

Tijuana River National Estuarine Research Reserve (TRNERR)

Program Manager Reports

Report Period: July 1, 2020 through December 31, 2020 **unless noted*

TASK: REFUGE MANAGER REPORT

**Brian Collins, Refuge Manager, San Diego Bay NWR
and Tijuana Slough NWR**

*Period: August 1, 2020 through February 3, 2021

1. PERSONNEL

San Diego NWR Complex personnel have been mostly teleworking since mid-March due to the COVID-19 pandemic in efforts to reduce staff exposure to community transmission of the SARS-CoV-2 virus. In the meantime, a new Presidential Executive Order was issued on January 20, 2021 that states, "all employees and visitors to Federal lands should wear masks, maintain physical distance, and adhere to other public health measures, as provided in CDC guidelines to prevent the spread of COVID-19." We continue working with reduced field staffing capacity to catch up on a backlog of field tasks such as trimming vegetation along trails, removing trash from a recent increase in homeless camps, monitoring and management of threatened and endangered species, and overseeing contracts for various field work projects. We have recently contracted with a refuse removal company to help remove significant amounts of solid waste from homeless encampments in the Otay river floodplain and along the southern end of San Diego Bay, and anywhere else where the amount of material that needs to be cleaned up exceeds our staff capacity to deal with it ourselves. Refuge staff are partnering with the City of I.B., San Diego County Sheriffs, the City of San Diego and other agencies in addressing the impacts to natural resources and threats to public safety that some of these unauthorized activities on our public lands create.

Unfortunately, we are still not yet able to authorize our volunteers who help us manage our Refuges in so many ways, to return to field work yet, due to the ongoing risk of community spread of the COVID-19 virus. We are basing our evaluations of safely inviting our volunteers and other partners back to work on science-based guidance from state and local governments based on infection rates and ICU capacity in a given county. Essential workers including USFWS law enforcement, fire staff, and others are actively in process of receiving vaccinations in order to enable our field management capacity to keep our staffers and members of the public potentially exposed to them as safe as possible moving forward.

The Department of the Interior and USFWS at the national level will be staffed with new leadership in the near future. The new Principle Deputy Director of the USFWS is Martha Williams, former Director of Montana Parks and Wildlife and former Deputy Solicitor for Parks and Wildlife with the Department of the Interior. During a Town Hall meeting with USFWS employees, Deputy Director Williams reiterated that what we do

within the Fish and Wildlife Service will be supported by federal resources, policies and operational decisions that are implemented moving forward.

2. WILDLIFE

Our preparations for managing the nesting season for our threatened and endangered birds is imminent. As a reminder, nesting season starts around February 15th for Light-footed Ridgway's rails and Belding's Savannah sparrows, March 15th for western snowy plovers and April 15th for California least tern, least Bell's vireo and California gnatcatcher.

Refuge staff are working as part of a consortium of scientists, NGOs and resource agencies investigating possible reintroduction sites for the critically endangered Pacific pocket mouse. You can read about ongoing conservation efforts for this species here <https://institute.sandiegozoo.org/species/pacific-pocket-mouse>. Note that the 'type location' for the species when it was initially described in the scientific literature was for a specimen taken from the Tijuana River Valley.

We plan to continue the second year of our telemetry work with colleagues from USGS and the University of Idaho tracking the survivorship and movements of young light-footed Ridgway's rails at Tijuana Estuary and other southern California wetlands in 2021. Preliminary results in 2020 showed us that the technology is working effectively, but survivorship of birds tagged so far in 2020 has unfortunately been low, reiterating the perilous path to recovery for this critically endangered species. We are committed to recovery of this focal species of our coastal wetlands, and plan to continue to work to persevere and increase our collective capacity to deliver conservation measures aimed at recovery of this species that is emblematic of southern California's coastal salt marshes. We estimate that the Tijuana River mouth closures in 2016 and 2017 incidentally led to a reduction in the population of Ridgway's rails within the wetland by over 50%. The population has been slowly recovering since those events, but ongoing habitat degradation related to water quality impacts and habitat loss makes the species' recovery more difficult than what a restored estuary free of excess sediment, trash, and sewage inflows would present to them.

3. MULTI-AGENCY PLANNING EFFORTS

San Diego NWR Complex Project Leader Andy Yuen is the lead for the Refuge on participation in the USMCA EPECG team that is tasked with consulting with the USEPA on prioritizing actions to implement improvements to water quality treatment infrastructure to reduce the magnitude of flows of sewage, sediment and trash into the Tijuana River Valley. See <https://www.epa.gov/newsreleases/epa-announces-two-near-term-clean-water-projects-tijuana-river>.

The Refuge Manager is participating (along with the Reserve Manager, Research Coordinator and Coastal Training Program Coordinator) as a member of the Technical Advisory Committee for the City of Imperial Beach's Sediment Management Planning efforts. This project is funded by the California Coastal Conservancy

https://scc.ca.gov/webmaster/ftp/pdf/sccbb/2020/2006/20200618Board13_Tijuana_River_Valley_Sediment_Plan.pdf.

4. TRAINING TO OTHER AGENCIES

The Refuge Manager has been working with the City and County of San Diego on training field staff in the identification of resources of conservation concern and avoidance of unintended disturbance to wildlife during the course of their activities. This is focused on both San Diego County Vector Control (mosquito and small mammal surveillance and control) and both City and County Stormwater staffers who are charged with water quality sampling along the estuary's beachfront.

5. TIJUANA RIVER MOUTH AND WATER QUALITY DATA

The Reserve's automated telemetry station has been temporarily disrupted by someone throwing one of our informational sandwich boards into the Oneonta Slough. Said board became entangled in our telemetry cables and dislodged the electrical equipment needed to keep the system running. As a result, our real-time telemetry feed in Oneonta Slough is temporarily inoperable. In the meantime, we are monitoring the condition of the river mouth visually twice a week and remain prepared to reopen the mouth in a timely manner should sand movement close the mouth to tidal action similar to what occurred in 2016 and 2017 when river mouth closures led to significant water quality degradation within the estuary.

TASK: OVERSIGHT AND IMPLEMENTATION OF RESERVE OPERATIONS

Chris Peregrin, TRNERR Reserve Manager, California State Parks

1. Coordinated Implementation of Reserve Programs

The Reserve Manager worked to respond to the Necessary Action and the Recommendations identified in the Reserve's 312 findings.

The Reserve Manager contributed to the National Estuarine Research Reserve Association annual board meeting, held virtually via Zoom, October 22.

The Reserve Manager attended the virtual NERR Annual Meeting, week of October 25.

The Assistant Reserve Manager continued role of Cooperating Association Liaison for the Southwest Wetlands Interpretive Association and is now attending the regular SWIA Board Meetings.

The Reserve Manager continued coordination with CA State Parks Peace Officers to support Reserve operations through public safety.

The Reserve Manager and the Assistant Reserve Manager, Research and Coastal Training Program coordinators continued regular communication with State Parks San Diego Coast District (SDCD) Natural Resources team to further align programmatic support and integration, with additional outreach to CA State Parks Natural Resources

program headquarters staff out of Sacramento. CA State Parks has been investing in the development of a coastal management program. We look forward to advising as needed and coordinating with this developing program and new Sacramento-based staff.

The Reserve Manager continued work with the Education Coordinator and TRNERR Program Managers to further the development of the Reserve's Interpretive Master Plan (IMP). During this period, the Reserve Manager coordinated IMP review by additional staff at CA State Parks San Diego Coast District.

The TRNERR Program Managers met approximately weekly via Zoom for this term to ensure programmatic coordination.

The Reserve Manager attended regular CA State Parks SDCD Manager Team Meetings. One of the goals of this engagement is to ensure effective integration of Reserve programs with CA State Parks operations. During this period, the frequency of the SDCD Manager Team Meetings returned to 1x/week. Significant focus of these meetings continued to be management of San Diego Coast District park units with appropriate COVID-19 precautions.

The Reserve Manager attended half-day de-escalation training that included particular focus on possible conflicts associated with COVID-19 restrictions (virtual).

The Reserve Manager attended Crucial Conversations training hosted by the NERR system (virtual).

The Reserve Manager attended CA State Parks equal employment opportunity-focused training 'Bear in Mind' hosted by CA State Parks Human Resources Office.

The Reserve Manager contributed to San Diego Coast District comments for CA State Parks after action report on COVID-19 initial department response.

The Reserve Manager worked with the TRNERR Program Managers to respond to NERRS Science Collaborative program call for information. The NERRS Science Collaborative is a NOAA-funded competitive grant program tied to the NERRS aimed at increasing research applications for end-users. The Science Collaborative managers are focused on alignment of the goals and administration of the program in a manner that can more effectively support Reserve management needs.

The Reserve Manager worked closely with the Education Coordinator (EC) to transition priority education program tasks while the EC is assigned to COVID-19 contact tracing detail starting December 28. It is anticipated that this detail may last 6-9 months. During this time, the TRNERR staff will maintain priority education efforts, with significant leadership provided by Education Specialist Ahmad.

2. Management of Reserve Budget

The Reserve Manager continued work with the Assistant Reserve Manager and CA State Parks Administration staff to manage the NOAA & CA State Parks Operations Budgets. During this period Valerie Stephens was designated Acting Chief of Administration for the San Diego Coast District. Stephens has supported the administration program for San Diego Coast District for years, has an excellent skill-set and positive attitude, and we are excited to see her step into this new leadership role.

The Reserve Manager continued work with the Assistant Reserve Manager and CA State Parks Administration staff to manage the Nelson Sloan Quarry Restoration grants administration process. The *Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project* is funded through two separate grants from the State of California. Establishment of these grants has posed some administrative challenges, including the development of new funding pathways, and alignment of these grants within the State of California's new financial management system- "Fi\$Cal."

The Reserve Manager worked with the Assistant Reserve Manager and core staff to develop and submit no-cost extension request to NOAA for the FY19 Operations award.

3. Protection and Restoration of the Tijuana River Valley

The Reserve Manager worked with the Assistant Reserve Manager to manage Goat Canyon Sediment Basin maintenance activity. During this period, the Contractor finished sorting and haul-off of the previous year's material, which had been staged on the processing pad. The Reserve Manager worked with CA State Parks Contract Specialists locally and in Sacramento to finalize award details for the fall 2020 work. The fall 2020 award includes option to extend the contract for two additional years offering valuable contractor continuity for the upcoming years. The Reserve Manager worked with the Contractor to oversee basin excavation in fall 2020. Approximately 20,000cy of material was excavated and placed on the processing pad.

The Reserve Manager continued work with the Assistant Reserve Manager on the *Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project*. The Reserve Manager continued work with the Assistant Reserve Manager, design staff from CA State Parks Southern Service Center, CA State Parks Administrative staff, and the State's project consultant (Dudek) to continue on-the-ground studies and design work for the completion of the final design and environmental review for the *Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project*. During this period, significant focus was placed on development of the environmental impact report analyses. (see Stewardship)

The Reserve Manager continued work with the Assistant Reserve Manager, TRNERR Research Coordinator, SWIA Project Management, and project consultants to further the design for the Tijuana Estuary Tidal Restoration Program. This project seeks to restore roughly 80 acres of salt marsh within the Reserve. (see also *Research*)

The Reserve Manager continued engagement as a local stakeholder with USEPA and North American Development Bank/Border Environment Cooperation Commission to initiate a diagnostic study of the water and wastewater infrastructure on the US-Mexico border in the Tijuana River Watershed. This effort seeks to identify issues with this infrastructure that contribute toward cross-border pollution, and to prioritize improvements that will ultimately resolve the wastewater and freshwater discharges into the Tijuana River. During this award period, efforts were continued toward aligning this work with the \$300million allocation in the federal government through the United States-Mexico-Canada Agreement. The Reserve Manager will serve on the Eligible Public Entities Coordinator Group (formerly the Inter-Agency Consultation Group) for this effort, representing the CA Natural Resources Agency and the Tijuana River National Estuarine Research Reserve.

The Reserve Manager continued engagement with the US International Boundary and Water Commission on the implementation of Minute 320 to the 1944 US and Mexico Water Treaty. The Reserve Manager has been designated to serve as the U.S.-based co-chair for the sediment working group. During this period the Reserve Manager, with support from the Reserve's Binational Liaison, initiated regular meeting with the Mexican co-chair, outlined a draft schedule and set of working group priorities for Minute 320 Binational Core Group review. Two other working groups have been established with similar charge including, solid waste and water quality. These efforts toward Minute 320 implementation reflect a renewed and reorganized effort from the USIBWC under Commissioner Harkins.

The Reserve Manager continued work with the TRNERR Research Coordinator, CA State Parks resource managers, and external researchers to collaborate on project planning for a dune restoration research project. The "Using Green Engineering Techniques to Restore Coastal Sand Dunes in Border Field State Park, San Diego, California" project involves California Ocean Protection Council, California Sea Grant Program, and the University of Southern California Sea Grant Program. During this award period site monitoring continued.

The Reserve Manager continued work with the Assistant Reserve Manager, CTP Coordinator and Binational Liaison to coordinate the NOAA Marine Debris 2018 grant efforts.

The Reserve Manager worked with the Assistant Reserve Manager, CTP Coordinator, Research Coordinator, Education Coordinator and Binational Liaison to initiate efforts toward the up-coming NOAA Marine Debris North American Marine Debris Prevention and Removal grant opportunity.

The Reserve Manager and Assistant Reserve Manager continued collaboration with the Tijuana River Valley Recovery Team (TRVRT).

4. Development of TRNERR Partnerships

The Reserve Manager and Assistant Manager worked with Research and Coastal Training Program Coordinators to provide a Reserve tour to Nicolas Chapa- the new USIBWC area manager.

5. Oversight of Reserve Facilities and Public Access Opportunities

The Reserve Manager worked with State Parks Administration staff, and State Parks maintenance crew, to manage and maintain the TRNERR headquarters and reserve facilities. During this period, the parking lot and restrooms went from open to closed status due to COVID-19 consideration. The trails adjacent to the visitor center remained open. Border Field State Park remained completely closed to the public.

Welcome Anthony Del Bono- new Park Maintenance Worker 1. We are pleased to have Anthony join the team with focus on maintenance support for Silver Strand SB and the Reserve. Del Bono comes to us with previous State Park maintenance experience, including recent work in Anza-Borrego Desert State Park. We look forward to working with him.

Happy retirement Francisco Vallejo. Maintenance Mechanic Vallejo retired this period. Vallejo covered maintenance duties for Silver Strand State Beach and the Reserve for nearly 20 years. He is an amazing individual with a maintenance skill set and committed work ethic that is top-notch. Through his career, he did an amazing job caring for the facilities in this sector and promoting a positive work environment. We will definitely miss his contribution.

The Reserve Manager and administration staff worked with maintenance and law enforcement for upgrades to the Tijuana Estuary alarm system.

The Reserve Manager supported efforts of a visiting team of trails specialists from CA State Parks headquarters in Sacramento. The crew focused on the ground-truthing and the digitizing of the trails in the Reserve for the development of a statewide trails database. We expect this database to support more-efficient trail management efforts and improve public recreation opportunities.

The Reserve Manager worked with USFWS and Maintenance with contract services to refresh all fire extinguishers across the Reserve.

The Reserve Manager worked with CA State Parks Southern Service Center design team to summarize previous work and future priorities around the flooding issues of Monument Road. The effort included a focused meeting with CA Coastal Commission staff to discuss how repairs of the road integrate with the Reserve's interpretation, restoration, and climate change resilience planning interests.

6. Reserve Updates Comprehensive Management Plan

TRNERR Core staff committed weekly program manager working sessions towards development and progress on the CMP.

TASK: EDUCATION PROGRAM

Marya Ahmad, TRNERR Education Specialist, California State Parks

1. Development and Implementation of Education Programs

A. Formal and Non-formal Teacher Training

Due to the continued closure of the Tijuana Estuary Visitor Center and no in-person programming, neither Tijuana Estuary Explorers nor MARSH curriculum teacher trainings occurred during this period. Teachers who attended virtual programs were sent digital material ahead of their virtual programs to help prepare students.

B. Student-centered Formal and Informal programs

No in-person, student-centered programs were held during this time. Reserve Educators instead continued carrying out their 3 virtual programs through California State Parks, Parks Online Resources for Teachers and Students (PORTS). The Reserve delivered one high school level *Detecting a Changing Climate* (DACC), three *Salt Marshes and Climate Change* to middle schoolers, and thirteen *Salt Marsh Secrets* to elementary students. The programs were mostly conducted as PORTS on-demand programs serving individual classrooms, however there were a handful of Home Learning Programs that serviced large audiences. A total of 688 students were reached through these programs.

The Reserve's virtual programs developed for PORTS are available on their own landing page on the PORTS website: <https://www.ports-ca.us/ports-programs/ports-on-demand/tijuana-estuary-natural-preserve>.

In July, the Reserve Education Specialist and Volunteer Coordinator collaboratively delivered 4 virtual programs to a summer college program, Sierra Service. Typically, students from California and Arizona visit the Reserve annually in person and are given an education component, and then participate in a hands-on project. This year 45 students participated in the alternate virtual education portion and then were encouraged to work locally or in their own backyards to fulfill their service portion.

C. Interpretation

Over the summer and in collaboration with other Southern California State Parks, the Reserve Education Specialist worked with other Park interpreters to create a dual language State Parks Junior Ranger program. The program contains 6 modules and targets 7 to 12-year-olds. The Reserve Education Specialist developed one of the modules, Weather and Climate, which is essentially a 7-minute video. Since it is a dual language program, the Assistant Reserve Manager helped with the Spanish translations. Aside from the video modules, the program also provides suggested activities and other web links so kids can dig deeper into the topics from home. The website that describes the program and provides the link to the entire Prezi can be found here: http://kids.parks.ca.gov/?page_id=22783

The Weather and Climate module, can be found here:
https://www.youtube.com/watch?v=HfTU3Z_XvmU&t=13s

On July 9, Reserve Education Specialist delivered *Salt Marsh Secrets* to 270 kids and parents as one in a series of virtual summer California State Parks Junior Ranger programs. This virtual summer program series was facilitated through the California State Parks PORTS program and was created in lieu of in-person Junior Ranger programs.

On August 8, TRNERR participated in a California State Park statewide Facebook livestream event, *The Great California Virtual Campout*. The event was a series of livestreams happening across California at various state parks throughout the day. The segment delivered by Reserve Education Specialist took place at Silver Strand State Beach. Both TRNERR and Silver Strand SB make up the San Diego Coast District South Sector.

On December 11, the Reserve Education Coordinator with support of the Reserve's Education Specialist and Assistant Manager, delivered a King Tide webinar via Zoom and promoted as a Facebook livestream.

Lunchtime Live, a weekly Facebook Livestream that began in April, continued during this period. There were 16 programs delivered with a typical length of 20-30 minutes each and totaling 8342 views, anywhere from 150 – 1700 views depending on the topic. The program was designed to provide outreach and interaction with the public since in-person bird and nature walks had ceased. The series has developed a regular following of watchers who engage with questions, comments, and suggest topics for future programs. All videos are captioned later and are made available on the [Reserve's YouTube page](#).

Border Field State Park's 50th anniversary is August 22, 2021. A planning committee was formed to include the Reserve Educator Coordinator and Manager as well as outside organizations and interested parties. Planning for a potentially in-person event is underway. The Reserve's contribution to the anniversary is the development of an OnCell/Stqry App to be used by visitors who visit Border Field State Park. Under the supervision of the Education Coordinator, a vendor was selected to compile written content and images supplied by Reserve Education staff into a usable form for the app. The target date for the launch of the app is before August 2021.

Reserve Education Coordinator developed a virtual geocaching tour for the Adventure Lab app. The geocaching tour takes visitors around the Visitor Center identifying some of the native plants in the coastal sage scrub habitat and discovering their environmental adaptations and Native American traditional uses.

The Interpretative Master Plan is awaiting the final comments to be incorporated and approved by SD Coast District Superintendent before finalizing. The Interpretive Action Plan (IAP) has been written and approved by USFWS partner. Final comments from SD Coast District Superintendent have been submitted and are awaiting incorporation into IAP.

D. Visitor Services

The Tijuana Estuary Visitor Center closed on March 12, 2020 due to COVID-19 and has not since reopened. The Visitor Center parking lot and restrooms have been closed intermittently during this period as well.

2. Production of Outreach Materials

Reserve Education Staff produced an e-newsletter every month of this reporting period including highlighting volunteers, other special events, and accomplishments. TRNERR volunteers were recruited to write species spotlights for the eNews as well as for social media posts.

3. Volunteer Capacity Building

Bringing back volunteers in person and volunteer training were still on hold during this period. Volunteers are encouraged to provide digital content for digital materials (i.e., eNewsletter), Reserve's Facebook page as posts, and to participate in the virtual Tijuana River Action Month events (see Stewardship).

4. Environmental education and interpretive capacity and leadership roles

The Reserve's Education Coordinator collaborated with California State Parks Interpretive Department at Headquarters in developing a Climate Change Training for California State Parks. The multi-day training takes place in March 2021.

Task: Coastal Training Program (CTP)

**Dr. Kristen Goodrich, TRNERR CTP Coordinator,
Southwest Wetlands Interpretive Association**

1. Assess the regional need for equity trainings to inform climate planning

The [Regional Adaptation Needs Assessment](#) developed in partnership between CTP, SDRCC, and The San Diego Foundation, was funded by the Caltrans SB 1 Adaptation Planning Grant Program (through SANDAG). It identified information gaps regarding existing risks and adaptation needs, including in the area of equity. In May 2019, SANDAG was awarded additional funding through SB 1, with SDRCC as a sub-recipient. This funding will support the development of tangible guidance on how to address identified risks and needs by holistically implementing projects that link mitigation, adaptation, and broader community benefits. An implementation toolkit, economic guidance document, and equity prioritization document will be developed to help local planners with this complex decision-making.

With SDRCC, in this reporting period, CTP started scoping the development of the equity prioritization document and associated training and technical assistance to support it.

Additionally, CTP participated in a EJ Coastal Partner Coordination Group (comprised of federal and state agency representatives) meeting focused on training to share

resources and lessons learned. Outcomes included subsequent meetings with CA State Lands Commission and CA Ocean Protection Council. Also, CTP participated in the California CTP Equity Workgroup with the two other CA CTPs and CA NERR Liaison to explore opportunities to elevate equity trainings in our state-wide and regional portfolios and evaluate state agency resources for regional application.

CTP, with Chesapeake Bay NERR CTP, established a LatinX Connections workgroup and held its first meeting. Additionally, developed and delivered content for a Diversity, Equity, and Inclusion session for the National CTP Sector meeting on language and terminology barriers and LatinX communities. Outcomes include interest in development of a tailored Crucial Conversations training with a nexus to these topics and will be explored in the next reporting period.

2. Identify training topic targets for SDRCC, as official network training provider

CTP participated in the San Diego Coastal Exchange in July 2020. Resilient Cities Catalyst and SDRCC convened global experts, along with key leaders in the region representing diverse community stakeholders in a sequence of virtual immersive convenings and small group working sessions to explore innovative design options that address coastal resilience challenges and surfaced a set of viable projects and policies that are ripe for further advancement.

Coming out of these convenings and design sprints, exchange participants coalesced around approaches that are most promising for meaningful impact in addressing the region's coastal challenges by prioritizing better projects, unifying multiple regional actors towards collaborative action, and attracting and generating more funding. They include: (1) The San Diego Future Fund; (2) Regional Resilience Roadmap; (3) Oceanside Littoral Cell Design Lab; and the (4) San Diego Future Campaign. The Summary Report can be found [here](#).

CTP participated in subsequent SDRCC Adaptation Planning Working Group (APWG) meetings in August 2020 and September 2020 to assess - with SDRCC staff and Working Group members - opportunities for implementing the above approaches. In the next reporting period, CTP will continue to participate in APWG meetings to develop training and technical assistance topics in support of implementation.

3. Leverage efforts to reduce plastic pollution in the Tijuana Estuary

CTP was invited to moderate the first course for the [Scripps Ocean Plastic Pollution Challenge](#) "Plastic Pollution in the Ocean: Global and Regional Perspectives." Objectives and process agenda were developed to complement subsequent courses and panelists invited in this reporting period. The course will occur in the next reporting period.

CTP also convened a single-use plastic waste working group in Baja California that meets every two weeks. CTP facilitates these meetings among government and NGO representatives from Tijuana, Tecate, Rosarito, Ensenada, and Mexicali, focusing on informing municipal and State policies. Additionally, CTP has convened a working group

on establishing a plastics circular economy that includes representation by the Environmental Commission of the Baja California Congress.

CTP continues to leverage its partnership with NOAA Marine Debris Program and implement its project deliverables including development of a workshop on the relationship between marine debris and flooding in the border region, and modify it for a virtual delivery in the next reporting period.

4. Continue to provide strategic CTP technical assistance and workshop/training

CTP delivered trainings in this reporting period and are documented in the performance monitoring database. Notably, in partnership with California Sea Grant, 'Excelling in a Virtual World' was delivered to CA Sea Grant fellows. Also, a training on green infrastructure was hosted virtually in partnership with NOAA's Digital Coast in September 2020. This training was requested to build upon the previous outcomes of a classroom-based green infrastructure training held in Ensenada in February 2020 and supports continued policy development efforts in the state.

Various technical assistance was provided to coastal decision-makers in this reporting period including facilitating meetings, providing survey and evaluation assistance, assisting organizations with grant writing, plan/policy revisions, and strategic/action planning. In this reporting period, CTP delivered a presentation and facilitated a breakout group for the Margaret A. Davidson Fellowship mentor cohort launch (July 2020); facilitated the now-virtual TRNERR Advisory Council meeting (August 2020); and convened a concept team and facilitated meetings toward the development and submission (December 2020) of a NERRS strategic concept 'Supporting a resilience NERRS workforce' to the NERRS Strategic Committee for consideration in the NERRS strategic visioning process. In November 2020, CTP was a panelist in the NERRS Science Collaborative [Measuring Climate Adaptation Success and Progress: Introduction to the Resilience Metrics Toolkit](#) webinar that featured outcomes of a multi-year and -end-user NSC catalyst grant that TRNERR led. A detailed catalog by award year and performance period can be found [here](#).

In this reporting period, two journal articles were published: (1) [Barriers and opportunities for beneficial reuse of sediment to support coastal resilience](#) in Ocean & Coastal Management; and (2) [Toward improved coastal sediment management through coordination in California](#) in Shore & Beach. Both were authored by CTP Coordinator and highlight CTP training and technical assistance efforts on the topic of sediment management and coastal resilience.

The CTP Coordinator also continues to serve on the NERRS Science Collaborative and California Shore and Beach Preservation Association boards, among other binational, state, and regional committees/advisory boards.

TASK: STEWARDSHIP PROGRAM

**Lorena Warner-Lara, TRNERR Assistant Reserve Manager,
California State Parks**

1. Habitats downstream of the Goat Canyon Sediment Basin protected from catastrophic sedimentation and trash inundation

Engineering/Environmental Resources Group Inc. excavated approximately 20,000 cubic yards of deposition material from the Upper Goat Canyon Sediment Basin in fall 2020.

Assistant Reserve Manager continues working on the *Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project* with State Coastal Conservancy and consultant (Dudek) on final design and environmental review. This project will help with long-term stabilization of Goat Canyon activities (*see also Oversight & Implementation*).

2. Sensitive plant and animal species habitat protected

The Stewardship Program maintained fencing and signage along dunes and coastal bluffs with US Fish and Wildlife Service.

3. Critical monitoring needs identified to maintain habitat health and monitor impacts to sensitive species and restoration projects

The Stewardship Program facilitated continued monitoring of CA least tern and Western snowy plover in the dune habitat of the Reserve. Regular plover and tern monitoring will begin in March 2021. This work is largely accomplished through a contract with a private consultant and through our partnership with the US Fish and Wildlife Service staff at Tijuana Slough National Wildlife Refuge.

Supported survey work for annual monitoring of CA gnatcatcher and least Bell's vireo in the Goat Canyon drainage and Bunker Hill. Monitoring will begin again in March 2021.

4. On-going restoration and enhancement projects continue trajectory toward healthy vegetation communities and integrate into functional ecosystem components with continued outreach opportunities

The Stewardship program continues to be down staff, the Stewardship Associate position has not been filled yet, and there are hiring delays due to COVID-19. The Assistant Reserve Manager also works as an Environmental Scientist for the Stewardship Program, however, is not funded by the NOAA award or counted as match.

Retired Annuitant Environmental Scientist continued maintenance of priority restoration sites. Although worked was reduced due to COVID-19 and hard closure of the Park.

Assistant Reserve Manager continued to work with Reserve Manager and Research Coordinator, SWIA Project Manager, USFWS, and project team to support the preparation of the joint EIR/EIS document for the Tijuana Estuary Tidal Restoration Program (TETRP) II Phase I. (*see also Research*)

The 11th Annual [Tijuana River Action Month \(TRAM\)](#) was conducted almost entirely virtually this year with a small number of neighborhood-based community cleanups. During the five weeks between September 12 and October 10, 2020, there were a total of [30 events](#) in the United States and Mexico. The Reserve's Stewardship and Coastal Training Programs coordinated TRAM, but Reserve hosted events were a joint effort among Reserve programs. TRAM events included neighborhood cleanups, virtual tours and environmental workshops, livestreams, and an art contest. Events in the US were hosted by TRNERR, CSP, USFWS, SWIA, Surfrider, I Love a Clean San Diego, Friends of Friendship Park, and Wildcoast. Mexican partners included the Secretaria de Economía Sustentable y Turismo (Baja CA), Tecate Councilwoman Vásquez, Tecate Dirección de Protección al Ambiente, Heineken México, Desembólsate BC, Haciendo Eco, La Cantimplora, LOVACT, Not a Perfect Ecoloco, Proyecto de Educación Ambiental, and Tecate Green. Partial funding for these efforts came from NOAA Marine Debris grants.

Below are the 2020 TRAM results:

12 Cleanup days

131 Volunteers

12,388 Pounds of trash removed

30 Total events

12 TRNERR hosted events

5,994 views - 8 TRNERR livestreams

CSP San Diego Coast District Natural Resources Staff have initiated a stewardship project focused on monitoring, site protection, invasive plant control, seed collection, propagation for restoration of rare plant habitat for Orcutt's liveforever (*Dudleya attenuata ssp. attenuata*) within the Reserve. Approximately, 80 cubic yards of invasive weeds have been removed from the site and the Dudleya plants have been flagged, baseline monitoring was conducted, some temporary fencing was installed, and an irrigation connection was established.

5. Identify public access and safety issues within the Reserve

Stewardship staff supported the Reserve Manager in coordination with public and Reserve partners to identify high priority access issues and, where feasible, worked to maintain and enhance public access at key locations throughout the Reserve.

In response to the COVID-19 pandemic, Reserve Manager continues to work with State Parks District staff to incorporate County and State guidelines in development of Public Safety closures and protocols for the Tijuana Estuary Visitor Center, grounds, and Border Field State Park. Border Field State Park continues to be closed to all public access since March 2020. The Tijuana Estuary Visitor Center continues to be closed; the parking lot and restrooms have been closed intermittently during this period as well. All trails around the Visitor Center reopened in August.

State Parks maintenance staff worked to maintain public use facilities at Monument Mesa, although at a low-level due to COVID-19.

US Fish and Wildlife Service worked to get the fire crew to clear vegetation around priority public access trails around the Visitor Center.

TASK: INVASIVES

**Lorena Warner-Lara, TRNERR Assistant Reserve Manager,
California State Parks**

1. High quality nesting habitat for CA Least Tern and Western Snowy Plover

No actions during this reporting period. Treatment of ice plant is typically completed in January/February.

2. High Quality Habitat for Riparian Birds

Despite delays due to COVID-19 closures, CSP Retired Annuitant Environmental Scientist continued work to increase the footprint of primary treated areas and follow-up on previously treated areas. This year however, castor bean (*Ricinus communis*) extended its coverage, due to the COVID-19 lockdown and higher than normal rainfall. The main plants treated were castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), giant reed (*Arundo donax*) and Tamarisk (*Tamarix ramosissima*) throughout the Goat Canyon drainage this period.

Some annual forbs were mowed before herbicide treatment, as well as 3 to 5 acres of black mustard (*Brassica nigra*). Annual weeds were hand pulled around native plantings. Other plants treated included Russian thistle (*Salsola tragus*), crystalline iceplant (*Mesembryanthemum crystallinum*), mustard (*Brassica nigra*), globe daisy (*Glebionis coronaria*), stinging nettle (*Urtica urens*), bristly ox-tongue (*Helminthotheca echioides*), lens-pod white top (*Lepidium draba*) and fennel (*Foeniculum vulgare*). It was also learned that many of the invasive exotic plants are hybrids and that many of the scientific names are going to be modified.

Appropriate native plants including oaks, pines, cypress, willows, shrubs, and grasses were planted to maintain plant cover.

TASK: TEACHERS ON THE ESTUARY

Marya Ahmad, TRNERR Education Specialist, California State Parks

1. Educators increase their knowledge of and appreciation of estuarine and watershed environments, as well as the necessary skills, to act as stewards of estuarine and watershed resources.

Due to COVID-19, the annual TOTE, typically held in May, was cancelled. A virtual TOTE was planned for late October-early November. The training was designed to include Reserve Education Staff, Research Coordinator and staff, Assistant Manager,

and a curriculum specialist from the San Diego County Office of Education. The team planned a virtual training to take place over five 1.5-hour afternoon sessions spanning a 2-week period and an agenda was finalized. Unfortunately, promotion did not yield much interest and the TOTE was rescheduled to March 2021 to be delivered in the same format.

TASK: RESEARCH COORDINATION

**Dr. Jeff Crooks, TRNERR Research Coordinator,
Southwest Wetlands Interpretive Association**

1. Research by TRNERR staff increases local knowledge

Given COVID-19 restrictions, much of Research Program's work continued to be done remotely, although we now are able to do limited field and lab work. This in-person work has focused in core research and monitoring efforts, such as SWMP. We also continue to use community science platforms, such as iNaturalist, both by contributing observations during (socially-distanced) outings as well tracking what others are finding in local systems of interest.

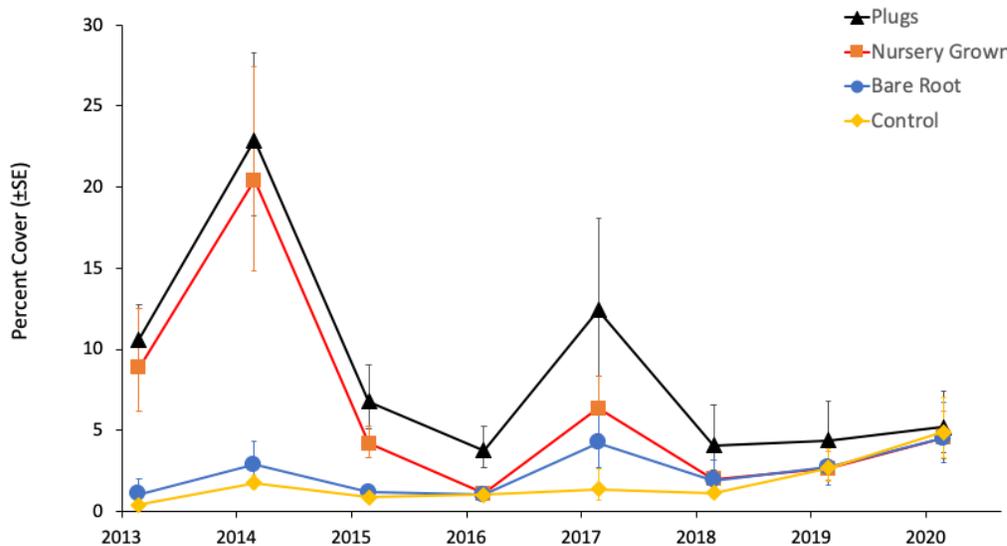
2. Restoration offers opportunities for coupled science / management

The Tijuana Estuary Tidal Restoration Project (TETRP) is the centerpiece of the Reserve's restoration effort. Progress has been slowed due to a variety of factors, including COVID-19. Pre-restoration monitoring has been curtailed, especially activities where teams of employees and volunteers would need to assemble. We were able to maintain a datalogger at the site, complete annual vegetation monitoring, and conduct limited fish sampling with minnow traps. We were not, however, able to do the larger-scale fish and invertebrate sampling using seines, coring, and pitfall traps. We anticipate that we will be able to resume these activities next year, which will still be prior to actual restoration, which is still several years off. The restoration is a costly project, and while there interest by several agencies in seeing this project completed, funds have yet to be secured. We anticipate the EIR / EIS being completed within the next year, however, and continue to work with project partners and the consultant on this document.

During the fall, we were able to complete another year of vegetation monitoring at the South San Diego Bay Salt Ponds (in part using leveraged funding from the US Fish and Wildlife Service). This focused on assessing vegetative cover in experimental plots established during marsh restoration in 2011. The treatments included plantings of cordgrass (*Spartina foliosa*) using the following treatments: nursery grown plants, bare root transplants, sediment plugs, and controls (no planting). Percent cover was assessed visually in the whole-plot, using the relevé method. Overall, in 2020, vegetative cover remains relatively low, with an average total vegetative cover of 18%. *Spartina foliosa* had the highest percent cover, at 8%. *Spartina* cover data from whole plots since 2013 reveal some clear trends with respect to experimental treatments. In the first two years, there were marked increases in cordgrass cover, particularly in the sediment plug and nursery grown treatments. Cover decreased starting in 2015, and

has remained relatively low since. The reason for this decrease is unclear, although *Spartina* loss has also been documented in other systems (e.g. Upper Newport Bay). There is an apparent treatment effect in the first few years after planting, but it has declined over time and is no longer evident in 2020.

Spartina Cover in Experimental Treatments



3. TRNERR is used as a reference site

Salt marsh monitoring, conducted by scientists at the University of California Santa Barbara as part of the mitigation project in north San Diego County, occurred this fall. Also, the Oneonta Slough SWMP station is used to assess the relative performance of the San Dieguito Lagoon mitigation site in terms of dissolved oxygen. The program description and past monitoring reports are available at:

http://marinemitigation.msi.ucsb.edu/mitigation_projects/wetland/index.html.

4. The Reserve offers attractive opportunities for researchers

Although research continued to be COVID-19 and water quality concerns (due to infrastructure failures and polluted transboundary flows which continued throughout the summer), several projects still are making progress. These projects are led by external researchers, but in many cases the Reserve is a collaborator. These projects are listed in the Research and Monitoring Database, but examples are provided below.

- We are continuing the project on hypoxia dynamics, led by Scripps (with TRNERR as a partner). This is funded by NCCOS Coastal Hypoxia Research Project (CHRP). We have been able to access the site and have deployed mussel biosentinels in Oneonta Slough (in collaboration with researchers at San Diego State University). These mussels are wired to track shell gape and heart rate, and this information will be coupled with abiotic monitoring (including SWMP) to better understand the relationship between environmental conditions (such as hypoxia) and biological responses of individual organisms.
- The NCCOS Ecological Effects of Sea Level Rise (EESLR) project led by the State Coastal Conservancy and with TRNERR as a partner, continues at the Reserve. This is focused on assessing marsh response to climate change in

wetlands throughout Southern California, and the focus for the Tijuana Estuary is determining how habitats to be created as part of TETRP might respond to sea level rise and sediment input from the watershed. This is being informed by a Science Advisory Team.

- The CA Ocean Protection Council and Sea Grant are funding a pilot project on dune restoration. Sampling occurred in the fall, and demonstrated dune-building in response to experimental treatments (placement of a field of shims in the dunes). Seaward expansion of the dune fencing has also permitted enhanced establishment of dune vegetation. This project is led by researchers at Coastal Environments and Coastal Restoration Consultants (the Reserve is an advisor on this).
- Researchers from the Scripps Institution of Oceanography are continuing their study of bioaerosols, including airborne contaminants.
- Studies of contamination in the river and estuary, led by San Diego State University with the Reserve as a partner, are increasing. This work includes analyses of existing data (which was conducted in part by our COAST Program summer intern) and deployment of new monitoring instruments. We have installed the infrastructure to deliver this information in real-time as part of the High Performance Wireless Research and Education Network (HPWREN: <https://hpwren.ucsd.edu/>), and are working to deploy additional sensors alongside our Boca Rio SWMP site. This work intersects with our NFWF-funded project on long-term patterns of pollution-driven change in the estuary.
- Sediment coring occurred in order to examine long-term trends of sediment accumulation, carbon capture, and shifting biotic assemblages in the marsh and on the beach. This was led by scientists at UCLA and CSU Fullerton.

In addition, Dr. Crooks is involved advising or supporting a number of graduate student research projects. Dr. Crooks is committee chair for three students at the University of San Diego, and serves on two additional committees there. He is involved in supporting students from SDSU, Scripps, UCLA, CSU Fullerton, and UC Irvine.

5. Communication of key research findings and perspectives

COVID-19 has dramatically altered how we do meetings and presentations, with in-person meetings between postponed, switched to virtual events, or cancelled. However, Dr. Crooks has continued to be virtually involved in various steering committees and virtual field trips, including:

- Topanga Lagoon Restoration Project
- California Estuary MPA Monitoring Project
- San Diego Bay Living Shoreline
- Los Peñasquitos Lagoon Restoration Planning (with separate funding)
- HiTIDER (History and Topography to Improve Decision-making for Estuary Restoration) - NERRS Science Collaborative project
- NOOC (Native Olympia Oyster Collaborative) – NERRS Science Collaborative project
- Southern California Wetlands Recovery Project
- Tijuana River Action Month (TRAM)

6. Reporting and Database Entry

Progress reports were prepared and submitted, and projects were entered into the Research Database.

TASK: IMPLEMENTATION OF THE SYSTEM-WIDE MONITORING PROGRAM

**Dr. Jeff Crooks, TRNERR Research Coordinator,
Southwest Wetlands Interpretive Association**

1. High quality meteorological and water quality data

NOAA SWMP funding allows SWIA and TRNERR to substantially leverage partnerships to maintain a robust monitoring program that address issues relevant to the Reserve specifically, and the region as a whole. Our partners and funders include California State Parks, the USFWS, the State Coastal Conservancy, the Los Peñasquitos Lagoon Foundation, and National Fish and Wildlife Foundation. We now operate three stations in the Tijuana River Estuary; two of them formal SWMP and one is associated with TETRP (and is being maintained in accordance with SWMP protocols). Two sites are monitored in South San Diego Bay, both SWMP. We also maintain three telemetered sites in Los Peñasquitos Lagoon, which are also being operated in accordance with SWMP protocols. This data is available at <http://torreypines.trnerr.org/>.

We continue to have extended deployments and some missing nutrient samples associated with COVID-19 restrictions and transboundary flows (which is a particular concern because of the presence of SARS CoV-2 in wastewater), although we have now been able to resume a more regular monitoring and maintenance regime due to recent improvements in water quality treatment at the border.

Dr. Crooks continues to serve as Chair of SWMP Oversight Committee, which helps ensure that high-quality data is produced by the Reserves. Disruptions to monitoring programs due to COVID-19 have been a theme since the beginning of the pandemic, and the Oversight Committee and CDMO are addressing these. The health and safety of NERR staff are emphasized, and missing data are being excused where necessary.

2. Understanding of long-term vegetation dynamics and SSAM-1

We were able to conduct (socially-distanced) fall vegetation monitoring and soil sampling. This data is currently being analyzed. We also are working on completing our SSAM-1 plan, and will have that submitted in the coming months.

3. Integration of monitoring with education and outreach programming

The TOTE training has been postponed, but we are working with the Education Program on a virtual event for the spring.

TASK: PROFESSIONAL DEVELOPMENT, TRAINING, PRESENTING

**Dr. Jeff Crooks, TRNERR Research Coordinator,
Southwest Wetlands Interpretive Association**

1. NERRs Integration and Leadership Development

Due to COVID-19, the Annual Meeting transitioned to a virtual event, and Reserve staff participated remotely.

2. Staff development

Participation in conferences has been limited due to COVID-19, and, when it has occurred, it has been virtual.

3. CZMA Integration and Leadership Development

This activity did not occur during this reporting period.

4. TRNERR Staff Program Support and Enhancement

Travel to field sites has been limited during this reporting period, although there has been local travel to field sites.

TASK: INVASIVE SPECIES - APPLICATION OF RESEARCH TO MANAGEMENT

**Dr. Jeff Crooks, TRNERR Research Coordinator,
Southwest Wetlands Interpretive Association**

1. Improved understanding and management of local invaders

We continue to track invasive species part of our vegetation monitoring, using baited minnow traps, and with iNaturalist. We also are beginning more work on the Kurushio Shot Hole Borer, picking up on established research and monitoring in the valley. This is anticipation of receiving funding from our partners at the Navy to continue this work. Dr. Crooks also advises two students at the University of San Diego who work on invasive species, one on the invasive Japanese oyster, *Crassostrea gigas*, and the other on freshwater invasions into Los Peñasquitos Lagoon.

2. Improved regional, national, and international information sharing

Dr. Crooks is Co-President of the Society for the Study of Marine Bioinvasions, and we continue to work with the Local Organizing Committee (at the Smithsonian Environmental Research Center scientists) and the Scientific Steering Committee on the meeting to be held in May 2022. This will be held in Annapolis, MD, and Dr. Crooks will be working to engage NOAA and the NERRS in the conference.

TASK: MARGARET A. DAVIDSON FELLOWSHIP SUPPORT
Dr. Jeff Crooks, TRNERR Research Coordinator,
Southwest Wetlands Interpretive Association

1. Successful implementation of Davidson Fellowship

We are excited that Nancy Torres, the University of San Diego M.S. student who is our new Davidson Fellow, has begun her project at the Reserve. Dr. Crooks is her thesis advisor, and planning is underway for the commencement of her field work. To date, Nancy has been doing historical data analysis and been participating in virtual TRNERR Research team meetings. She also participated in the NERRA meeting, and Dr. Crooks attended and presented at the virtual mentor training over the summer.