

UC San Diego

Extension Publications

Title

Sharing the Coast: Opportunities and strategies for accelerating coastal resilience in the San Diego-Baja California Region

Permalink

<https://escholarship.org/uc/item/2n28w1cc>

Authors

Le Alvarado, Meliza

Engeman, Laura

Pairis, Amber

Publication Date

2024-10-01



Sharing the Coast:

Opportunities and strategies
for accelerating coastal
resilience in the San Diego-
Baja California Region



Table of Contents

page

Acknowledgements	3
Abstract	4
Summary of Impacts	6
Key Points from the Needs Assessment	8
Strategic Vision	13
About the strategies	14
<i>Goal 1: Develop a regional baseline for coastal resilience data</i>	14
<i>Goal 2: Build a cross-border workforce</i>	18
<i>Goal 3: Develop deeper community connections and engagement</i>	22
<i>Goal 4: Support meaningful engagement</i>	25
Conclusion	29

Authors

Meliza Le Alvarado, Laura Engeman, and Amber D. Pairis

Suggested citation

Le-Alvarado M., Engeman L., and Pairis, A.D. (2024) Sharing the Coast: Opportunities and strategies for accelerating coastal resilience in the San Diego-Baja California Region. California Sea Grant & Climate Science Alliance. <https://www.climatesciencealliance.org/resources/sharing-the-coast>

Design by Kat Schroeder Mora, Climate Science Alliance

Acknowledgments



Photo by Climate Science Alliance

This strategic vision was supported by a grant from the **Binational Resilience Initiative Fund**, a partnership of the **San Diego Foundation**, **International Community Foundation**, **Builder's Initiative**, and **Resilience Cities Catalyst**.



BUILDERS INITIATIVE



Photo by Fauna del Noroeste

The authors also want to recognize and thank the **Climate Science Alliance** team and participants in the organization's **Binational and Tribal Working Groups** for their support of this project and for hosting meetings that connected partners and increased input into the project.

We would also like to extend our gratitude to **everyone who generously shared their ideas and visions for regional coastal resilience**. We are grateful for the time participants gave in one-on-one interviews, survey responses, group discussions, and meetings.

Abstract

The unique binational border region of San Diego, California, and Baja California, Mexico is characterized by a rich mosaic of ecosystems sharing vast land and ocean ecoregions, such as the California Floristic Province and the California Current Marine Ecosystem.

The region not only shares these ecological systems, but is also deeply interconnected through a large community of people commuting daily for work, education, and family ties. These communities include Indigenous peoples who remain connected to their coastal ancestral lands on both sides of the border through stories, knowledge, food, and ceremonial places.

Today the coastal border region faces growing challenges such as ocean acidification, marine heatwaves, beach and cliff erosion, contamination and pollution, habitat fragmentation, and other impacts that will be exacerbated by climate change. These impacts are interconnected and complicated, requiring binational collaboration to safeguard our coastal communities and ecosystems into the future.

In 2023, the **Binational Climate Extension Project** led by **California Sea Grant** and the **Climate Science Alliance**, conducted an assessment of science assets, gaps, and priorities with the aim of advancing coastal resilience through binational collaboration. The assessment focused on the coastal area spanning from San Onofre State Park, San Diego County to Ensenada/San Quintin, Baja California. Valuable insights were gathered through a series of interviews, workshops, online surveys, and convenings. From these, a suite of actionable and low-cost strategies were developed into a binational vision that reflects the unique opportunities for elevating binational expertise and capacity in coastal resilience.



Photo by Laura Ibarra



Just as bioregions transcend the physical borders imposed upon them, we acknowledge that **this binational region has been stewarded since time immemorial by the Kumeyaay and Kiliwa people**, who continue to live, protect, and thrive throughout this land today, maintaining a deep relationship of balance and harmony.

■ California mediterranea ■ Sonoran Desert

Graphical representation of the shared bioregions of the San Diego-Baja California Region. Abalone, artwork by Audrey Carver.

Summary of Impacts

PROJECT LAUNCH

46 cross-border attendees attended a convening of the Climate Science Alliance's bilingual Binational Working Group meeting in May 2023 where the project was launched.

45

SURVEY RESPONSES

45 individuals responded to a bilingual survey to map regional scientific assets and expertise.

64

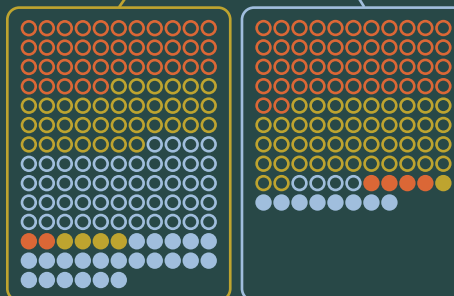
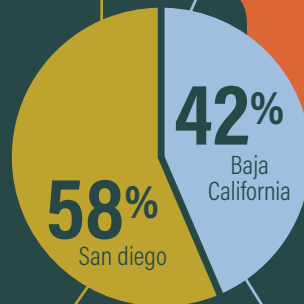
IN-DEPTH INTERVIEWS

64 interviews were conducted with diverse stakeholders, providing insights into regional projects, challenges, and needs.

256

DIRECTORY OF COASTAL RESILIENCE EFFORTS

256 coastal resilience professionals were registered in a binational database, including 107 from Baja California and 149 from San Diego.



- Academia
- Non-profit / non-governmental organization
- Governmental
- Graduate or undergraduate student
- Indigenous affiliation
- Other

Photo by Meliza Le Alvarado



INDIGENOUS COASTAL GATHERING

A Tribal coastal listening session was held on Kumeyaay lands with representatives from Southern California and Baja California sponsored by the Climate Science Alliance's Tribal Working Group.



BINATIONAL CONVENING

70+ attendees and 20+ organizations participated in 4 presentations and 20+ poster sessions at a binational coastal resilience convening in February 2024. The event was hosted by the Climate Science Alliance Binational workgroup and California Sea Grant to highlight resilience projects across the border region.



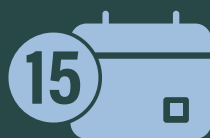
BILINGUAL WEBINAR

A webinar was convened to share Baja California research on beach morphodynamics and coastal dune ecology with the California Coastal Dune Science Network.



ROUND TABLE

A binational round table was hosted at the 2024 Ocean Observing in California conference to explore leveraging cross-border observational assets for coastal resilience.



EVENT SUPPORT

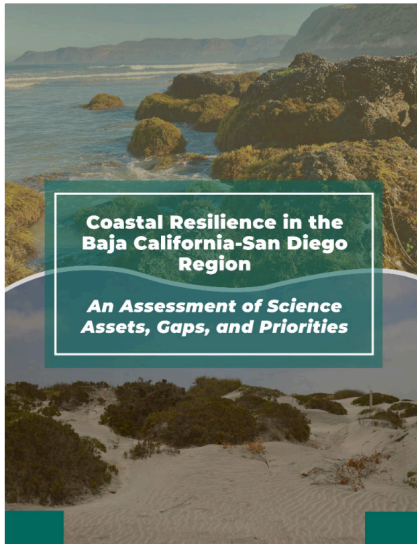
15 binational coastal resilience events were supported, including a nature-based solutions training, a border bioblitz, a youth tribal camp, a scientific dive training, and an estuary research symposium.



EXCHANGE VISIT

An exchange visit was hosted at Scripps Institution of Oceanography to identify collaborative research areas on sea level rise, coastal shorelines, and estuaries.

Key Points from the Needs Assessment



Coastal Resilience in the Baja California - San Diego Region. An Assessment of Science Assets, Gaps, and Priorities

The **Binational Climate Extension Project** led by **California Sea Grant** and the **Climate Science Alliance**, conducted an assessment in 2023 of science assets, gaps, and priorities with the aim of advancing coastal resilience through binational collaboration. The assessment focused on the coastal area spanning from San Onofre State Park, San Diego County to Ensenada/San Quintin, Baja California. The assessment began with developing a database of key stakeholders, knowledge centers, and organizations active in coastal resilience efforts across the study area. This was followed by a series of in-depth interviews, workshop dialogues, and an online survey. The information gathered was summarized in a report titled, "**Coastal Resilience in the Baja California-San Diego Region: An Assessment of Science Assets, Gaps, and Priorities.**" Results were then shared at a bilingual 2024 Binational Coastal Resilience Convening, hosted in partnership with the Climate Science Alliance's Binational Working Group.



Scan the QR code to read the entire assessment

tinyurl.com/coastal-needs-assessment



Key findings by topic from the needs assessment report were:

1 Coastal habitat resilience and adaptation

2 Understanding contemporary and future coastal hazard risks

3 Marine ecosystem restoration and monitoring

4 Community engagement and education

5 Indigenous leadership and participation

6 Resources and knowledge-sharing needs

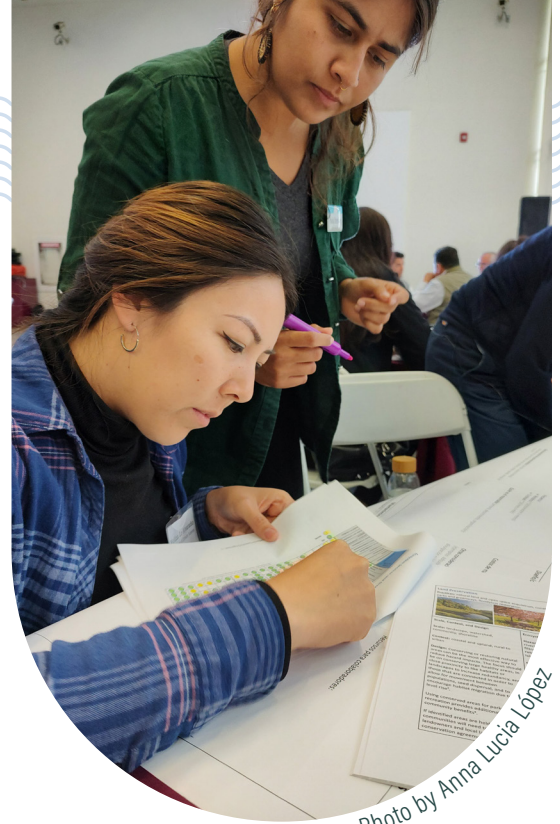


Photo by Anna Lucía López

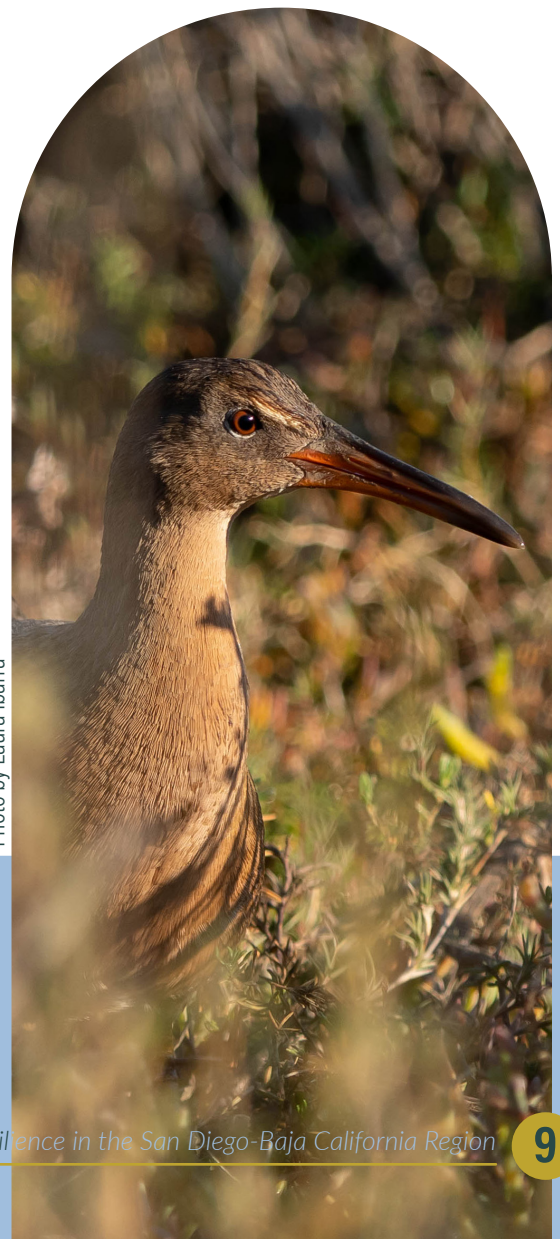


Photo by Laura Ibarra

Key Points from the Needs Assessment

1

Coastal habitat resilience and adaptation

Our coastal environments, particularly estuaries and dunes, are foundational to the region's ecological resilience. These habitats, which provide a buffer against climate impacts such as sea level rise, are experiencing continuous stressors from a variety of activities and sources. There are currently several cross-border partnerships focused on adaptive strategies for these habitats that build ecological resilience. On-going efforts both north and south of the border are largely concentrated on enhancing ecosystem health and implementing nature-based solutions to mitigate coastal hazards. Despite these efforts, there is an ongoing need to deepen and expand collaborative research and restoration practices to ensure the long-term preservation and resilience of these vulnerable and critical habitats.



Photo by Laura Ibarra

2

Understanding contemporary and future coastal hazard risks

Recognizing the escalating risks associated with coastal hazards is important to San Diego and Baja communities. This includes addressing the challenges posed by sea level rise, coastal erosion, and storms. Current binational collaborations have yielded some progress in modeling and data sharing; however, there is a marked need for more comprehensive and integrated approaches to predict, monitor, and manage these risks. Expanding regional climate models to Baja California and fostering greater scientific exchange were identified as critical needs to improve predictions and preparedness strategies.

3

Marine ecosystem restoration and monitoring

The health of the marine ecosystem within the California Current system and how it is responding to climate change stressors is a concern shared by both regions. Topics include marine heatwaves, ocean acidification, and the impacts of harmful algal blooms on public and ecosystem health. Long-standing ocean observation programs have facilitated some degree of binational monitoring and regional alerts for unhealthy water conditions. However, strengthening joint monitoring initiatives, expanding alert systems, and aligning restoration practices on both sides of the border can leverage shared knowledge and experiences to address climate-related challenges more effectively.

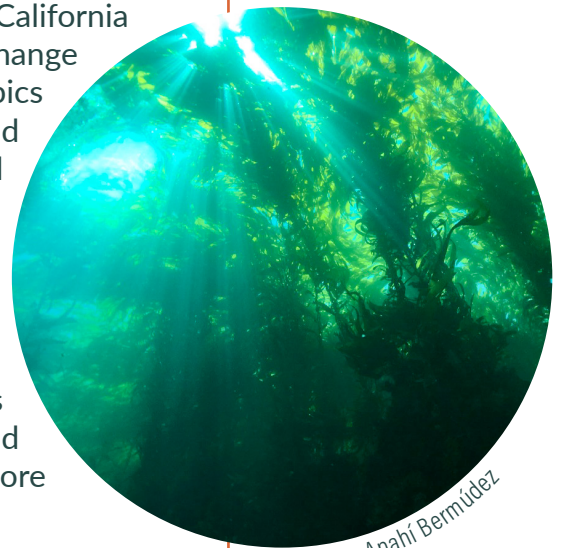


Photo by Anahi Bermúdez

4

Community engagement and education

Educational programs that integrate scientific research, community involvement, and policy advocacy are essential for building local capacity and resilience. Several border region efforts are currently directed towards building resilience through community-led initiatives. These initiatives focus on developing local capacities and fostering sustained engagement through educational programs, binational and intertribal working groups, and indigenous led-collaborations. These kinds of partnerships, programs, and activities highlight the importance of adaptive strategies and habitat restoration that also address social justice concerns and efforts towards cultural preservation. Key efforts include training in coastal management, promoting community-led environmental stewardship, and strengthening cross-border partnerships to protect ecosystems and build resilience against coastal hazards.

Key Points from the Needs Assessment

5 Indigenous leadership and participation

Establishing long-term relationships with Tribal communities and giving space and opportunities for Indigenous peoples to lead this work is paramount to integrating and honoring the vision and priorities for community-informed resilience actions. Indigenous and Tribal communities have stewarded the land since time immemorial and were largely forcibly removed from the coast because of colonization. Despite being relocated away from coastal homelands, they retain deep connections to coastal spaces. Working cooperatively to create and uphold options for Indigenous peoples to reconnect and reclaim their role as stewards of their ancestral coastal lands is a critical component for preserving cultural heritage and traditional ecological knowledge. Key areas for consideration that are important to Indigenous peoples on both sides of the border include improving access and freedom of use of coastal spaces, incorporating true historical context into education and engagement in public spaces, acknowledgment of unceded ancestral lands in coastal areas, protecting traditional uses in coastal spaces, and supporting projects that strengthen re-connection for youth to coastal waters.



Photo by Climate Science Alliance

6 Resources and knowledge-sharing needs

Funding constraints, complex governance, and limited access to resources pose challenges across all the presented multidisciplinary focus areas, particularly in the Baja California region. There's a critical need for better networking and cross-border knowledge sharing, with stakeholders advocating for collaborative platforms to exchange databases, ideas, and strategies. Such collaborations are essential for addressing issues from ocean monitoring to coastal communities' well-being.

Strategic Vision

About this strategic vision

The vision for this project is to enhance regional and binational collaboration and thus create more prosperous and resilient coastal communities, people, and ecosystems.

Our goal in putting this document together is to articulate a set of binational recommendations that can foster transformative collaborations by integrating science, academic research, traditional knowledge, and innovative practices into strategies that are actionable, intentional, and relevant. Ultimately, we need to see the cross-border region as one connected system and advance efforts that expand our research capabilities, data collection, knowledge sharing, collaboration, and community engagement.

1 Develop a regional baseline for coastal resilience data

2 Build a cross-border workforce

3 Develop deeper community connections and engagement

4 Support meaningful engagement

The following pages explain our strategic recommendations and the objectives we consider necessary to achieve each goal. →

STRATEGIC GOAL
1

Develop a regional baseline for coastal resilience data

Advancing coastal adaptation and mitigation efforts necessitates a robust baseline understanding of coastal habitat extents, vulnerabilities, and changing conditions. Assembling critical data and maps across the border region can promote binational prioritization of vulnerable areas and species and improve predictive models of future climate impacts. Developing

protocols for using common methodologies and leveraging technological advancements would strengthen capacity for data-sharing. These data will also improve our understanding of regional coastal dynamics, resulting in more robust adaptation strategies and policies that are responsive to changing conditions.

Photo by California Sea Grant



OBJECTIVE 1.1

Invest in shared data products that track regional coastal climate trends

OBJECTIVE 1.2

Improve short and long-term coastal climate predictions

OBJECTIVE 1.3

Expand science dissemination and communication

Develop a regional baseline for coastal resilience data

OBJECTIVE 1.1

Invest in shared data products that track regional coastal climate trends

- Invest in high-resolution imagery that can be used to map geomorphology, vegetation, land use, and changing conditions. LiDAR, drone, and satellite imagery are critical for improving coastal climate predictions of flooding, erosion, and habitat loss. Advancements in these technologies are being explored on both sides of the border and provide opportunities for regional coastal monitoring collaborations.
- Explore investments in new low-cost coastal and marine observation technologies such as gliders, sensors, roving buoys, and beach video-monitoring systems. There are increasingly more options for capturing ongoing changes in conditions at beaches, in watersheds, and out in the ocean that can help inform resilience priorities and adaptive solutions at key locations.
- Create publicly available maps of geomorphological changes, vegetation, shoreline erosion, and sea level rise to support public and policy-level education and engagement. Additionally, create maps of oceanic conditions and climate-related ocean parameters such as sea surface temperature, ocean acidification, and hypoxia.
- Integrate local and Traditional Ecological Knowledge (with appropriate permission). Invest in and compensate Indigenous and local community partners that hold important observations of coastal change. Honor and recognize the deep understanding and connections through data upholding and knowledge sovereignty (see Strategic Goal 4).
- Identify key locations in Baja California for the installation of climate-weather stations to expand existing data networks and secure funding to maintain these consistently over time. Collaborate and fund local institutions and communities to deploy and maintain these stations.
- Conduct binational comparative assessments of shoreline and estuarine conditions as well as erosion/recovery responses to recent extreme storm conditions (e.g., Rosarito Beach vs. Torrey Pines).
- Conduct and support binational comparative assessments of marine ecosystem conditions and responses to recent extreme oceanographic events (e.g., kelp forest canopy in Central/Southern California and Baja California).
- Establish and/or uphold existing common protocols/meta-data across the cross-border region for scalable and comparable findings, and define science-based metrics for measuring and tracking indicators of coastal resilience.
- Create and/or invest in existing (or new if needed) data repositories to allow for better data sharing, validation, and ability to compare binational data trends among regions.
- Incorporate outputs from various models (e.g., hydrodynamic, ecological, socio-economic) to create comprehensive risk assessments and inform policy and planning efforts.

Develop a regional baseline for coastal resilience data

OBJECTIVE 1.2

Improve short and long-term coastal climate predictions

- Expand regional climate models into Baja California and support additional climate-weather stations to validate these models.
- Expand nearshore wave prediction models across the region and improve sea level rise and coastal storm forecasts in Baja California. Support these efforts by strategically deploying wave and current instruments in the Baja region. Cross-border high-resolution bathymetry and Digital Elevation maps are also needed to improve local-scale models for evaluating sea level rise impacts.
- Co-develop coastal early warning systems (forecasts) for waves, wind, heat waves, harmful algal blooms, etc., that covers the broader border region.
- Develop a binational marine forecast system to alert the ocean-dependent industry and public about harmful ocean conditions.
- Leverage technological advancements such as machine learning, AI-enhanced data processing tools, and advanced modeling techniques to improve the accuracy and reliability of short and long-term coastal climate predictions.
- Develop NASA-academic partnerships to test the utility of satellite data for monitoring coastal and marine trends.
- Identify institutional partnerships to expand access to, and the use of data processing and computing infrastructure

Photo by David Mora



OBJECTIVE 1.3

Expand science dissemination and communication

- Develop bilingual sea level rise and coastal storm training and science outreach materials to support local risk management planning (for example vulnerability assessments).
- Develop bilingual science communication for multiple audiences from synthesis reports and annual or seasonal reports on key ocean and coastal conditions reflecting climate impact trends.
- Support binational data hubs, portals, and data-sharing partnerships. Synthesize data into binational summaries of key trends such as beach erosion, marine heat waves, harmful algal blooms, or kelp loss and identify pathways to keep information updated (see Objective 1.1).
- Leverage existing regional science and climate-related conferences, summits, and workshops to feature both San Diego and Baja California research. Examples of specific conferences that serve as a hub for sharing ideas are: San Diego Climate Summit, The San Diego Estuary Research Symposium, State of Biodiversity Symposium led by the San Diego Natural History Museum, Marine Debris Leadership Academy, The California Estuarine Research Society Conference, Ocean Observing in California Conference, The Next Generation Sonoran Desert Researchers Summit, Climate Science Alliance Binational Convenings and Cross Border Workgroup.



[At the Binational Convening, I learned] the importance of binational collaboration and the connection between agencies, the support that can be received with binational funding, and the exchange that can take place."

- 2024 Binational Coastal Resilience Convening attendee

STRATEGIC GOAL

2

Build a cross-border workforce

To develop regional expertise and capacity for coastal resilience, a skilled and prepared workforce is essential. This goal focuses on deploying targeted education, training, mentoring programs, and internships to build capacity and skills for students and professionals. Leveraging academic pathways that

integrate coastal resilience curriculum, supporting diversity in academia, funding binational research projects, and facilitating equitable opportunities for student participation will ensure a knowledgeable workforce capable of advancing coastal resilience efforts into the future.

Photo by Meliza Le Alvarado

OBJECTIVE 2.1

Cultivate the next generation of coastal resilience leaders through comprehensive educational pathways

OBJECTIVE 2.2

Create more professional development pathways

OBJECTIVE 2.3

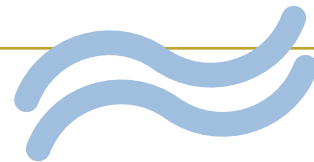
Build synergies between research and industry

Build a cross-border workforce

OBJECTIVE 2.1

Cultivate the next generation of coastal resilience leaders through comprehensive educational pathways

- Create and invest in mentoring programs. Provide opportunities for graduate students to travel and teach in border community's high schools, elementary and middle schools, and community programming.
- Develop institutional agreements and foster academic partnerships for jointly mentoring postdocs, grad students, fellows, and internships.
- Integrate coastal resilience topics into existing curricula and develop new binational courses to address emerging challenges. Work with leadership at academic institutions to develop and expand joint undergraduate and graduate degree programs that students from Mexico and the U.S. can receive credit for. Examples include the binational Masters of Business Administration and Geophysics program jointly offered by San Diego State University and Universidad Autónoma de Baja California (UABC).
- Provide visiting scholar opportunities for knowledge-sharing about new methods, modeling, and data to expand coastal resilience science expertise and capabilities across the region.
- Create and promote scholarships for students, postdocs, and faculty to participate in academic and cultural exchange, research cruises, and training at academic institutions and government research programs. Examples include the POGO (Partnership for Observation of the Global Oceans) member state coalition or Fulbright Scholars program.
- Include socio-economic research in the curriculum to help students understand how coastal changes affect communities, economies, and cultures. This will enable future leaders to develop holistic resilience strategies that consider both environmental and social dimensions.
- Fund binational research projects that expand student and researcher expertise in coastal resilience observations, modeling, and climate projections.
- Expand accessibility by incorporating bi-lingual spaces and live translation to foster real-time communication.
- Provide virtual training to ensure equitable access. Record and post the sessions in a public domain, and utilize online platforms and hybrid learning models to enable broader participation.



OBJECTIVE 2.2**Create more professional development pathways**

- Create and invest in internship opportunities to enable hands-on activities and engagement in coastal resilience solutions such as nature-based solutions, restoration practices, engineering, and monitoring methods in academic, government, and non-profit settings.
- Provide targeted training and education programs to build local capacity for climate adaptation, disaster risk reduction, and sustainable resource management that are accessible to practitioners and community partners on both sides of the border.
- Partner with organizations that foster diversity in the sciences to expand mentoring programs and binational professional development opportunities. Examples include women in science or STEM (Science, Technology, Engineering, and Mathematics) organizations, SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science), etc.
- Host workshops with participant support funding to ensure widespread access to training and field technological resources, including coding, use of advanced sensors, numerical models, remote sensing, digital twins, drone usage, diving training, and safety measures in support of Objectives 1.1 and 1.2.
- Focus education and outreach on the integration of nature-based solutions and smart design principles for mitigating coastal hazards. This includes the use of sustainable materials and technologies that enhance resilience while preserving ecological integrity.
- Work with entities focused on fostering international exchanges to broaden US and Mexican participation in in-person workshops and conferences and facilitate visa and travel approvals.
- Create newsletters and social media platforms to promote job opportunities, fellowships, internships, and stories about career experiences.
- Expand training and participation in field-based and hands-on science surveys, such as coastal restoration events, implementation of nature-based solutions, and marine habitat conservation efforts. Create certification programs and scholarships for these programs to expand opportunities for marine science diving, drone use, intertidal survey collection, and water quality monitoring.

OBJECTIVE 2.3

Build synergies between research and industry

- Co-develop coastal and marine research initiatives to address emerging climate hazards to ocean-dependent industries.
- Develop industry-research partnerships that support binational involvement by students and researchers to inform offshore wind, kelp restoration, aquaculture, sustainable seafood, and other blue economy initiatives.
- Expand industry engagement in coastal resilience planning to ensure ongoing relevance and utility of research outcomes.
- Leverage best practices and adaptation in resilience approaches in commercial industries, including using oysters to mitigate shoreline erosion, implementing restoration ecology techniques, and natural resources management to enhance the resilience of coastal ecosystems.

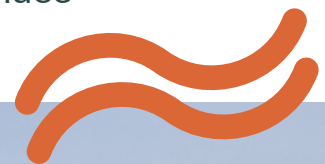


Photo by David Mora

“ [In my field of work, I want to see more] connectivity between coastal and offshore areas. Connecting ecological to social indicators to understand effects of climate change on coastal communities.”

- 2024 Binational Coastal Resilience Convening attendee

Photo by Gabriela Ehuan



STRATEGIC GOAL

3

Develop deeper community connections and engagement

The well-being of coastal human communities is intricately linked to the health of the marine and coastal ecosystems, which are increasingly vulnerable to threats such as coastal hazards and shifts in marine species. These challenges are compounded by the structural complexities of a dynamic and busy border crossing, characterized by a high level of urbanization, socio-cultural differences, and

immigration pressure. Responding to these challenges requires a holistic approach that integrates scientific research, community involvement, and policy advocacy. This goal focuses on enhancing community resilience through broad-based educational initiatives, fostering active public participation in environmental monitoring, and protecting cultural connections to coastal regions.

Photo by Mariela Galvez



OBJECTIVE 3.1

Enhance community education and training to foster public participation

OBJECTIVE 3.2

Utilize the power of storytelling

Develop deeper community connections and engagement

OBJECTIVE 3.1

Enhance community education and training to foster public participation

- Expand accessibility by incorporating translators to bridge language and cultural gaps, and harmonize concepts and methodologies across diverse fields.
- Expand Bi-lingual K-12 educational materials on climate change and coastal resources to serve youth and adults in the US border region and Mexico. Provide binational training to educators on available K-12 resources (Train the Trainer).
- Cultivate mentoring programs within high schools, middle, and elementary schools.
- Develop protocols and data collection methods that use non-academic terminology and bilingual instructional materials so it is easier for people to participate.
- Utilize both formal and informal engagement mechanisms to build relationships and gather input and guidance from community partners.
- Promote participation in community science programs and user-friendly software and apps that collect coastal observations of shoreline changes and biodiversity through local workshops and online platforms. Examples include but are not limited to CoastSnap, Chronologs, iNaturalist, and PescaData.
- Identify opportunities for leveraging low-cost equipment (e.g., sensors) that community members can install and maintain, for example, water, pH, and salinity sensors for rural fisheries communities.
- Improve data accessibility and engage local communities, policymakers, and industry, to ensure that the data collected are relevant and useful for decision-making.
- Promote citizen science initiatives and facilitatesocial learningthrough interactive approaches that enable communities to access and interpret outputs from resilience modeling frameworks, to foster community ownership and understanding of resilience efforts.
- Incorporate interactive elements such as field visits, hands-on activities, and storytelling to enhance learning experiences.



A lot of work has already been done to model and evaluate sea-level rise risk of our coasts [...] We need better coordination across groups working in this field"

- 2024 Binational Coastal Resilience Convening attendee

Develop deeper community connections and engagement

OBJECTIVE 3.2

Utilize the power of storytelling

- Develop a binational media strategy for communicating stories and accessible content about changing ocean and coastal conditions (e.g., whale migrations, marine heat waves).
- Collaborate with nonprofits to disseminate synthesis reports reflecting climate impact trends and annual or seasonal reports on key ocean and coastal conditions through binational media and public education outlets.
- Promote storytelling and awareness of cultural ties with the coast and citizen coastal concerns such as coastal access, habitat loss, connection with the coast, and tangible experiences with coastal vulnerabilities to inform present-day and future hazard responses.
- Create a communication strategy with an advisory board and use media outlets in the border region to share bilingual and border region stories to highlight shared coastal impacts, coastal adaptation practices, and career opportunities, leveraging border region media and communication experts and outlets.
- Promote and organize binational events or festivals celebrating sustainable food and cultural heritage, fostering community engagement and awareness of coastal hazards, loss of marine biodiversity, etc.

“ [In my field of work, I want to see more] funding and people from other disciplines working together [...] More lawyers, engineers, anthropologists, economists, etc. Not only biologists and oceanographers.”

- 2024 Binational Coastal Resilience Convening attendee



Photo by Mariela Galez

STRATEGIC GOAL
4

Support meaningful engagement

In order to advance and promote respectful ways to integrate community perspectives and leadership into coastal resilience actions requires efforts that create genuine relationships and trust, engage in meaningful ways,

support community-led decisions, and for Indigenous peoples, facilitate reconnection, reclamation, and stewardship to ancestral lands that will preserve cultural heritage and traditional ecological knowledge.

Photo by Condor Visual Media

OBJECTIVE 4.1

Enhance access and participation to support Indigenous-led stewardship of coastal spaces

OBJECTIVE 4.2

Expand opportunities for co-stewardship of coastal lands

OBJECTIVE 4.3

Support BIPOC leadership, decision-making, and stewardship in coastal management, restoration, and use

OBJECTIVE 4.1

Enhance access and participation to support Indigenous-led stewardship of coastal spaces

- Remove permit processes to facilitate access to coastal areas for cultural use. Provide parking passes and permits at no cost for access/use/gathering to ensure Indigenous people can safely and equitably practice their culture.
- As appropriate and approved, Integrate acknowledgments of Indigenous people and their perspective, history, and current use of coastal spaces into public signage, educational materials, and historical content at coastal sites. Incorporate Indigenous languages into signage to reinforce cultural heritage and recognition.
- Acknowledge the historical and ongoing impacts of land dispossession on Indigenous communities. Efforts for coastal resilience must address historical injustices and support the repatriation, access to, and restoration of coastal lands including land back and access rights.
- Collaborate with Indigenous artists, educators, community members, and knowledge holders to develop culturally appropriate and respectful outreach materials and signage.
- Support projects focused on the restoration and protection of sacred sites and significant spaces.
- Develop shared training programs for knowledge exchange, shared learning and incorporation of traditional ecological practices where appropriate.

Photo by Paula Sternberg Rodríguez



OBJECTIVE 4.2

Expand opportunities for co-stewardship of coastal lands

- Create, support, and fund tribal liaison positions to build capacity for strategic partnerships with Indigenous communities.
- Collaborate with tribal government, community leaders, and Indigenous-led and serving organizations to identify knowledgeable and respected community members who can serve as leaders and stewards of coastal resilience efforts and provide them with adequate support and resources.
- Provide leadership training and support to community members to build capacity for implementing resilience efforts.
- Facilitate knowledge-sharing spaces that uphold the equal valuation of knowledge and create equitable spaces to exchange best practices and lessons learned regarding coastal resilience.
- Promote the use of Indigenous data if deemed appropriate by the knowledge holder and/or community leadership in resilience planning and decision-making, ensuring that Indigenous perspectives are integrated into strategies and actions.
- Develop and adhere to data-sharing agreements that respect Indigenous data and knowledge sovereignty, ensuring that any data collected from Indigenous lands/people/communities is controlled, managed, and used at the discretion of those communities/people.
- Promote and support tribal leadership in significant reports and success stories from Indigenous-led projects to showcase their impact and effectiveness. Examples include the California Climate Change 5th Assessment and the San Diego Coastal Chapter or California's nature-based tribal grants.



Photo by Paula Sternberg Rodriguez

OBJECTIVE 4.3**Support BIPOC leadership, decision-making, and stewardship in coastal management, restoration, and use**

- Ensure community partners including Indigenous peoples are fairly compensated for their time and expertise, including covering travel expenses, providing honorariums, and funding the development of training materials.
- Develop training and curriculum that includes modules that educate participants on colonization, local indigenous history, traditional ecological knowledge, cultural sensitivity, and effective communication strategies.
- Collaborate with BIPOC educators and organizations to co-create and regularly update the curriculum to reflect current knowledge and practice to advance diversity, equity, and inclusion (DEI).
- Develop online user-friendly and regularly updated platforms where BIPOC coastal partners can access training materials, ask questions, and engage in discussions with Indigenous trainers and community members.
- Evaluate the effectiveness of training programs through surveys, interviews, and follow-up meetings, gathering input from both trainers and participants.



[In my field of work, I want to see] both community-based and government agency networks building strategies together—especially governmental agencies from the US and Mexico- supporting long-term strategies"

- 2024 Binational Coastal Resilience Convening attendee



Photo by Jenna Wisniewski

Conclusion

This strategic vision emphasizes the necessity of integrating academic research, traditional knowledge, innovative practices, and community-led projects to effectively address the complex challenges of our shared coastline and ensure a resilient future for all.

Developing a regional baseline for coastal resilience data is fundamental. By prioritizing academic research and leveraging technological advancements, we aim to gather critical data to understand changes in coastal habitats, monitor responses to coastal hazards, and evaluate how adaptation solutions are working. This robust baseline will enable us to create more effective adaptation strategies and responsive coastal policies.

By building workforce and capacity through targeted education, training, mentoring, and internships, we can develop a skilled workforce essential for establishing regional knowledge and advancing coastal

resilience solutions. Integrating coastal resilience curricula, supporting cross-border academic partnerships, and funding binational research projects will provide opportunities for early career learning in this field and ensure a knowledgeable workforce.

The well-being of coastal human communities is intricately linked to the health of marine ecosystems. Enhancing community resilience through education,



Photo by Laura Ibarra

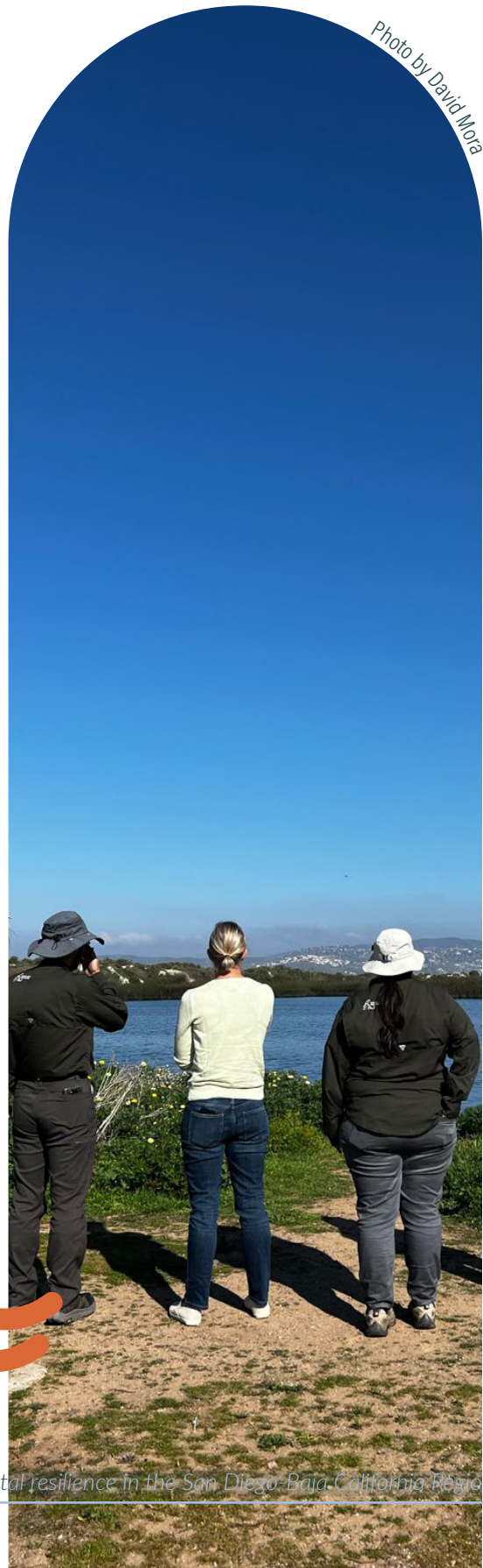
Conclusion


public participation in environmental monitoring, and protecting cultural connections to coastal regions is essential for addressing the challenges we face.

Meaningful engagement with Indigenous communities and other marginalized groups is also imperative. Creating genuine relationships, supporting community-led decisions, and facilitating the stewardship of ancestral lands are critical steps. Enhancing access and participation and promoting BIPOC leadership in coastal management is necessary for preserving cultural heritage and traditional ecological knowledge.

Despite the contrasts in governance, lifestyle, and management approaches, our shared coastline presents both unique challenges and many opportunities for collaboration. The physical border may delineate our nations, but it cannot divide our shared responsibility to protect our coastal environments and communities. In a time of changing climate, our common coastline calls for a holistic, resilient approach. By learning from each other, leveraging our diverse experiences, and fostering binational cooperation, we can transform these challenges into opportunities for innovation and thus adaptation.

Photo by David Mora



A person with long hair, wearing a blue long-sleeved shirt, olive green pants, and a blue cap, is walking away from the camera through a vast field of low-lying coastal plants. The plants are a mix of vibrant orange, red, and yellow-green. The ground is sandy and covered with dark, dry vegetation. In the background, the ocean is visible under a bright blue sky with scattered white clouds. The overall scene is a coastal landscape during what appears to be autumn or winter.

**We hope this vision document
will serve as a foundation for
inspiring new binational leadership,
shared investments, and expanded
partnerships to support the coastal
resilience needs of the border region.**

Photo by Jenna Wisniewski



www.climatealliance.org/resources/sharing-the-coast