

Tijuana River National Estuarine Research Reserve (TRNERR)

Program Manager Reports

Report Period: July 1, 2022 through December 31, 2022

TASK: OVERSIGHT AND IMPLEMENTATION OF RESERVE OPERATIONS

Chris Peregrin, TRNERR Reserve Manager, California State Parks

1. Coordinated Implementation of Reserve Programs

The Reserve Management Team worked with the TRNERR Program Managers to respond to the Necessary Action and the Recommendations identified in the Reserve's 312 findings (see *Tijuana River NERR Section 312 Evaluation Status Report*).

The TRNERR Management Team coordinated reporting and submittal for Performance Progress Report(s) for NOAA Award NA21NOS4200054.

The Reserve Manager contributed to the NERRA summer meeting on August 23 and Fall Board meeting October 18.

The Reserve Manager contributed to the NERR Manager Meetings held July 13,14.

The Reserve Manager attended the NOAA West Coast Managers meeting.

The Reserve Manager contributed to the CA NERRS bi-monthly check-in.

The TRNERR Management Team and Program Managers hosted the quarterly TRNERR Advisory Council meetings on July 27 and November 1; the July 27 meeting also served as the public meeting for the NOAA 312 evaluation.

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

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

The Management Team met with the TRNERR Program Managers approximately weekly in virtual format for this term of the grant to ensure programmatic coordination.

The Reserve Manager attended weekly CA State Parks San Diego Coast District Manager Team Meetings. One of the goals of this engagement is to ensure effective integration of Reserve programs with CA State Parks operations.

The Management Team worked with the CA State Parks Administrative Team to recruit, interview and hire a new Staff Services Analyst to support the administration of the

TRNERR and San Diego Coast District operations. Welcome Christina Rayburn. Funding for this position comes from CA State Parks San Diego Coast District operations and the TRNERR Operations award. Christina contributes to the TRNERR Management Team.

The Management Team worked with CA State Parks Administrative office and SWIA Administrative Director to hire new Stewardship support staff. Welcome Demmuel Eslava and Ransses Lopez. Demmuel contributes to program integration with a portion of time dedicated to the Research Program and a portion of time dedicated to the Stewardship Program. Ransses is primarily committed to the Stewardship Program with funding support through a grant from CA State Parks for wildfire resilience and also NOAA's Marine Debris Program with some support through the TRNERR Operations Award. Both employees provide examples of Reserve effort to utilize both CA State Parks and SWIA employment to diversify and stabilize funding opportunities and elevate hourly rates in effort to approach living wage for employees with seasonal employment classifications.

The TRNERR Management Team worked with the Education Program and CA State Parks Administration to recruit, interview, and hire a new member of the education and visitor services program. Welcome Valeria Viera. Valeria is supported through the TRNERR Operations award and is primarily focused on visitor services at the visitor center and some additional work with the Research Program.

The TRNERR Management Team worked with the TRNERR Program Managers to further the Draft TRNERR Comprehensive Management Plan toward submittal to NOAA OCM.

COVID-19 continues to spread in the San Diego region resulting in significant operational response and adjustments. The Management Team continues working with CA State Parks management, and TRNERR Program Managers to implement a safe environment for staff and visitors of the Reserve.

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 operating budgets.

The Reserve Manager supported the Assistant Reserve Manager and CA State Parks Administration staff to manage the Nelson Sloan Quarry Restoration Project grants and administration process. The Nelson Sloan Quarry project is funded through three grant allocations from the State of California- one from CA Department of Water Resources (via San Diego County Water Authority) and the other two through the State Coastal Conservancy.

The TRNERR Management Team worked with the TRNERR Program Managers to evaluate options for NOAA IJA funding support. A funding request was advanced

through SWIA to support capacity building toward a future award request addressing implementation activities.

3. Protection and Restoration of the Tijuana River Valley

The Reserve Manager worked with contractor ERRG on the Goat Canyon Sediment Basin maintenance activities. During this reporting period efforts focused on final haul-off the removal activities for the deposition material excavated in Fall 2021 and also excavation of the 2022 deposition material (*see also Stewardship*). Approximately 20,000 cubic yards of material was hauled off-site during this period; the deposition material for this season's work is being beneficially reused for concrete and asphalt production, and also nursery/landscape products. Approximately 20,000 cubic yards of material was excavated from the basins and placed on the processing pad in Fall 2022.

The Reserve Manager initiated efforts with CA State Parks Administration to update contract documents for the Goat Canyon Sediment Basin maintenance- the project must be re-bid for FY 23.

The Management Team supported CA gnatcatcher and least Bell's vireo surveys for the 2022 nesting season (*see also Stewardship*).

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 alignment of the Nelson Sloan Quarry Project with the TETRP Project (*see also Stewardship*) and preparing the Draft EIR for redistribution.

The Reserve Manager worked with TRNERR Binational Liaison to contribute to IBWC Binational Core Group meetings for the IBWC Minute 320 effort.

The Management Team continued work with the TRNERR Research Coordinator, SWIA Project Management, US Fish and Wildlife Service, and project consultants to further the design for the Tijuana Estuary Tidal Restoration Program (TETRP) II Phase I project. This project seeks to restore roughly 80 acres of salt marsh within the Reserve. During this period the project team prepared for and held a public meeting and released the Draft EIR/EIS for public review (*see also Stewardship and Research*).

The Reserve Manager continued engagement with USEPA to identify issues with water and wastewater infrastructure that contribute toward cross-border pollution, and to prioritize improvements that will address the wastewater and freshwater discharges into the Tijuana River. During this award period, the TRNERR Management Team attended information meetings and collaborated with CA State Parks Executive Staff for review and signature on a comment letter for the USEPA's Draft Environmental Impact Statement outlining priority projects for the \$300million allocation in the federal government through the United States-Mexico-Canada Agreement. The Reserve

Manager serves on the Eligible Public Entities Coordinator Group (EPECG; 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 and Assistant Reserve Manager contributed to the technical advisory committee toward the development of a Tijuana River Valley Sediment Management Plan. This effort is led by the City of Imperial Beach, with consultant Dudek, and funded by the State Coastal Conservancy.

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 (“Using Green Engineering Techniques to Restore Coastal Sand Dunes in Border Field State Park, San Diego, California”) involving California Ocean Protection Council, California Sea Grant Program, and the University of Southern California Sea Grant Program. During this award period site monitoring continued and the project team continues exploring project expansion with additional funding sources.

The Reserve Manager worked with the Assistant Reserve Manager, CTP Coordinator, CTP Associate, Research Coordinator, Volunteer Coordinator, and Binational Liaison to continue work on the NOAA Marine Debris North American Marine Debris Prevention and Removal grant opportunity. This grant is supported through USMCA funds (see *also Coastal Training Program*). During this award period the Reserve Manager worked with CTP and Stewardship to support characterization of the trash captured behind the Goat Canyon Sediment Basin trash booms. The characterization effort is funded by NOAA’s Marine Debris Program through a grant to SWIA.

The TRNERR Management Team worked with CTP, Research and Education to develop a grant application to NOAA’s Marine Debris Program to support upgrades to the Goat Canyon Sediment Basin trash boom infrastructure, and to increase education and outreach around the Reserve’s efforts to control land-based marine debris.

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

The Reserve Management Team worked with CA State Parks Natural Resource team at the San Diego Cast District on planning and preparation of an *Arundo donax* removal project in Border Field State Park. Supported by wildfire response funding, this project is in early planning phases and anticipated to continue for several years and aimed at treating acres of Reserve land impacted by this invasive plant.

The Reserve Manager attended several information briefings hosted by US Customs and Border Protection focused on new design and repairs to the Border Infrastructure System in the area of Monument Mesa. The Reserve Manager worked with CA State Parks Executive Staff for development and submittal of a comment letter to US Customs and Border Protection.

The Reserve Management Team collaborated with CalRecycle on agreements to haul off waste tires from the Reserve. The Goat Canyon Sediment Basin can capture up to 5000 waste tires annually from cross-border flows.

The Reserve Manager contributed to final review and a public meeting for the Tijuana River Watershed Water Quality Improvement Plan; public meeting held on October 18.

The Reserve Manager and CTP worked with CA State Parks on an on-going effort to develop a climate change vulnerability assessment and adaptation plan addressing the San Diego Coast District area, including the TRNERR.

4. Development of TRNERR Partnerships

The Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project has offered additional opportunity to strengthen existing partnership and develop new working relationships, including:

- Working relationships with the County of San Diego, Department of Parks and Recreation have been strengthened, and collaboration toward future partnerships for sediment management has increased.
- Consultation processes with Kumeyaay Native Americans have included many virtual meetings and also some site visits. These efforts have deepened Reserve understanding of Kumeyaay interest in sediment management in the Tijuana River Watershed. We expect this consultation process to grow into stronger working relationships and shared management strategies.
- Wildlife regulatory agencies have taken an interest in the project, especially in relation to the presence of the Federally Endangered Quino checkerspot butterfly. The presence of this species in this area was first made known through surveys in support of the project. We expect our working relationship with the USFWS and CDFW to strengthen as we continue to develop this project toward implementation.

The TRNERR Management Team and Program Managers supported a TRNERR site visit for CA Assemblymember David Alvarez on July 21.

The TRNERR Management Team contributed to learning sessions with newly hired CA Coastal Commission Federal Liaison Ashley Reineman.

The TRNERR Management Team collaborated with CA State Parks Executive staff and the USEPA and the IBWC to plan and host a signing ceremony at the TRNERR visitor center on August 18 for two international agreements addressing pollution on the international border. The TRNERR Manager provided welcoming remarks.

The TRNERR Management Team and Education staff worked with NGO partner Parks California to support an outreach event at the TRNERR Visitor Center. The event was

held on September 15 and included guided education trail walks for invited public, including Girl Scouts and their families from the San Diego region.

The TRNERR staff said goodbye, and congratulations on retirement, to USFWS Refuge Manager Brian Collins. Brian worked at the Tijuana Slough National Wildlife Refuge for many years and has been an amazing partner for management of the TRNERR.

The Reserve Manager supported a TRNERR site visit for CA State Parks Superintendents from the Southern California area on October 26.

The TRNERR Management Team collaborated with TRNERR Program Managers, CA State Parks Natural Resources, NOAA OCM and CA Coastal Commission to host a CA Coastal Commission field visit and networking opportunity at TRNERR on November 3. The day included discussions around existing and upcoming coastal project in the San Diego region and efforts to improve partnership and collaboration.

The TRNERR Management Team collaborated with the TRNERR Program Managers, CA Coastal Conservancy, and NOAA OCM to plan and host a TRNERR site visit for Nicole LeBoeuf, Assistant Administrator for NOAA's National Ocean Service (NOS) on November 17.

The Reserve Manager worked with CA State Parks to host CA State Parks staff from Channel Coast District for a coastal management exchange field day.

5. Oversight of Reserve Facilities and Public Access Opportunities

The Reserve Management Team worked with State Parks Administration staff, and State Parks maintenance crew, to manage and maintain the TRNERR headquarters and Reserve facilities.

The Reserve Manager continued collaboration with CA State Parks law enforcement and San Diego County Parks to ensure operational alignment with the new County campground in the Tijuana River Valley.

The Reserve Manager coordinated with CA State Parks Southern Service Center design team to further efforts focused on the repair of Monument Road in Border Field State Park. During this review period team focused on update and amendments to the scope of work and contract for the planning and design consultants.

The Reserve Manager continued to support the TRNERR Coastal Training Program on the newly funded Resilient Roads and Reserves project. This project will highlight efforts to address coastal flooding and infrastructure issues at the three CA-based NERRS (*see also Coastal Training Program*).

6. Reserve participates in Section 312 Evaluation

From July 25 to 28, 2022 the Reserve participated in a Section 312 program evaluation. Reserve staff participated in meetings with the evaluation team to plan, develop an

agenda for the week, and prepare for the evaluation. Reserve staff coordinated with planning for and participating in meetings with stakeholders, as well as a general public meeting. The Reserve Program Managers reviewed and commented on draft evaluation findings.

TASK: EDUCATION PROGRAM

Anne Marie Tipton, TRNERR Education Coordinator, California State Parks

1. Implementation of Education Programs

A. Formal and Non-formal Teacher Training

Reserve Educators conducted a Tijuana Estuary Explorers training for five teachers in September. It was hybrid with two one-hour sessions and one one-hour in-person session.

The Reserve had two MARSH trainings in October with four teachers total.

B. Student-centered Formal and Informal programs

TRNERR had four elementary and one middle and high school programs the second half of the year. Elementary programs are either M.A.R.S.H. (Marsh Awareness with Resources for Slough Habitats) or Tijuana Estuary Explorers. One of the original education programs of the Tijuana Estuary, M.A.R.S.H. was developed to introduce students to basic wetland and upland ecology and cultural history. The program has two components that vary depending on the grade. Tijuana Estuary Explorers” is an in-class and field trip program, targeted at 3rd - 6th grade, incorporates reading, writing, and science into four comprehensive activities about the Tijuana Estuary and its watershed.

Middle and high school program activities are selected from 10-12 rotations that are based on SWMP and other monitoring and restoration efforts. The most popular rotations are weather station and water quality, using analogue measures, and invasives service-learning, where students get to remove invasive exotic plants. Classes came from the local San Diego Unified School District.

Reserve Educators continued carrying out their 3 virtual programs through California State Parks, Parks Online Resources for Teachers and Students (PORTS). The Reserve delivered two high school level Detecting a Changing Climate (DACC), nine Salt Marshes and Climate Change to middle schoolers, and 30 Salt Marsh Secrets to elementary students. The programs were mostly conducted as PORTS on-demand programs serving individual classrooms. A total of 1,741 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/PORTSon-demand/tijuana-estuary-natural-preserve>.

C. Interpretation

Lunchtime Live, a weekly Facebook Livestream that began in April 2020, continued during this period. There were 10 programs delivered with a typical length of 10-25 minutes each and totaling 1,639 views. The program was designed to provide outreach and interaction with the public since in-person bird and nature walks had ceased. Even with ongoing docent walks, the series still has 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](#).

YMCA Camp Surf located in the northern part of Imperial Beach, CA has taken their residential students to the reserve for decades. For the first time in the summer of 2022, Reserve Educators provided 30-minute virtual introductions to eight groups of approximately 25 middle school students so that they could have a blended learning experience and become more acquainted with the reserve before they brought campers here in-person. The instructors at Camp Surf reported that it enhanced the field-based learning of the students.

After almost seven years, off and on, the Interpretative Master Plan and Action Plan was completed and approved by all the signatories for California State Parks. The next step is creating an Annual Interpretation Implementation plan for the 2023 calendar year.

D. Visitor Services

The Tijuana Estuary Visitor Center opened on June 23, 2021, after being closed for 15 months. Visitor Center attendance was 3,740 during this reporting period. Visitor Services Park Aide Valeria Viera started in September. She is also assisting the Senior Park Aide with managing the Friends of San Diego Refuges bookstore.

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

The first docent-led walks took place in July 2021. Since then, the Reserve has resumed our normal Saturday Nature Walks (2nd/4th) and Sunday Bird Walks (1st/2nd/3rd/5th). We have a new youth bird walk docent, Ares, who conducts the 2nd Sunday Bird Walk. The Volunteer Coordinator and Education Specialist worked to plan and host Tijuana River Action Month together with the Stewardship and Coastal Training Programs and the Tijuana River Action Network partners (see Stewardship and CTP).

4. Environmental education and interpretive capacity and leadership roles

The Education Coordinator attended several BEETLES environmental education trainings.

Task: COASTAL TRAINING PROGRAM (CTP)

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

1. Deliver training and technical assistance to coastal decision-makers

CTP delivered trainings in this reporting period, notably, in collaboration with the San Diego Regional Climate Collaborative “Advancing a connected and collaborative climate action community.” This Network Meeting featured presentations from the City of San Diego on their recently adopted Climate Action Plan as well as a presentation on upcoming climate and resilience funding opportunities and programs. At this workshop, San Diego climate professionals and practitioners had the opportunity to connect, share best practices and help the climate collaborative set a program vision for the new year. Other trainings in this reporting period include a workshop “Agua y Plantas Nativas Superando Fronteras” that focused on increased cross-border dialogue on water issues and their impact on the U.S.-Mexico border. Additionally, there was an emphasis on native plants and their role in sediment stabilization and green infrastructure in the San Diego-Tijuana border region. Results from these and other post-workshop evaluations can be found in the OCM performance monitoring database.

Moreover, other trainings offered in the Mexican section of the watershed (Tijuana and Tecate) during this reporting period include workshops for youth about single-use plastics and circular economy at Cetys Universidad, Universidad Autónoma de Baja California- Tecate campus and at summer camp program for indigenous children. These workshops were supported by the Duos project (“Improving socio-ecological resilience through marine debris prevention and removal in U.S.-Mexico”) funded by the U.S.-Mexico-Canada Agreement and NOAA Marine Debris Program. During this reporting period, CTP worked jointly with a non-profit partner Inpacvi, to design and apply a site assessment in the Kumeyaay community at San Jose de la Zorra (Ensenada, MX) to explore areas for collaboration related to the project’s circular economy component.

In addition, CTP has presented on nature-based solutions and marine debris related topics to coastal decision-makers, including to the British Embassy in Mexico, Federal Congress in Mexico (Fausto Gallardo), the Tijuana Environmental Subcommission, and the Secretaría de Desarrollo Agrario (Territorial y Urbano), among others. In September, CTP participated in the 7th International Marine Debris Conference in Korea, the world’s longest-running international conference series dedicated to the issue of marine litter and plastic pollution, offering two presentations about the community circular economy in Tijuana and the binational emergency response guide.

Moreover, in November CTP was invited to participate in a session “Solid Waste and

Marine Debris in the Border Region: Technologies and Solutions” during [RE:BORDER 2022](#), the fourth annual conference that explores key regional issues and innovative solutions. In October of this year, CTP received recognition from The UN Environment Programme Country Office in Mexico for addressing plastic pollution.

During this reporting period, CTP has been conducting outreach about actions and pollutants that negatively impact the Tijuana River Watershed and the Pacific Ocean, participating in radio shows, such as UABC radio, Sintesis Tijuana, and a podcast developed by Azul, a grassroots organization working with Latinos to conserve marine resources.

CTP continued to provide ongoing technical assistance to the Baja California State and local Governments, supporting the single-use plastic ban within the Tijuana government agencies.

CTP also participated in the CZM, NERR, OCM Training Collaboration Workgroup to design and deliver a training needs assessment among the California Coastal Zone Management agency staff - the State Coastal Conservancy, Coastal Commission, and the Bay Conservation Development Commission. Results from that assessment are currently being analyzed to determine most immediate topics and delivery strategies in the next reporting period. Additional, and varied, technical assistance was provided to coastal decision-makers in this reporting period, including facilitating meetings, providing survey and evaluation assistance, offering field experiences for NOAA and other coastal leadership, and assisting organizations with grant writing, plan/policy revisions, and strategic/action planning. A complete catalog of technical assistance can be found [here](#).

Several grant awards were received and commenced in this reporting period including through the NERRS Science Collaborative transfer project “[Transferring Knowledge to Understand the NERRS Niche in Addressing Aquatic-Bound Debris](#)” and the [San Diego Foundation \(TSDF\) Binational Resilience Fund \(BRI\)](#). The inaugural BRI grants funded through TSDF will address immediate needs in coastal preservation and improve the ability of decision-makers to respond to climate-related impacts along the Cali-Baja coastline.

The CTP Coordinator was nominated as the Vice President of the National Estuarine Research Reserve Association in this reporting period and continues to serve on various regional advisory bodies including the San Diego Regional Climate Collaborative as well as other NERR system level working groups including on topics of plastics, human dimensions, equity, and disaster resilience. CTP participated in NOAA’s federal 312 evaluation to describe the significance of community connections in the CTP portfolio. Additionally, CTP engaged in the 2023 California Sea Grant Fellowship process in order to get matched with a fellow for the upcoming year. This is the first time TRNERR has hosted a fellow who will begin their term in the next progress period to advance CTP efforts.

2. Report training and technical assistance outcomes

In this reporting period, after training delivery, CTP administered post-workshop evaluations, collected, and analyzed data, and submitted it into the performance monitoring database. This detailed technical assistance catalog by award year can be found [here](#). The technical assistance spreadsheet is integrated with data from FY16 until FY22 (reporting period 1). The catalog includes a separate worksheet with ongoing CTP technical assistance.

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. exported approximately 20,000 cubic yards of sediment from the processing pad and excavated approximately 22,000 cubic yards of deposition material from the Goat Canyon Sediment Basin in Fall 2022.

Assistant Reserve Manager continues working on the Nelson Sloan Quarry Restoration 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 and can provide a receiving site for future sediment excavated from the Tijuana Estuary Tidal Restoration Program (TETRP). (*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 the CA least tern and Western snowy plover in the dune habitat of the Reserve. Regular plover and tern monitoring will begin again in March 2023. 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 February/March 2023.

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

During this period, the Reserve Manager, Assistant Reserve Manager, SWIA Administrative Director and CA State Parks hired two Stewardship Maintenance Aides – Ransses Lopez and Demmuel Eslava (*see also Oversight and Implementation of Reserve Operations*). One of the positions is funded through a combination of funds from the NOAA Marine Debris and the CA State Parks Wildlife and Forest Resilience programs. The other is a split position between the Stewardship (CA State Parks) and Research (SWIA) programs funded by this NOAA operations award and based on the split position model that has been successful at TRNERR in the Education and Research program and serves to provide more integration and connection between the programs. The Assistant Reserve Manager also works as an Environmental Scientist for the Stewardship Program, however, is not funded by this award or counted as match.

Retired Annuitant Environmental Scientist and Stewardship Maintenance Aides continued maintenance of priority restoration sites.

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. During this reporting period, the California Department of Parks and Recreation and the U.S. Fish and Wildlife Service worked through internal agency approvals for the release of the Draft Environmental Impact Report/Environmental Impact Statement on August 19, 2022. This was followed by work on response to comments and other work towards agency approvals for the Final EIR/EIS which is expected in spring of 2023. TETRP II Phase I would restore approximately 82 to 87 acres of salt marsh, mudflat, tidal channel, transitional/upland habitats on portions of both Border Field State Park and the Tijuana Slough National Wildlife Refuge. (*see also Oversight and Implementation and Research*)

The thirteenth annual Tijuana River Action Month (TRAM), a series of education and stewardship events held during September and October to benefit the Tijuana River Watershed, ran from September 17th to October 15th and was mostly in-person. TRAM 2022 featured **20 events** and included clean-ups, environmental workshops, habitat restoration and tree planting. A total of **864 people** participated and cleared over **70,000 pounds of debris** (some by heavy equipment). Some events were canceled due to rain events. Reserve staff from the Stewardship, Education, and Coastal Training Programs were all involved in the facilitation of TRAM with CTP heading up the work in Tijuana and Tecate. Events in the US were done in partnership with TRNERR (cross-sectoral), CSP, USFWS, SWIA, Friends of Friendship Park – Binational Friendship Garden, I Love a Clean San Diego, Tijuana River Valley Equestrian Association, Surfrider San Diego - Clean Border Water Now, Sierra Club Borderlands, UCSD Center on Global Justice, and the CA State Parks Foundation. Mexican partners included Proyecto Fronterizo de Educación Ambiental, Nación Verde, Km1, Plastic Oceans, Haciendo Eco, TAPTI, CICEA Papalotzin, Costasalvaje/Wildcoast, Grupo de Ecoturismo Siñaw Kuatay,

INPACVI A.C., Universidad Autónoma de Baja CA, el Club de Leones Tecate, Mujer Verde, and Conalep Tecate. Funding from the NOAA Marine Debris Program helped make this year's TRAM possible.

CSP San Diego Coast District Natural Resources Staff and the TRNERR Stewardship Maintenance Aides continued work on 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. In October, as part of TRAM and in partnership with the CA State Parks Foundation, the TRNERR Stewardship Staff and Volunteer Coordinator hosted a volunteer event in the project area to help restore coastal sage scrub habitat. The focus was on the removal of *Limonium perezii* and *Carpobrotus edulis*.

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.

State Parks maintenance staff worked to maintain public use facilities at Monument Mesa.

The Reserve Manager worked with the TRNERR Program Managers, and State Park District Chief Ranger, to improve communication around water quality issues and beach closures initiated by the San Diego County Department of Environmental Health.

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

CSP Retired Annuitant Environmental Scientist treated 170 colonies of ice plant (*Carpobrotus edulis*) throughout the dune systems at Border Field State Park. The table shows a comparison over the last ten years. This year like last continued to be low. The work was completed in December 2022 using a glyphosate-based nonselective herbicide approved for use near water.

2023	170 colonies
2022	192 colonies
2021	546 colonies
2020	386 colonies
2019	418 colonies
2018	Too many to count
2017	375 colonies
2016	310 colonies
2015	500 individuals
2014	886 individuals

Foliar applications involve spraying the leaves of target species with a low concentration mixture (1.5-5%) of herbicide in accordance with label instructions. Foliage is covered thoroughly, but not to the point of run-off. Treatment days are determined based on the weather forecast, ideally when there is little to no wind (5 mph or less) and rain is not

expected for 8 to 12 hours. These conditions minimize drift and allow the sprayed vegetation to dry completely.

2. High Quality Habitat for Riparian Birds

CSP Retired Annuitant Environmental Scientist and the Stewardship Maintenance Aides continued work to increase the footprint of primary treated areas and follow-up on previously treated areas. 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. Manual removal strategies, including hand pulling, saw, weed-wacker, and mower were used in addition to Roundup Pro Concentrate, and Pathfinder II, post-emergent, broad-spectrum herbicides.

In October 2022, American Conservation Experience, under contract with California State Parks, cut and removed 600 cubic yards of giant reed (*Arundo donax*) from Border Field State Park. The crew cut down the giant reed with chainsaws and weed whips, then transported the cut material to dumpsters. This project was funded by and is part of the Wildfire and Forest Resilience Program and will remove 2.4 net acres of giant reed over 4 years to reduce fuel loading and continuity, and to improve habitat structure for the Least Bell's Vireo. Work was supervised by the Reserve's Stewardship Maintenance Aide, R.Lopez.

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

Anne Marie Tipton, TRNERR Education Coordinator, 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.

Sixteen educators attended the fall 2022 hybrid Teachers on the Estuary training in November. There was one TOSA (Teachers on Special Assignment - science), two elementary, two middle school, two informal, and ten high school teachers. The TOTE consisted of three virtual afterschool sessions and one in-person day. They had several

asynchronous assignments including watching an hour-long watershed video and doing the SWMP tutorial to prepare for the Data stories session.

Research and CTP staff participated. The San Diego County Office of Education science coordinator helped with planning, production of virtual sessions, and developing the asynchronous portion. The in-person day covered Estuaries 101, data literacy, SWMP Scenarios, and a reserve tour to Border Field State Park along the border.

TASK: RESEARCH COORDINATION AND IMPLEMENTATION

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

1. Research by TRNERR staff increases local knowledge

The Research Program continued to advance the outcomes identified in the operations award, although there are some lingering (but limited) challenges associated with COVID restrictions (primarily resulting from time away from the office associated with COVID infection or symptoms). The Research Program has been able to increasingly engage our volunteers in some field work, and they have helped with processing soil samples as well as collecting phytoplankton samples for a state-wide [monitoring program](#). TRNERR also had a summer intern through the [California State University COAST](#) program, Nour Nuhaily, from Cal State San Marcos. N. Nuhaily used community science (iNaturalist) to look at the phenomenon of tropicalization - the appearance of warm water species in Southern California.

2. The Reserve offers attractive opportunities for researchers

Research projects are listed in the Research and Monitoring Database, and include:

- The [NCCOS Coastal Hypoxia Research Project](#), a partnership with Scripps, SWIA/TRNERR, and San Diego State University, which is in its final few months. This project is leveraging long-term TRNERR-based monitoring in both the Tijuana Estuary and Los Peñasquitos Lagoon to consider to examine the effects of lagoon closure and other drivers on oxygen dynamics. We are also delivering this information to local resource managers, and are planning a symposium on this and related topics in February.
- Our NERRS Science Collaborative grant (Luke Miller, SDSU, as PI), [Habitat Heartbeats](#), is expanding on the use of these biosentinels. We are working with an aquaculture facility in San Diego Bay to deploy these shellfish in that context, and deployments are also occurring in Los Peñasquitos Lagoon and a restoration site in San Diego Bay.
- Researchers from San Diego State University continue to use one of our SWMP sites as a focal area for an expanded suite of monitoring with their deployed dataloggers (e.g. tracking CDOM and tryptophan), and are also examining groundwater dynamics.

- We finished a project on habitat change in the broader Tijuana River Valley, with partial support from the US Navy and US Fish and Wildlife Service. A StoryMap based on these results of this is being finalized.

In addition, Dr. Crooks is involved advising or supporting a number of graduate student research projects. Dr. Crooks is on several committees and is chair for students at the University of San Diego. He is also involved in supporting students from a variety of universities, including SDSU, Scripps / UCSD, UCLA, and UC Irvine.

3. Restoration offers opportunities for coupled science / management

The Draft EIR / EIS for the Tijuana Estuary Tidal Restoration Project ([TETRP](#)) was released, and we have received and responded to public comments. This is moving on to the State and Federal agencies for approval. We are also preparing a proposal for final design, engineering, and permitting, to be submitted to the Coastal Conservancy in February. The Reserve Research Program also continue to conduct pre-restoration monitoring in the TETRP footprint, focusing on vegetation and large fish/ invertebrates using minnow traps.

TRNERR has completed a decade's worth of monitoring at the [South San Diego Bay Salt Ponds Restoration](#) site, with the latter years focusing on vegetation development. We have analyzed long-term trends, and prepared a final report for the US Fish and Wildlife Service. This noted a number of patterns, including what appeared to be a dramatic response of the restored marsh to the elevated sea levels associated with an El Niño in 2015-2016, which also coincided with a major drought.

4. TRNERR is used as a reference site

TRNERR is a reference site included in the [mitigation monitoring program for the impacts of the San Onofre Nuclear Generating Station \(SONGS\)](#). Another round of fish and invertebrate sampling occurred in the fall (conducted by University of California Santa Barbara scientists), and data from TRNERR SWMP loggers is also used as part of the performance assessment for the restored site in northern San Diego County.

5. Communication of key research findings and perspectives

Dr. Crooks has continued to be involved in various steering committees and field trips. Activities during this reporting period include:

- Los Peñasquitos Lagoon Restoration Planning (with separate funding)
- HiTIDER (History and Topography to Improve Decision-making for Estuary Restoration) - NERRS Science Collaborative project
- Advise on Topanga Lagoon restoration
- Field trip for students associated with the National Ocean Sciences Bowl
- [Interview on dune restoration](#) for the Denver Museum Nature and Science – Institute for Science and Policy
- [Paper](#) published examining dynamics associated with mouth closure in Los Peñasquitos Lagoon
- [Paper](#) published on relationships of benthic fauna to mouth closure and hypoxia.

Also, Dr. Kellie Uyeda has for a second year in the Water Justice Exchange Ideation Collaborative hosted by the University of San Diego. This event serves to connect environmental leaders in brainstorming sessions to explore solutions to water justice challenges. Approved projects are then provided seed funding to address these water justice challenges. She collaborated with San Diego Audubon Society and San Diego Coastkeeper to submit a proposal to expand community-based monitoring of fish and water quality within Kendall-Frost marsh in Mission Bay, CA. This proposal was approved and work on the project has begun.

In addition to the Water Justice Exchange, Dr. Uyeda has also served on the organizing committee of Love Your Wetlands Day at Kendall-Frost marsh for the last two years. She coordinates the marsh walk portion of the event, in which the general public picks up trash within the marsh as part of a guided tour. This year she has added a series of scientific talks, so that volunteers collecting trash also have the opportunity to learn about marsh ecology from a local estuarine scientist. Love Your Wetlands Day takes place this year on Feb 4th.

6. Reporting and Database Entry

Database was updated as necessary.

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 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 the National Fish and Wildlife Foundation.

The Reserve operates 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). One of these sites, Boca Rio, is associated with an enhanced suite of monitoring conducted by Reserve partners (see above). This includes a [web camera](#) deployed as part of the High Performance Wireless Research and Education Network (HPWREN). Two sites are monitored in South San Diego Bay, both SWMP. The Research Program also maintain three telemetered sites in Los Peñasquitos Lagoon, which are also being operated in accordance with SWMP protocols. This data is available at torreypines.trnerr.org.

These data are used for a variety of research and management efforts, including management of tidal inlets (see CHRP section as well). Monitoring data are also being used to inform active restoration planning and post-construction monitoring, including TETRP, SONGS mitigation monitoring, South San Diego Bay salt ponds restoration,

and Los Peñasquitos Lagoon restoration as part of a TMDL (Total Maximum Daily Load) associated with excess sediment and freshwater.

Dr. Crooks continues to serve as Chair of SWMP Oversight Committee, which helps ensure that high-quality data is produced by the Reserves.

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

TRNERR conducted annual vegetation monitoring in the Tijuana Estuary the fall, with the aid of volunteers. These sites include transects sampled using SWMP biomonitoring protocols. Among other things, this data aided in interpretation of patterns in the south San Diego Bay salt pond restoration.

3. Integration of monitoring with education and outreach programming

The Reserve conducted a TOTE training in the fall, which included both in-person and virtual activities. SWMP remains a centerpiece of TOTE activities (see Education program report for more details).

TASK: PROFESSIONAL DEVELOPMENT, TRAINING, PRESENTING

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

1. NERRs Integration and Leadership Development

Dr. Crooks, E.Holliday, L.Warner-Lara, and CTP Associate E.Freitas attended the NERRS/NERRA annual meeting in Seattle. This meeting led to information sharing among disciplines and increased consistency of approach and strategies among all Reserves.

2. Staff Development

This activity did not occur during this reporting period.

3. TRNERR Staff Program Support and Enhancement

Travel to field sites and local meetings occurred during this time period.

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

A central element of the SWMP vegetation monitoring is to examine the distribution and abundance of invasive plants, which will be important in the development of a planting plan for the TETRP site. The Tijuana River Valley habitat change work also focused on the impact of the invasive [Kuroshio Shot Hole Borer](#) beetle as well as on the invasion of the plant *Arundo donax* in on riparian habitats (in part supported, with non-matching funds, by the Navy).

Dr. Crooks is adjunct faculty in the Department of Environmental and Ocean Sciences at the University of San Diego, and advises students who are working on invasive species. This includes a study of tissue contaminants in native and invasive snails in the Tijuana Estuary (by our Davidson fellow, Nancy Torres), and another project is starting to examine the relationships between plants and spiders (including those between non-native species).

2. Improved regional, national, and international information sharing

The 11th meeting of Society for the Study of Marine Bioinvasions is to be held in Baltimore, Maryland, in May, 2023. Dr. Crooks is co-president of the society, which focuses on sharing of information on invasive species research and management from across the world. In addition, the recently published [paper](#) on responses to mouth closure and hypoxia also included consideration of invasive species.

TASK: MARGARET A. DAVIDSON FELLOWSHIP SUPPORT

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

1. Successful implementation of Davidson Fellowship

Our first Davidson Fellow, Nancy Torres, finished her fellowship on contamination levels in the Tijuana Estuary, and is preparing for her thesis defense in February. N.Torres was also a recipient of the first ever Margaret A. Davidson Fellowship Award, which recognizes fellows that strongly embody and model the values embraced by Margaret Davidson as a coastal leader. Our new Davidson Fellow, Natalie Grayson from the Scripps Institution of Oceanography, has begun her work on the microbiome of the Tijuana Estuary.