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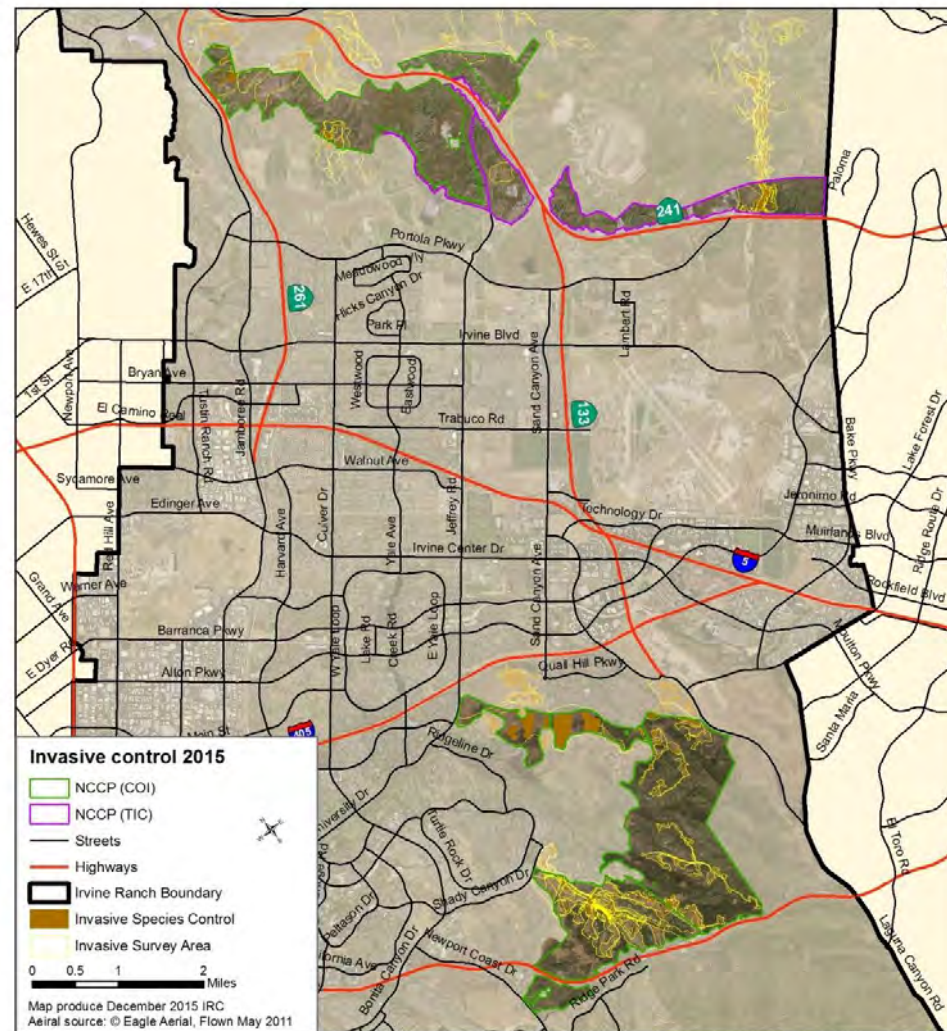


COI Fig. 1: Estimated Annual 7 Day Access of Trails on COI-OSPS



## City of Irvine - Open Space Preserve

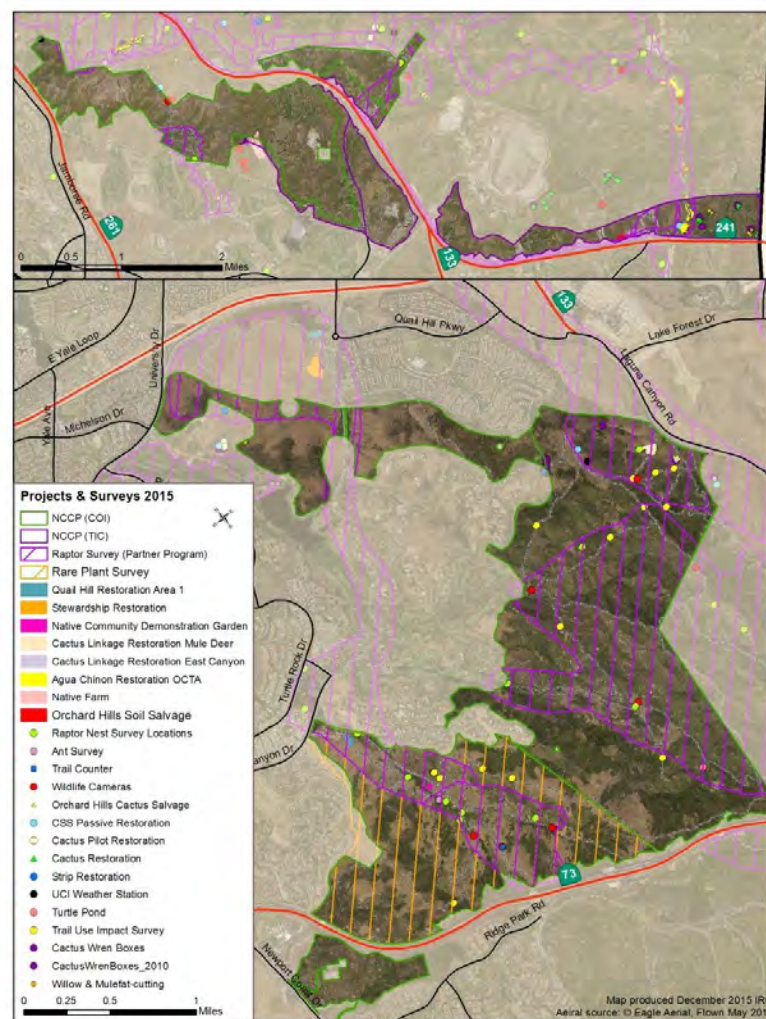
Program, Project, Activity	2015 Progress Report	2016 Work Plan
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COI Fig. 2: Invasive Control

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
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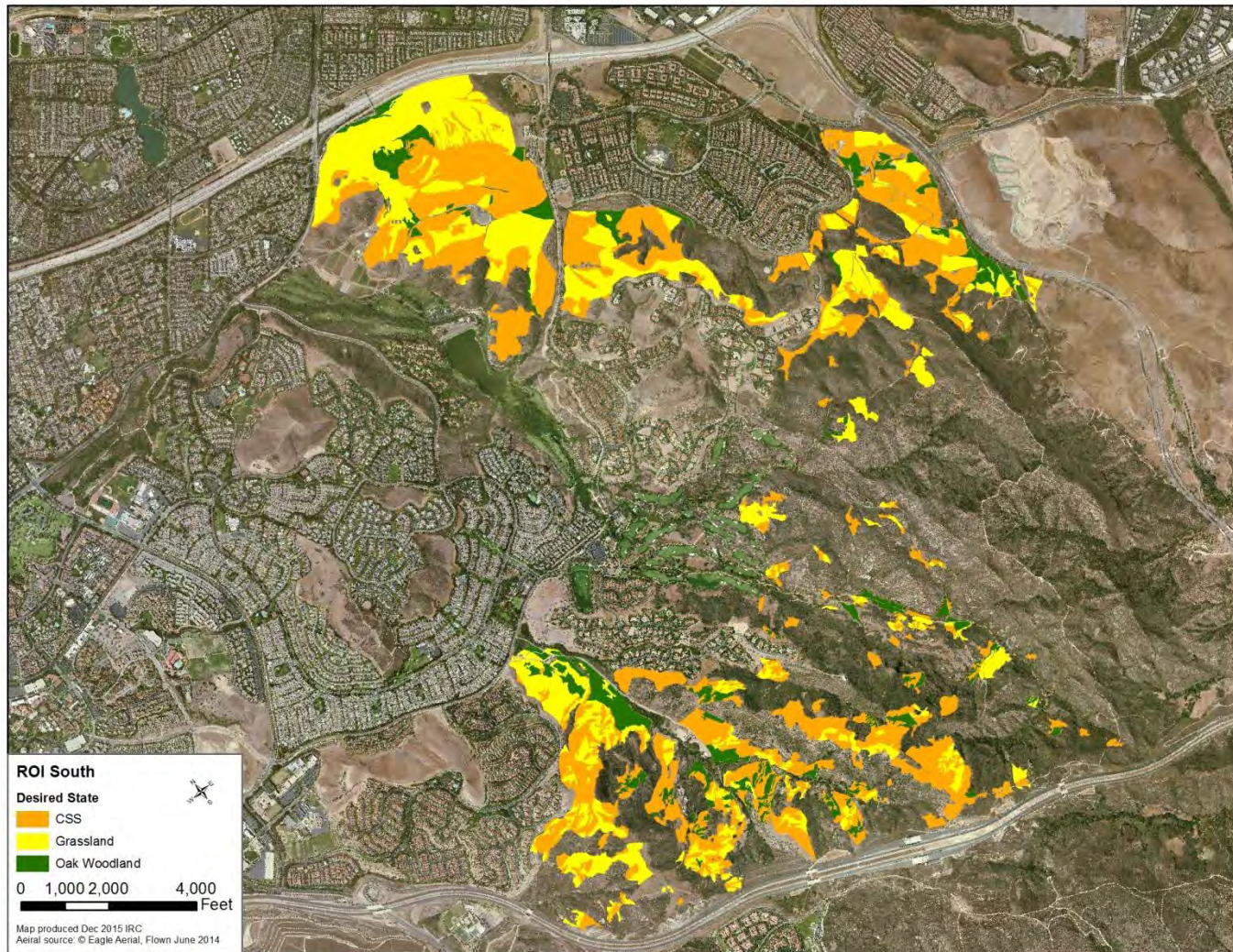


COI Fig. 3: Projects and Surveys



## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
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COI Fig. 4. Restoration polygons for prioritization.

## City of Irvine - Open Space Preserve

Program, Project, Activity	2015 Progress Report	2016 Work Plan
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Id	Name	Status	Habitat Type	ACREAGE
1	CSS restoration	Planned	CSS	0.275012
2	Grassland Restoration	Planned	Grassland	5.392851
3	Grassland Restoration	Complete	Grassland	1.842943
4	Cactus restoration Mule Deer	In Progress	CSS	0.372910
5	Rabbit Run Restoration	Complete	CSS	0.024941
6	Turtle Ridge Trailside Restoration	Complete	CSS	0.460000
7	CSS Passive Restoration	In Progress	CSS	0.018398
8	Ridge Route CSS Restoration	Complete	CSS	5.018829
9	Trail-adjacent Habitat Restoration	Planned	CSS	8.066759
9	Trail-adjacent Habitat Restoration	Planned	Grassland	19.805698
9	Trail-adjacent Habitat Restoration	Planned	Oak Woodland	0.256836
10	USDA/IRC/NROC Cactus Scrub Restoration	In Progress	CSS	0.700000
10	USDA/IRC/NROC Cactus Scrub Restoration	In Progress	Grassland	1.620000
11	Quail Hill Area 1	In Progress	CSS	1.850000
12	Bommer Canyon Area 1	Planned	Grassland	1.750000
<b>Grand Total</b>				<b>47.46</b>
- Completed				7.35
- In Progress				4.56
<b>Sub Total (Existing Restoration Acreage)</b>				<b>11.91</b>
- Planned				35.54
<b>Sub Total (Existing + Planned)</b>				<b>47.45</b>
CSS				
- Completed				5.50
- In Progress				2.88
- Planned				8.33
<b>Sub Total</b>				<b>16.71</b>
Grassland				
- Completed				1.84
- In Progress				1.62
- Planned				26.94
<b>Sub Total</b>				<b>30.40</b>
Oak Woodland				
- Planned				0.26

COI Fig. 6: COI-OSPS - Restoration Habitat Acreage 2015

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<b>Recreation Use, Monitoring &amp; Management:</b>		
Current Use Policies:	<p>7 day 7:00 a.m. to sunset public hiking and mountain biking is the current access configuration.</p> <p>Supplemental docent led activities were conducted as outreach opportunities. The maximum limit for docent-led activities is 25 participants with a minimum of 2 "IRC-Certified" volunteers.</p>	<p>7 day 7:00 a.m. to sunset public hiking and mountain biking will continue to be the access configuration.</p> <p>Supplemental docent-led activities will also be used as outreach opportunities.</p>
Recreational Monitoring: - Use & Access	<p>This land is referred to as the Buck Gully Preserve. The following totals include recreation/interpretive, trail boss, invasive removal and citizen science programs. The time frame is from January 1 through December 31, 2015.</p> <p>Total activities offered: 150 Total activities implemented: 143 Total volunteers: 834 Total volunteer hours: 2,195 Actual public participants: 303 Public participant stewardship/trail hours: 237</p> <p>All public use was managed according to the policies noted in the approved RRMP.</p>	<p>Docent-led activities for the public will continue to be offered in 2016. The maximum limit for docent-led activities is 25 participants with a minimum of 2 "IRC-Certified" volunteers.</p> <p>Activities may include public interpretive, recreational, trail work, or stewardship programs.</p>

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>The following public recreation/interpretive and trail boss programs were offered from January 1 through December 31, 2015. When necessary, programs are cancelled due to the Red Flag Warnings, Rain Closure and Santa Ana Wind events.</p> <p>Total recreation programs offered: 21  Total recreation programs implemented: 20  Total volunteers: 69  Total volunteer hours: 198  Actual public participants: 223</p> <p>Total trail boss programs offered: 5  Total trail boss programs implemented: 5  Total volunteers: 7  Total volunteer hours: 39  Actual public participants: 0</p>	
Recreational Monitoring: - Private Programs, Outreach Programs and Patrols	Public outreach of the Buck Gully and Big Canyon programs are integrated into the Irvine Ranch Natural Landmarks website and quarterly activity guide (distributed countywide), and the City of Newport Beach website and Navigator magazine. Content about Buck Gully and Big Canyon programs are also posted on the Irvine Ranch Natural Landmarks social media sites.	Private volunteer activities and patrols may occur in preparation and development of public programs.  Patrols may also be used to monitor human access and deter non approved uses.  Public outreach via the referenced outlets will continue.
Recreational Monitoring: - Volunteer Wildlife	Citizen Science Volunteers spent approximately 40 hours maintaining wildlife cameras throughout	IRC's Citizen Scientists will continue to collect camera trap data to monitor human access,



## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Activity & Human Access Monitoring	Buck Gully.	assess the type and level of unauthorized access, track trends in wildlife diversity and abundance over time and space, and further develop activity and disturbance profiles for wildlife species in Buck Gully.
User Compliance Programs: - Access Monitoring	<p>Trail counter data indicate 21,957 people visited Buck Gully in 2015, about 60 persons per day. The counter is located at the 5<sup>th</sup> Street and Poppy trailhead in the southwest corner of the Reserve. It therefore captures any person(s) who access at least a few feet along the start of the trail.</p> <p>Based on photographs taken from a single trailside camera in the more remote, northeast corner of the Reserve, 3,575 people visited Buck Gully in 2015. For comparison, 2,821 people were detected by the camera trap in 2014.</p> <p>The large discrepancy in visitation estimated by trail counter versus camera has two sources. First, the camera has a longer time-delay between capture events; 1 minute for camera versus 1.5 seconds for trail counter. So large groups of people are often under-captured by the camera. The other difference is that the trail counter captures access in the most heavily used section of Buck Gully, whereas the camera is located in a remote part of the Reserve. Hence, while about 22,000 people step foot into the Reserve each year, only about 3,575 access</p>	Wildlife and human access monitoring will continue using remote cameras and trail counters.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>remote areas or cover large sections of trail.</p> <p>About 90 photographs of dogs were captured by the single trail camera in Buck Gully. Dogs are not permitted in Buck Gully Preserve.</p>	
<p>User Compliance Programs:</p> <ul style="list-style-type: none"> <li>- Monitoring and Human Access Management</li> </ul>	N/A	<p>Budget permitting, implement a web-based photo database for all trailhead human access camera locations. IRC management and Field Patrol personnel (NP Rangers and Natural Resource Supervisor), will have direct encrypted access to human access photos as well as a database spreadsheet of unauthorized access. This photo data will provide more effective means for field patrol personnel to target specific days, times and locations for their patrols.</p> <p>Budget permitting, implement live-feed still-photo camera locations targeted at known areas of high-risk activities, that is to say areas of extensive nighttime use, fire pits, unauthorized vehicles, etc. These cameras will have the ability to relay photos directly to a web-based storage drive and provide instant notification to selected patrol personnel of unauthorized presence in the area.</p>
<p>Educational Outreach:</p> <ul style="list-style-type: none"> <li>- Irvine Ranch Citizen Science Program</li> </ul>	<p>IRC continued to operate wildlife camera monitoring activities using citizen scientists and occasionally employs volunteer help to assist in other monitoring activities. The following public and volunteer-only programs were offered January 1 to December 31, 2015. Note that</p>	<p>Wildlife camera trapping and raptor monitoring will continue. If resources permit, a monthly citizen science butterfly survey will be initiated.</p> <p>IRC and the City of Newport Beach Natural Resource and Recreation Staff will work closely</p>



## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>programs offered and implemented include some individual private activities.</p> <p>Total citizen science programs offered: 42  Total citizen science programs implemented: 36  Citizen science volunteers: 71  Volunteer hours: 178  Public participants: 1  Public participant hours: 6</p>	<p>together to coordinate programs offered throughout the City's natural areas, addressing programming, monitoring and restoration when appropriate.</p>
<p>Educational Outreach:  - Irvine Ranch Land Steward Program</p>	<p>The Irvine Ranch Conservancy conducted one land steward, one lead land steward training session and two herbicide training workshops for land stewards. The Land Steward program was deployed to assist with monthly restoration programs. One seed collection program was also implemented with three volunteers. Note that programs offered and implemented include some individual private activities.</p> <p><b>Invasive Control:</b>  Total stewardship programs offered: 1  Total programs implemented: 1  Land steward volunteers: 10  Land steward volunteer hours: 7  Public participants: 0  Public participant hours: 0</p> <p><b>Restoration:</b>  Total stewardship programs offered: 23  Total programs implemented: 23  Land steward volunteers: 69</p>	<p>IRC will maintain and work to increase stewardship programs through continued regular offerings.</p>

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	Land steward volunteer hours: 251 Public participants: 79 Public participant hours: 237	
Educational Outreach (All Areas): - Trail Boss Training Programs	Conducted volunteer Trail Boss training and implemented the Adopt-A-Trail program to assist with ongoing monitoring and maintenance of trail system. Completed Volunteer Trail Projects: 2 Trail boss training sessions: 1 Trail maintenance projects: 16	Continue training Trail Boss volunteers, and offer advanced training in specific areas of trail work, i.e.: power equipment, rock armoring, specialty construction techniques.
<b>Recreation Facility Construction and Maintenance:</b>		
New Construction or Expansion (Buck Gully):	Designed and implemented a "Trail Condition" sign and barrier element for use during periods of necessary trail closure. Coordinated with NB staff to implement trail closures when needed.	Implement additional informational signage (Trail Courtesy). Design and implement a human access monitoring system with the use of trail cameras located at the three primary trailhead access points. Coordinate volunteer Eagle Scout projects with the City of Newport Beach. These projects may include additional site benches, informational signage, interpretive bird blinds, and trail-side viewing decks.
Maintenance of Existing Facilities (Buck Gully):	The IRC managed 16 volunteer trail maintenance work sessions. These work days focused on vegetation trimming of the poison oak to maintain	Monitor the trail system for the creation of unauthorized social trails, and perform closure of any social trails as needed. If required, install

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>the desired trail-corridor width of 4' (tread is to remain 2' wide).</p> <p>Painted and serviced gates.</p> <p>Brushed over unauthorized social trails.</p> <p>Replaced vandalized kiosk corkboard cover.</p> <p>Repaired railing on cement bridge after flood damage.</p> <p>Repaired ~600' of trail damaged by failure of V ditch draining Buck Gully Rd. Repair included rebuilding the trail and adding 3 drainage dips.</p> <p>Worked with OCFA to clear vegetation around V ditch and City to have it repaired.</p> <p>Continued to coordinate with City &amp; Gully adjacent HOAs to identify source of and mitigate amount of urban runoff impacting the trail surface. City officially notified Pelican Hill management company (BHE) that the runoff was not acceptable. BHE worked with IRWD to address overwatering with individual landowners. Runoff has lessened since these actions took place.</p> <p>Coordinated with City to implement a trail closure protocol and signage system.</p>	<p>fencing to limit social trail use.</p> <p>Continue to monitor the area with historical runoff from Pelican Hill and perform necessary maintenance as required. Continue to coordinate with City to respond to and report flooding. Maintenance may include the expansion of the previously installed causeway, rock armoring or boardwalk installation.</p> <p>Continue to monitor the trail tread for signs of erosion, and make necessary adjustments to the trail as needed.</p> <p>Continue to monitor the slope adjacent to the trail and shore up any eroding areas (using boulders or retaining walls) if necessary.</p> <p>Perform a semi-annual inspection and maintenance of all bridges, gates and kiosks.</p> <p>Improve graffiti resistance of signage by adding graffiti coating to signs.</p>

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
Facility Replacement/Repair (Buck Gully):	N/A	N/A
<b>Infrastructure Construction and Maintenance:</b>		
Removal of Inactive Field Research Materials	None found.	IRC will evaluate and remove inactive field research materials if they are no longer deemed useful.
<b>Habitat Restoration &amp; Enhancement:</b> (Note: Funding Sources noted in first column if other than Land Owner)		
Exotic Plant Eradication: Program Summary (NCC, in part)	Invasive plant species, specifically artichoke thistle, castor bean, fennel, garland chrysanthemum, canary island date palm, Mexican fan palm, Italian thistle, mustard, pampas grass, Russian thistle, tamarisk, and tree tobacco were treated across 2.8 total acres of land (gross area) (2.2 acres of which occurred outside the NCCP boundary). Weeds were targeted for removal within reserve and park boundaries as well as along roads, trails, and fuel modification areas (NPB Fig. 1). Many invasive	Artichoke thistle, fennel, castor bean, garland chrysanthemum, and pampas grass will continue to be controlled along trails and habitat edges. In addition, ornamental trees planted or naturally established will begin to be removed in high priority areas and, as acceptable native shrub supplies permit, will be replaced with natives.  A report on NCC-funded 2015 control activities will be submitted to NCC in January 2016.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>plants are residing along the reserve and park edges, including non-City (HOA) properties.</p> <p>The primary species targeted for eradication within Buck Gully Reserve currently is pampas grass. Other species targeted for include castor bean, garland chrysanthemum, artichoke thistle, fennel, tree tobacco, and several species of exotic palms. Russian thistle was also treated along the northern hazard reduction zone of Buck Gully.</p> <p>Most control efforts were carried out by IRC staff and staff-led volunteer groups during public stewardship events. Additionally, IRC oversaw three days of control work contracted by NCC for pampas grass and exotic palm treatment along Buck Gully stream.</p>	
Exotic Plant Eradication: - Exotic Plant Monitoring	Invasive control efforts in 2015 were prioritized based on both spring-time monitoring in 2015 and a comprehensive survey and mapping effort of vegetation along all fuel modification zones in 2012.	Invasive survey results from 2012 in Buck Gully and 2015 in Big Canyon will continue to inform invasive plant removal work in the foreseeable future.
Exotic Plant Eradication: - Artichoke Thistle	<p>Treatment within NCCP (Buck Gully):</p> <ul style="list-style-type: none"> <li>• 146 gross m<sup>2</sup>, 1.1 net m<sup>2</sup> (decrease from '14)</li> <li>• Estimated 8 plants</li> </ul> <p>Treatment outside of NCCP (Big Canyon):</p> <ul style="list-style-type: none"> <li>• 3057 gross m<sup>2</sup>, 14 net m<sup>2</sup></li> <li>• Estimated 51 plants</li> </ul>	Control work will continue as needed.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
- Fennel	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• 1108 gross m<sup>2</sup>, 4.7 net m<sup>2</sup> (up from '14)</li> <li>• Estimated 35 plants</li> </ul>	Control work will continue as needed.
- Italian Thistle	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• None</li> </ul>	Control work will continue as needed.
- Tree Tobacco	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• None</li> </ul>	Control work will continue as needed.
- Castor Bean	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• 131 gross m<sup>2</sup>, 2 net m<sup>2</sup> (increase from '14)</li> <li>• Estimated 2 plants</li> </ul>	Control work will continue as needed.
- Pampas Grass (NCC, in part)	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• 1065 gross m<sup>2</sup>, 11 net m<sup>2</sup> (decrease from '14)</li> <li>• Estimated 42 plants</li> </ul>	Control work will continue as needed.
- Canary Island Palm (NCC, in part)	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• 131 gross m<sup>2</sup>, 0.2 net m<sup>2</sup> (decrease from '14)</li> <li>• Estimated 1 plants</li> </ul>	Control work will continue as needed.
- Mexican Fan Palm (NCC, in part)	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• None (decrease from 2014)</li> </ul>	Control work will continue as needed.
- Iceplant	See restoration activities below	Control work will continue as needed.
- Garland Chrysanthemum	Treatment within NCCP (Buck Gully): <ul style="list-style-type: none"> <li>• None (decrease from 2014)</li> </ul>	Control work will continue as needed.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
<p>- Peppertree</p> <p>- Russian Thistle</p> <p>- Tamarisk</p> <p>- Moroccan Knapweed (<i>Volutaria tubuliflora</i>)</p>	<p>Treatment within NCCP (Buck Gully):</p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p>See restoration activities below</p> <ul style="list-style-type: none"> <li>•</li> </ul> <p>Treatment within NCCP (Buck Gully):</p> <ul style="list-style-type: none"> <li>• 18 gross m<sup>2</sup>, 3.5 net m<sup>2</sup> (sim. To 2014)</li> <li>• Estimated 1 plant</li> </ul> <p>A population was found in Big Canyon, representing the first County record of this invasive species.</p>	<p>Control work will continue as needed.</p> <p>Control work will continue as needed.</p> <p>Control work will continue as needed.</p> <p>This species will be prioritized for eradication.</p>
Exotic Animal Control:	About 90 photographs of dogs were captured by the single trail camera in Buck Gully. Dogs are not permitted in Buck Gully Preserve.	<p>Monitoring for exotic animals will continue in 2016 and actions will be taken if wild exotic animals are found.</p> <p>A survey for and removal of African clawed frogs (<i>Xenopus laevis</i>) in Buck Gully stream is planned.</p>
<p>Habitat Restoration and Revegetation:</p> <p>Restoration activities</p> <p>Fuel Modification</p> <p>Restoration Demonstration</p>	<p>In 2015, the following activities occurred:</p> <ul style="list-style-type: none"> <li>• 11 public stewardships</li> <li>• 1 private stewardship event with UC Irvine student group.</li> <li>• Approximately 500 more container plants were installed on the site.</li> <li>• Approximately 300 salvaged cactus pads were planted onsite.</li> <li>• Approximately 35 pounds of native CSS and</li> </ul>	<p>An addition 860 container plants will be installed in the Waterwise demonstration area in the winter of 2016.</p> <p>Regular (1 day/ month) monitoring and weed removal activities will continue through 2016.</p> <p>An interpretive sign about the project will be installed in 2016.</p>

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>grassland seed was hand seeded on site.</p> <ul style="list-style-type: none"> <li>• Staff and volunteers watered and mulched plantings every 6-8 weeks from late spring through late fall.</li> <li>• Staff and volunteers continued to collect seed from native plants that were added to restoration projects in November of 2015.</li> </ul>	
<p>Habitat Restoration &amp; Revegetation: -Orchard Hills Salvage Cactus to Buck Gully</p>	<p>Approximately 28 large, salvaged cacti were transplanted in October from the Orchard Hills salvage site to Buck Gully Reserve near the intersection the Bobcat utility road and single track trail. Additionally, approximately 400 pads were planted at the second East Canyon site.</p>	<p>Planted cactus will be maintained by IRC staff, including periodic checks to determine whether they need watering in their first year. A report summarizing the cactus salvage efforts from both Portola Springs and Orchard Hills will be written by IRC staff and submitted to NCC documenting locations, activities, and general success.</p>
<p><b>Fire Management Activities:</b></p>		
<p>Fire Prevention: - Fire Watch Program</p>	<p>None at this time</p>	<p>None at this time.</p>
<p>Maintenance of Fuel Breaks/Modification Zones:</p>	<p>Newport Beach Fire Department agreed to adjust seasonal fuels trimming of hazard reduction areas from summer to late spring to decrease viable seed set from non-native species. Natives were flagged and vegetation management crews were instructed to avoid plants. Thinning was implemented by Southland Landscape</p>	<p>IRC will continue to coordinate with the Newport Fire Department on habitat-friendly vegetation management along reserve borders.</p>



## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	Maintenance. Managed areas are adjacent to NCCP.	
Maintenance of Fuel Breaks/Modification Zones: - Brochure	IRC worked with City, NCC, CNPS, and Fire Authority to create an informational brochure describing best management practices for fuel modification areas and home owners. The emphases of the brochure are to: 1. reduce fire risk, 2. reduce the spread of exotic species, and 3. reduce water consumption. The brochure was sent to all neighboring residents and is available at local volunteer and public events.	Brochure continues to be available.
<b>Miscellaneous Activities and Management Programs:</b>		
Trail Condition Monitoring	In July through September 2015, Bren graduate student intern Eliza Berry carried out annual monitoring on the condition of trails and trail-side vegetation using 45 long-term trail monitoring transects scattered throughout central and coastal NCC, including Buck Gully. She also compared trail and road width data collected over the last five years for evidence of significant change. She found that single-track trails are not widening significantly, suggesting proper design and management of trails across the NCC. In contrast, there was a significant increase in utility	The condition of trails and trail-side vegetation will be monitored again in the summer of 2016.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>road width over the same time period (an average of 1.06 m wider since 2010), suggesting a need to look more closely at the impact of periodic grading activities. Widening was not correlated with the trail user abundance. Another key finding was that the cover of vegetation adjacent to trails and roads declined in 2015 from 2013 and 2010, as did overall and native plant species richness. While both native and non-native species cover declined, non-native species cover declined relatively more. These declines are likely the result of recent drought and not recreation activity since they are not correlated with levels of human activity, nor was there physical evidence of trampling. Eliza also researched and tested ways to improve our method for estimating changes in trail and road depth using both new field techniques and analyses of aerial imagery. These improved methods will be integrated into the 2016 monitoring program.</p>	
Raptor Surveys	<p>IRC partnered with Bloom Biological Inc. (BBI) to conduct spring raptor breeding surveys across the Irvine Ranch Natural Landmarks (Figure 4). Monitoring occurred regularly from March 9<sup>th</sup> through May 29<sup>th</sup> 2015.</p> <p>A total of 141 historic (i.e. used in previous years) or new nest sites were surveyed. Of these:</p> <ul style="list-style-type: none"> <li>• 92 nests (65%) were determined to be inactive in 2015 (i.e. no attempts at nesting</li> </ul>	Raptor surveys will continue in 2016 across the IRNL.

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
	<p>were made). This represents the second year in a row of well-below average breeding activity, although not as low as 2014.</p> <ul style="list-style-type: none"> <li>• 49 nests (35%) were considered active in 2015. Thirty-two of these successfully fledged young while 11 ultimately failed. The fate of the remaining six active nests was unknown.</li> <li>• Of the 32 successful nests, 3 were osprey, 1 bald eagle, 2 red-shouldered hawk, 20 red-tailed hawks, 2 Cooper's hawks, 2 barn owls, and 2 great horned owls.</li> <li>• 6 additional nests were given a status of unknown.</li> <li>• The final report was careful not to blame low nest occupancy and success entirely on drought because previous droughts have not been associated with such low reproductive activity across so many traditionally active territories. The authors suggest that other factors may be involved and/or interacting with drought, including disease (e.g. West Nile Virus) and exposure to anticoagulants in pest control products. The full draft report can be made available upon request.</li> <li>• Zero active raptor nests were found in Buck Gully in 2015.</li> </ul> <p>The full report is available upon request.</p>	
Sensitive Species Monitoring:	Buck Gully: Surveys for California gnatcatcher (CAGN) and coastal cactus wren (CAWR) were conducted in	CAGN and CAWR monitoring in Buck Gully will continue in 2016. IRC plans to survey for aquatic animals along Buck Gully stream in the spring of

## City of Newport Beach - Buck Gully

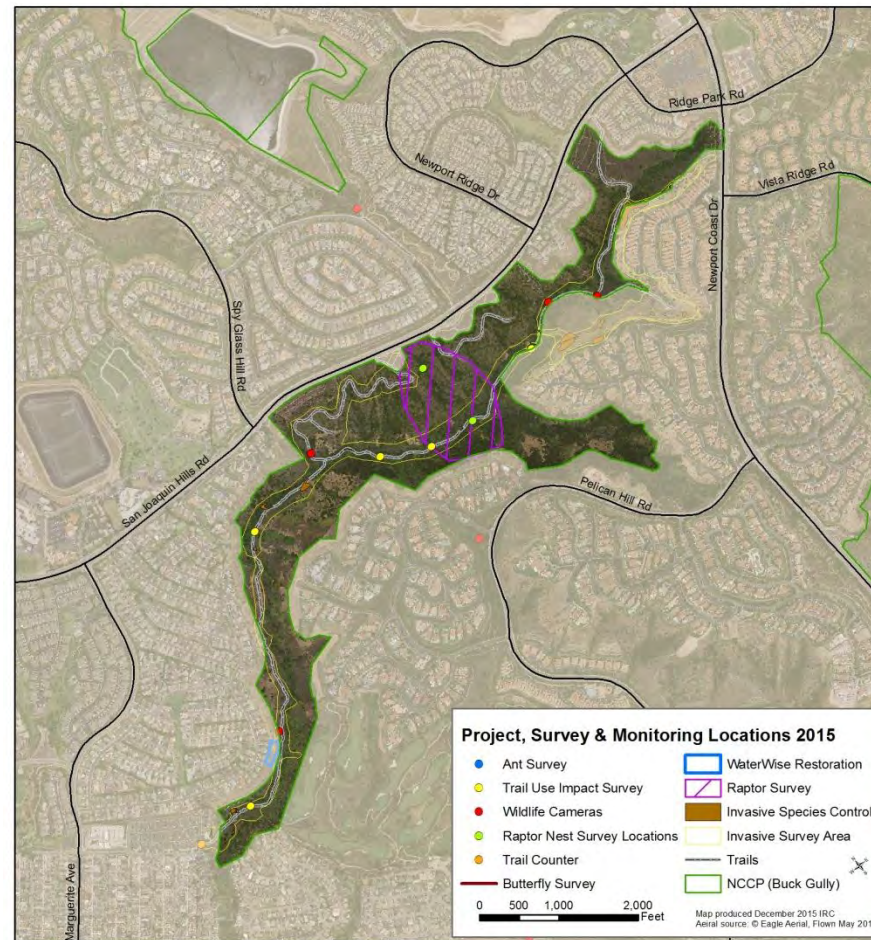
Project, Program, Activity	2015 Progress Report	2016 Work Plan
	Buck Gully Reserve in 2015. A total of 8 CAGN individuals were detected in 2015 among 6 territories. Two active nests were identified within those territories. CAWR were not detected in Buck Gully in 2015.	2016.
Scientific Research:	<p>IRC staff and volunteers currently service and maintain seven cameras in and around Buck Gully Reserve, three of which occur within the Reserve.</p> <p>Camera data are used for a variety of projects including tracking use and movement by native wildlife, identification of individual bobcats, and monitoring changes in and impacts of human access.</p>	IRC is continuing to operate its wildlife camera monitoring program across the central and coastal reserves.
Bobcat Pelt Pattern Matching:	<p>IRC has analyzed photographs from wildlife camera traps to identify nine individual bobcats in Buck Gully.</p> <p>Additional data were collected in 2015 for future analysis.</p>	An additional 6 month period of data will be assessed and incorporated into a manuscript. The manuscript will be submitted for publication in 2016.
Conservation Capacity:	IRC will continue to manage Buck Gully consistent with the Buck Gully 2009 Resource and Recreation Management Plan and the 2012 assessment of Fire modification zones. These documents identified encroachment, weed invasion, run-off, and erosion of edge habitat as primary threats to habitat, and fragmentation and road mortality as primary threats to wildlife.	Conservation actions will focus on invasive species control, continued camera trapping to monitor wildlife, and the continuation of active restoration activities in priority fuel management areas. All activities will incorporate volunteer assistance to increase capacity.

**City of Newport Beach - Buck Gully**

<b>Project, Program, Activity</b>	<b>2015 Progress Report</b>	<b>2016 Work Plan</b>
	Management goals for 2015 included implementation of a showcase hazard reduction zone replanting, eradication and control of target invasive species, and continued monitoring of wildlife activity.	

## City of Newport Beach - Buck Gully

Project, Program, Activity	2015 Progress Report	2016 Work Plan
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Newport Beach Fig. 1

## **ATTACHMENTS**

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**2015 Progress Report & 2016 Work Plan**

ATTACHMENTS

OC Parks, City of Irvine, Newport Beach and the Irvine Company - Central/Coastal OC NCCP Wildlands

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## ATTACHMENTS

### OC Parks, City of Irvine, Newport Beach and the Irvine Company - Central/Coastal OC NCCP Wildlands

#### The Irvine Company 2015 Annual Report Habitat Mitigation Sites Within the NCCP Reserve System

Development Name	Mitigation Site(s)	Project that Mitigation Applies to	Performance Standards Status	Current Status
PA27-Turtle Ridge Bommer Canyon Mitigation Area	PA28	PA 27 Development	The Corps and CDFW have approved the restoration aspect of the project.	Complete; however, the Corps will not approve the entire project until all permit conditions have been met. There are other mitigation areas associated with this project located outside of the NCCP that require the recordation of a conservation easement.
Pelican Hill	Cameo Highlands	N/A	Container plants installed in May 2015. Seed installed in November 2015. Cuttings are scheduled to be installed in January 2016.	In progress
Santiago Hills II	Irvine Regional Park Drain Outlet	Santiago Hills II	Installation complete December 2008. Years 1-4 standards met.	Requesting agency buyoff.

## ATTACHMENTS

## OC Parks, City of Irvine, Newport Beach and the Irvine Company - Central/Coastal OC NCCP Wildlands

## CONTACT LIST:

Phone	OC Parks/OCP Managed	Contact
714-973-3743	<b>OC Parks General Contacts</b>	Stacy Blackwood, OC Parks Director
949-923-3742		Jennifer Naegele, Restoration Ecologist
949-923-2201	<b>Aliso and Wood Canyons Wilderness Park</b>	Joanne Taylor, Senior Park Ranger
949-923-2299		Zak Salazar, Park Ranger II
714-973-6864		John Gannaway, Parks Division Manager
714-973-6621	<b>El Modena Open Space (Santiago Oaks Regional Park)</b>	Mike Wilson, Senior Park Ranger
714-973-6623		Steve Jax, Park Ranger II
714-973-2291		Bill Reiter, Parks Division Manager
714-973-6834	<b>Irvine Regional Park</b>	Jim Simkins, Supervising Park Ranger
714-973-6837		Derrick Ankerstar, Park Ranger II
714-973-2291		Bill Reiter, Parks Division Manager
949-923-2233	<b>Laguna Coast Wilderness Park</b>	Barbara Norton, Supervising Park Ranger
949-923-2234		Brad Barker, Park Ranger II
949-923-3701		Laura Cohen, Resource Specialist
714-973-6864		John Gannaway, Parks Division Manager
949-923-2244	<b>Limestone Canyon &amp; Whiting Ranch Wilderness Park</b>	Candice Hubert, Senior Park Ranger
949-923-2298		Josh Goldsmith, Park Ranger II
714-973-6864		John Gannaway, Parks Division Manager
714-973-6621	<b>Peters Canyon Regional Park</b>	Mike Wilson, Senior Park Ranger
714-973-6623		Steve Jax, Park Ranger II
714-973-2291		Bill Reiter, Parks Division Manager
714-973-6621	<b>Santiago Oaks Regional Park</b>	Mike Wilson, Senior Park Ranger
714-973-6623		Steve Jax, Park Ranger II
714-973-6863		Bill Reiter, Parks Division Manager

## ATTACHMENTS

## OC Parks, City of Irvine, Newport Beach and the Irvine Company - Central/Coastal OC NCCP Wildlands

Phone	OC Parks/OC Parks Managed	Contact
949-923-2293	<b>Talbert Regional Park (North Coastal Facilities)</b>	Scott Fegley, Operations Manager
949-923-2297		Jamie Montgomery, Park Ranger II
714-973-2291		Bill Reiter, Parks Division Manager
949-923-2293	<b>Upper Newport Bay Nature Preserve (North Coastal Facilities)</b>	Scott Fegley, Operations Manager
949-923-2297		Jamie Montgomery, Park Ranger II
714-973-2291		Bill Reiter, Parks Division Manager
949-923-2201	<b>Aliso and Wood Canyons Wilderness Park</b>	Joanne Taylor, Senior Park Ranger
714-973-6864		John Gannaway, Parks Division Manager
714-973-6621		Mike Wilson, Senior Park Ranger
714-973-6623	<b>El Modena Open Space (Santiago Oaks Regional Park)</b>	Steve Jax, Park Ranger II
714-973-6632		Bill Reiter, Parks Division Manager
Phone	OC Parks/IRC Managed	Contact
714-721-4212	<b>Irvine Ranch Wildlands</b>	John Gump, OC Parks Operations Manager
714-920-0177		Ron Slimm, OC Parks Senior Ranger
714-5084750		Michael O'Connell, IRC Executive Director
714-508-4763		David Raetz, IRC Deputy Director
714-508-4737		Claudia Soto-Neira, IRC Director of Community Programs
714-508-4765		Dr. Jutta Burger, IRC Managing Dir. Science/Stewardship
714-508-4766		Dr. Megan Lulow, IRC Director, Science Initiatives
714-508-4752		John Graves, IRC Director, Planning & Field Ops.
714-508-4762		Adam Maywhort, IRC Sr. Manager, Planning & Field Ops.
Phone	City of Irvine/IRC Managed	Contact
949-724-6692	<b>Irvine Open Space Preserve</b>	Laurie Hoffman, Director - Irvine Community Services
949-724-7522		Angie Burgh, Sr. Mgmt. Analyst – Irvine Comm. Services
714-5084750		Michael O'Connell, IRC Executive Director
714-508-4763		David Raetz, IRC Deputy Director
714-508-4737		Claudia Soto-Neira, IRC Director of Community Programs
714-508-4765		Dr. Jutta Burger, IRC Managing Dir. Science/Stewardship
714-508-4766		Dr. Megan Lulow, IRC Director, Science Initiatives
714-508-4752		John Graves, IRC Director, Planning & Field Ops.

## ATTACHMENTS

## OC Parks, City of Irvine, Newport Beach and the Irvine Company - Central/Coastal OC NCCP Wildlands

714-508-4762  
714-508-4725

Adam Maywhort, IRC Sr. Manager, Planning & Field Ops.  
Jill Sprance, IRC Field Ops. Manager

Phone	City of Newport Beach/IRC Managed	Contact
949-644-3157	<b>Buck Gully</b>	Laura Detweiler, N. B. Recreation. & Sr. Services Director
949-644-3036		Michelle Clemente, N. B. Natural Resource Supervisor
714-5084750		Michael O'Connell, IRC Executive Director
714-508-4763		David Raetz, IRC Deputy Director
714-508-4737		Claudia Soto-Neira, IRC Director of Community Programs
714-508-4765		Dr. Jutta Burger, IRC Managing Dir. Science/Stewardship
714-508-4766		Dr. Megan Lulow, IRC Director, Science Initiatives
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714-508-4762		Adam Maywhort, IRC Sr. Manager, Planning & Field Ops.
714-508-4725		Jill Sprance, IRC Field Ops. Manager

Phone	Irvine Company/IRC Managed	Contact
949-720-2609		Dan Miller, Irvine Company Senior Vice President
949-720-2878		Dean Kirk, Irvine Company Senior Director
714-5084750		Michael O'Connell, IRC Executive Director
714-508-4763		David Raetz, IRC Deputy Director
714-508-4737		Claudia Soto-Neira, IRC Director of Community Programs
714-508-4765		Dr. Jutta Burger, IRC Managing Dir. Science/Stewardship
714-508-4766		Dr. Megan Lulow, IRC Director, Science Initiatives
714-508-4752		John Graves, IRC Director, Planning & Field Ops.
714-508-4762		Adam Maywhort, IRC Sr. Manager, Planning & Field Ops.
714-508-4725		Jill Sprance, IRC Field Ops. Manager