



**IMPACT REPORT 2019–2023** 



# Investing in the Next Generation of Conservation Leadership

As the Cornell Lab of Ornithology works with an increasing number of partners and communities around the world, I am always excited when our building is abuzz with visitors and different languages. It's one more sign our science-to-action work is growing its footprint and responding to global declines in bird populations.

When the Coastal Solutions Fellows are in town, I am downright inspired. In my 25 years working in science and conservation, I have never met a group of young professionals who can match the 30 Fellows (and counting) in their energy, enthusiasm, and out-of-the-box thinking.

And when these Fellows come together in Sapsucker Woods, I am reminded of what makes this program so powerful and effective.

The Coastal Solutions Fellows Program embodies our understanding that the best solutions call for interdisciplinary approaches. These Fellows represent the brightest young scholarly minds from Latin America in a multitude of fields—ornithology, biology, architecture, engineering, land-use planning, sociology, and more. This broad array of expertise supports problem-solving that is as much about people as nature, that balances economic opportunities and realities with conservation goals.

The program also represents Cornell Lab's abiding commitment to Latin America and the Pacific Flyway. Since 2019, these Fellows have conserved species and collaborated with communities in dozens of coastal priority sites in nine different countries.



lan Owens, Executive Director, Cornell Lab of Ornithology

Here, you will find proof that to be impactful, on-the-ground conservation work must always be community led. Every Fellow has forged capacity-building partnerships with one or more local communities—including ethnic and indigenous groups—who support novel thinking and take on stewardship roles.

In this way, our Fellows add to the existing foundation of bird monitoring and technology that make the Cornell Lab's mission a global enterprise.

I invite you to listen to our Fellows' voices and hear their compelling narratives in the pages that follow. When you see the imprint Coastal Solutions Fellows Program makes on the world and, equally, on the trajectory of their professional lives, you will understand that supporting future cohorts of Fellows means creating change not only for the length of a project, **but over the course of a career.** 

Just as I look forward to the return of the Fellows to Ithaca, I also envision a future where the Cornell Lab is a home away from home for many more international conservation leaders working in partnership with us and with their own local communities. Please join us in this vision for a more sustainable future.

With gratitude,

Ian Owens

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# Transforming the Pacific Flyway into a Hub of Conservation Innovation

Mere decades ago, the Pacific Flyway was teeming with billions of shorebirds as they traveled from their breeding grounds in Alaska and Arctic climes to their winter homes as far south as Tierra del Fuego.

Over the years, humankind has steadily intruded on these journeys. Catastrophic losses of habitat have slashed their populations. Conservation efforts, slow to rise to the emergency, now call on a new generation of leaders to reverse these declines.

The Cornell Lab of Ornithology collaborated with The David and Lucile Packard Foundation to launch the Coastal Solutions Fellows Program expressly for this purpose—to bring together the best and brightest young Latin American scientists and innovators to think differently, work in concert with communities, and achieve remarkable on-the-ground conservation results. Equally, the program is intent on building conservation capacity for future generations.

Across the continuum of science, land-use planning, and conservation policy, 30 Coastal Solutions Fellows and counting are piloting new approaches that balance the needs of shorebirds with those of local communities. They are thinking about how to make an immediate impact through innovative science-based projects, how to work with and alongside communities, and how to change behaviors and laws for sustainable and progressive conservation.

The results speak for themselves: more than a quarter million acres of newly protected habitats and a host of management agreements and conservation easements have been established, and local ordinances and national regulations have been created. In terms of avian impact, 28 priority shorebird species have directly benefited, from Snowy Plovers and Red Knots to Hudsonian Godwits and Whimbrels.

And we are just getting started.

#### The Coastal Solutions Leadership

The Coastal Solutions Fellows Program at the Cornell Lab of Ornithology is managed by a small and effective team of bilingual professionals:



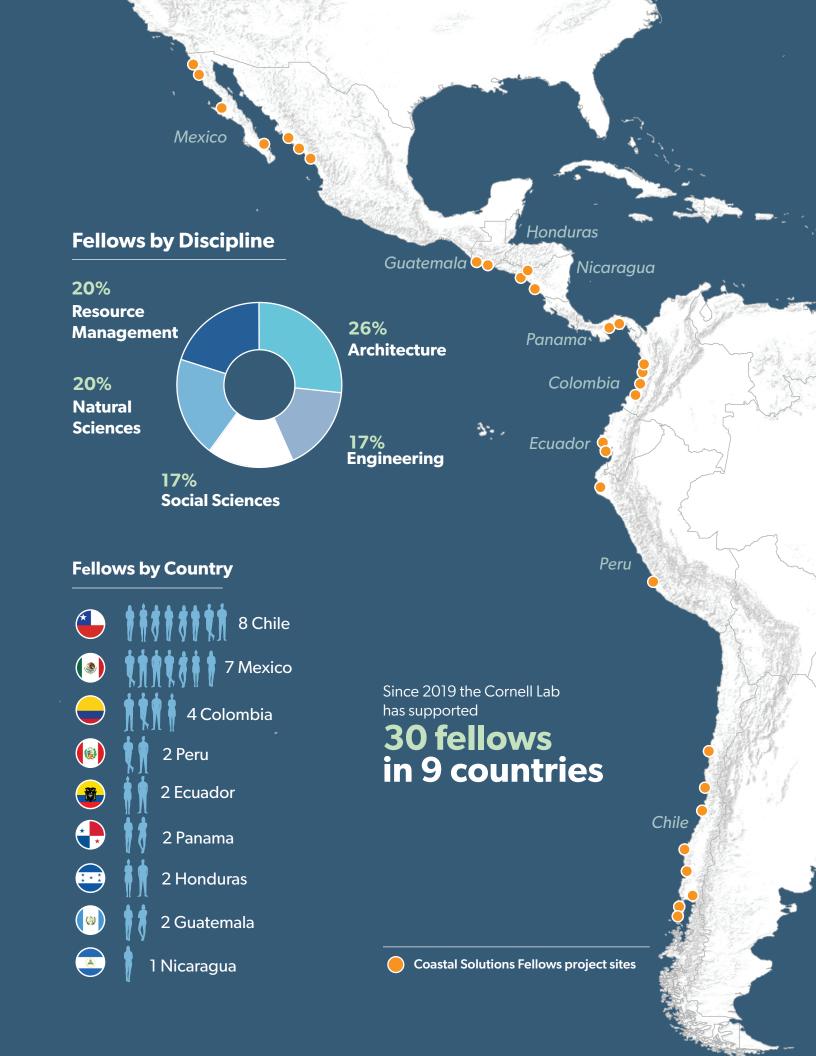
**Viviana Ruiz-Gutiérrez**Co-Director, Center for Avian
Population Studies
Associate Director, Coastal
Solutions Fellows Program



**Osvel Hinojosa-Huerta** Program Director, Coastal Solutions Fellows Program



**Diana Ochoa**Program Coordinator, Coastal
Solutions Fellows Program





The Coastal Solutions Fellows have led the signing of 37 collaboration agreements, 13 conservation instruments, and 16 public policy mechanisms

This has resulted in direct conservation impact on

286,274 acres of shorebird habitat

Their efforts resulted in \$3.43 million dollars in matching funds and new grants to continue and expand their initiatives \$1.2 M \$1.0 M \$800 K \$600 K \$400 K \$200 K \$0 2019 2020 2021 2022 2023 Matching Funds New Funds by Fellows Secured by Fellows

Black-necked Stilt by Blair Dudeck / Macaulay Library

The Fellows have created new knowledge and contributed to scholarship, such as:



Published 33 peer-reviewed scientific papers and 40 science communication articles



Delivered 158 conference presentations



Received 20 awards and professional recognitions

## Our Fellows value the power of **networking**

They have worked with
120 mentors and collaborators
from 200 organizations in
18 countries



- Mentors and Collaborators
- Partner Organizations

Our Fellows work alongside communities to achieve longlasting conservation outcomes. Together they have:

19,473 people engaged in project activities, including workshops, meetings, festivals, and citizen science









1 million followers on their social media platforms combined



275 media stories earned in both national and global outlets

www.solucionescosteras.org/en/fellows-outcomes



#### Five Years of Fellows

Our desired outcomes were healthy coastal ecosystems for both people and migratory birds. Our answer was a fellowship program to build local capacity in Latin America, focused on training early-career professionals to develop science-based solutions for restoration and sustainable development.

Viviana Ruiz-Gutierrez
 Co-Director, Center for Avian Population
 Studies, Cornell Lab of Ornithology

Snowy Plover by Sean Crockett / Macaulay Library

#### 2023 FELLOWS



**Darwin Garcia**Conservation
Biologist



**Ballantyne Puin**Environmental
Engineer



**Enrique Fornasini** Architect



**Daniela Ruz** Environmental Engineer



**Julia Salazar**Tourism
Administrator



**María Valladares** Coastal Scientist

#### 2022 FELLOWS



**Victor Ayala** Ornithologist



**Gabriela Contreras**Wildlife
Conservationist



Jorge Parra
Conservation
Biologist



**Onil Rodríguez**Development
Engineer



María Schoenbeck Marine Scientist



**Juan Silva**Environmental
Sociologist



#### 2021 FELLOWS



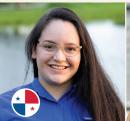
**Ariadna Araúz** Urban Planner



Marcela Argüello Architect



**Gustavo Diaz** Landscape Planner



**Andreina Pernía** Architect



**Juanita Fonseca** Coastal Scientist



**Eliana Montenegro**Socio-ecologist

#### 2020 FELLOWS



**Román Canul** Civil Engineer



**Medardo Cruz** Ornithologist



**Manuela Erazo** Social Anthropologist



**Laura Ibarra** Architect



**Varinia Sagastume**Wildlife
Manager



**Flavio Sciaraffia** Landscape Architect

#### 2019 FELLOWS



**Johann Delgado**Civil Engineer



Richard Johnston Coastal Scientist



**Natalia Martínez-Curci**Ornithologist



**Sharon Montecino**Environmental
Engineer



**Leslie Ponce de León** Landscape Architect



**Jonathan Vargas** Ornithologist





**Natalia Martínez-Curci** 2019 Coastal Solutions Fellow

Natalia, a shorebird ecologist from Argentina, created and tested best practices for shorebird conservation on the seaweed farms of Chile's Chiloé archipelago.



When Natalia Martínez-Curci learned about Coastal Solutions Fellows, the program was still an aspiration for the Cornell Lab of Ornithology.

Then-executive director John Fitzpatrick was planting seeds with young professionals to gauge their interest in the prospective program. Fitzpatrick crossed paths with Natalia as she was finishing her PhD studying shorebirds in Samborombón Bay near Buenos Aires. Natalia knew shorebird ecology was her calling, but she was feeling uncertain about her next career move.

"Hearing the program description for the first time was eye-opening," recalls Natalia. "A postdoc program focusing on the Pacific Flyway felt like the perfect way to keep working in academia—and to work on more than just research. Under the project's best practices agreement, the Mapuche communities of Chiloé will **improve the management** of the 7,000 acres of Caulín Bay.

I had the opportunity to consider a broader view of conservation and understand strategies for modifying human impact on species. That's the moment I knew this fellowship would show the way forward."

#### Going beyond science alone

As Natalia began thinking about a Coastal Solutions project, her PhD research led her to Caulín Bay, a winter home for many shorebirds. The Bay is also the site of seaweed aquaculture that plays a key role in the lives of the indigenous communities.

Natalia designed a project to assess how this aquaculture impacts the wellbeing of the Caulín Bay shorebirds. Her thoughtful approach immediately jumped off the page for application reviewers. But they returned to her with a request: expand your proposal beyond ecology and include the local community.

"This forced me out of my comfort zone," Natalia says. "I thought about how to include the Mapu-

che-Williche Wente Kaulin and Huenque Caulín communities. What could I learn from their farming practices? How could we partner? Would they sign a management agreement?"

Natalia assembled an interdisciplinary team of sociologists, biologists, and ornithologists to develop a conservation plan for both people and shorebirds. And she forged relationships that afforded a look inside indigenous aquaculture practices, passed from generation to generation.

"I visited community members and worked with them on the beach," says Natalia. "I talked about what I was doing, taught them to birdwatch, and listened closely to their concerns and ways of working. It takes time to build trust."







#### Gaining trust, finding harmony

Members gradually welcomed the team into their community. Research findings spanned the purely scientific, such as the value of preserving uncultivated intertidal zones, and insights born from working alongside the community—learning, for example, that dogs accompanying the farmers frequently interrupted birds' feeding routines.

Every Coastal Solutions project seeks long-term sustainability. Few formalize it as happened on May 27, 2023. All partners, including community leaders and Universidad Austral de Chile signed an agreement establishing best-management practices for seaweed farming in Caulín Bay. Thanks to Natalia's approach, the indigenous communities in the bay can now steward community-led conservation for generations of shorebirds.

Local leaders expressed an appreciation for their responsibilities. "We are privileged to have the wonderful birds of Caulín," says Cristian Raimilla, president of the Huenque Caulín community. "As an indigenous community, we are very happy with this work and it didn't cost us much at all

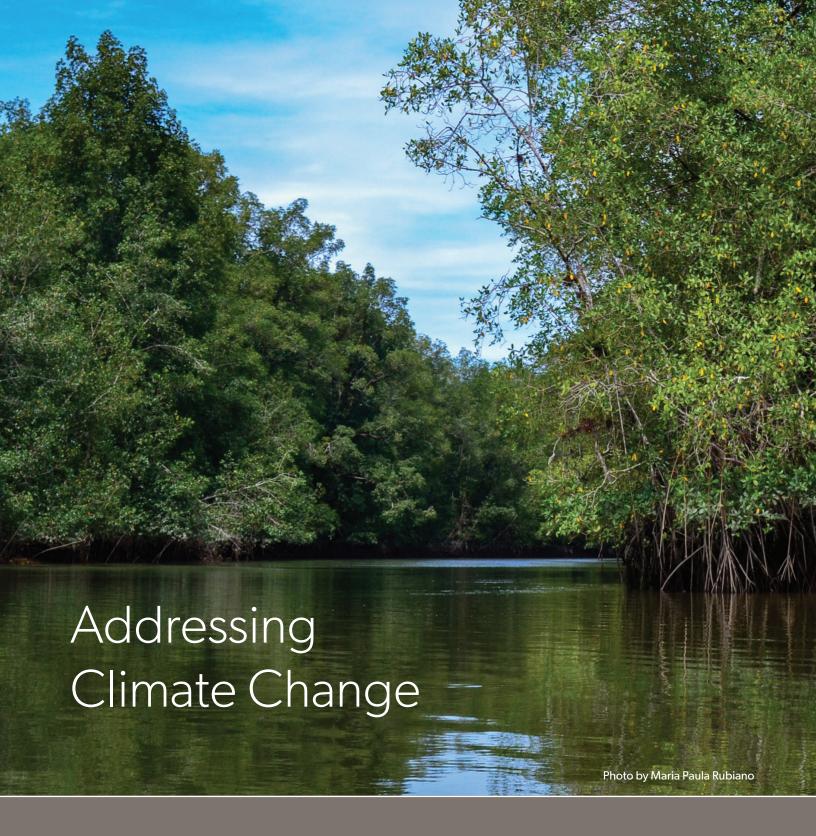
economically. But this won't continue to work unless we as human beings are conscientious, unless we create awareness and teach our children, unless we find happiness in seeing how our birds are doing."

Natalia is also thinking about the future and putting into practice what she learned as she teaches students at the Universidad de Mar del Plata in Argentina.



Coastal Solutions has changed everything for me. No other organization in Latin America to my knowledge undertakes conservation in such an inclusive, interdisciplinary way. Now I think differently, and I see in my students the same desire. This is how change happens.

-Natalia Martínez-Curci





**Johann Delgado** 2019 Coastal Solutions Fellow

Johann, a civil engineer from Colombia, crafted and implemented a coastal defense strategy that restores crucial shorebird habitats on Isla Punta Soldado.



Not long ago, Punta Soldado, Colombia, an island at the edge of the Bay of Buenaventura, was a paradise for migrating shorebirds. Western and Spotted Sandpipers, Wilson's Plovers, and more—as many as 8,000 annually—flocked to its robust intertidal ecosystems, anchored around the mangroves and adjacent mudflats that once dotted both sides of a vast, pristine beach.

The island's 500 Afro-Colombian inhabitants have always relied on the abundance of life found in these same waters and mudflats. Here they fish and harvest mollusks.

Everything has changed with the escalation of climate change.

Rising ocean levels, warmed by more frequent and severe recurrences of El Niño, dramatically eroded the beach, destroyed the mangroves that were the nursery grounds for fish and mollusks, and forced many residents to relocate farther inland. The island fell eerily silent. The birds had dwindled to just 200.



After shorebirds counts on Punta Soldado dropped precipitously from 8,000 to just 200 in 2021, the naturally restored coastline attracted as many as **5,000 shorebirds** in 2023.



#### The power of interdisciplinary innovation

The challenges buffeting this community are what first inspired Johann Delgado to become an engineer. He wanted to solve big problems while shaping conservation action.

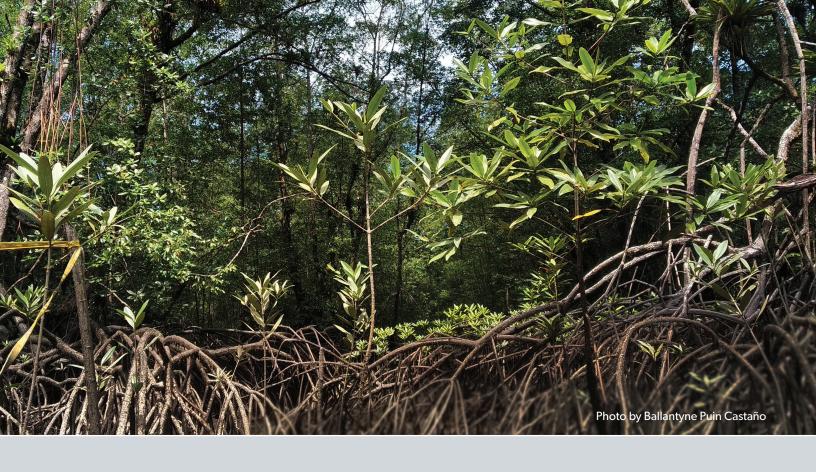
"An undergraduate oceanography course changed my way of thinking," says Johann, on track to earn a PhD in Civil and Environmental Engineering from Cornell in 2024. "It motivated me to go to grad school, where I met colleagues who knew about mangroves, coral reefs, and the chemistry of the ocean. I realized experts from different disciplines can shape better solutions and build better projects, especially to benefit communities."

When Johann became a Coastal Solutions Fellow in 2019, he embraced the opportunity to partner with the residents of Punta Soldado and build a team that embodies this approach. He recruited sociologists, biologists, ornithologists and engineers—including mentor Andrés Osorio, a coastal

management expert who had been his Masters advisor. While the scientists modeled currents to predict changes, the engineers, with residents, planned and constructed a natural barrier of elevated sandbars. They aimed to protect the mangroves to begin restoring shorebird habitats.

"The moment you become a Fellow, you must be a leader for the community," says Johann, whose first field campaign shaped his perspective. "I remember being on Punta Soldado when there was a storm. I could see the waves going right up to the town. Suddenly, you realize it's not just about numbers. It's about lives. It's about dreams."

At the same time, he heard the community say in one voice: we are not leaving. Young resident Michel Sinisterra expresses this shared perspective, "The ocean is life. It's hope. When you're near it, you forget your problems. It brings peace. I don't think I'll ever be separated from the ocean."



#### Hope for the next generation

Last year a welcome indicator of success arrived from thousands of miles away as shorebirds started returning in the hundreds, then the thousands. It happened after a La Niña event that helped the recovery of the island's beaches and mudflats.

An important key to creating long-term success, beyond the coastal defense strategy, are the environmental education programs Johann's team designed to ensure islanders value the role of the birds in the ecosystems they are conserving. It's a lesson Johann hopes will one day be passed on—as young people on Punta Soldado start to take leadership roles to improve their community.

The next generation is equally important to Johann's work today as co-founder of the nonprofit Adaptation Latin America and a frequent speaker about coastal climate solutions. He recently shared his expertise on a larger stage—as a Youth Delegate to the United Nations Climate Change Conference (COP 28) in Dubai at the end of 2023.

Every chance he has, Johann credits the Coastal Solutions Fellows Program for his career. "I tell people Coastal Solutions is a smart investment because it's about people power. By reaching young professionals early in their careers and believing in them, you are giving them the chance to change the world."

Semipalmated Plover by Ryan Sanderson / Macaulay Library



#### Conservation Achievements



#### **VARINIA SAGASTUME, Biologist**

**Project:** Transforming aquaculture practices to benefit shorebirds in Guatemala.

**Key strategies:** Established a close working relationship with Acuamaya, the country's largest aquaculture producer, to identify the best management practices for shorebirds and people, and organized hundreds of volunteers to implement community-based shorebird monitoring efforts.







### JONATHAN VARGAS, Ornithologist Project: Recovering Snowy Plovers in Ensenada, Baja California, Mexico.

**Key Strategies:** Partnered with the real estate sector and agencies to protect priority sites, and launched a volunteer-driven social campaign to create awareness to limit vehicles, off-leash dogs, and other disturbances on the beach.

Impact to date: Human disturbance has been reduced by 90% in 800 acres of coastal habitats, benefiting thousands of shorebirds. Snowy Plovers have been recovering in the region, from just one pair in 2008 to 80 adults and 150 chicks in 2022. Local nonprofits and the city have adopted the project, securing the permanence of these efforts. Jonathan is an influential shorebird expert, leading conservation efforts throughout Mexico and partnering with nonprofits and academia, with support from the U.S. Forest Service, the U.S. Fish and Wildlife Service, and international organizations such as Point Blue, Manomet, and National Audubon Society.







#### **ROMÁN CANUL, Civil Engineer**

**Project:** Restoring Huizache-Caimanero, a 30,000-acre coastal lagoon system in Sinaloa, Mexico, degraded by poor planning and sedimentation.

**Key strategies:** Developed a geo-hydrological model to identify the best restoration interventions and partnered with local nonprofit Conselva, fishing cooperatives, and local communities to secure funding for implementation.

Impact to date: In 2022, Román helped establish a Natural Protected Area to protect shorebird habitat. He also helped secure funding for restoration that serves as a model for guiding investments for climate resiliency in Mexico. Román's work brought recognition as one of 20 Young Leaders influencing the water sector in Mexico. He is now a tenured professor at the University of Campeche, where he is Chair of the Graduate Program in Coastal Engineering.





#### **ELIANA MONTENEGRO,** Socio-ecologist

**Project:** Community-based restoration of La Segua, Ecuador, a priority wetland threatened by shrimp aquaculture expansion.

**Key strategies:** Forged relationships with local shrimp farmers to implement best practices to benefit shorebirds, and created ASO Humedal, a local nonprofit to identify ongoing opportunities for sustainable economic activities.

Impact to date: Working with legal experts, Eliana established the first conservation easements to use shrimp ponds as shorebird habitats at peak migratory season. In collaboration with 2023 Coastal Solutions Fellow Enrique Fornasini, she is implementing restoration projects at the wetland and developing a conservation business plan for the region. Eliana is now the Flyways coordinator in Latin America for Birdlife International, based in Quito, Ecuador.





#### MANUELA ERAZO, Social Anthropologist

**Project:** Protecting the Tubul-Raqui Wetland in Chile, a priority site for shorebirds facing multiple development threats.

**Key strategies:** Organized Mapuche-Lafkenche indigenous groups and Chilean fishermen, once communities in conflict, to work together and develop a proposal for the Ministry of Environment to create a 5,000-acre coastal wetlands sanctuary.

Impact to date: The Tubal-Raqui Nature Sanctuary was approved by the Chilean government in 2022, establishing formal protection for this site. In collaboration with the communities, Manuela's team is now developing the management plan for the sanctuary. Manuela's work earned her the Blue Pioneer Marine Conservation Leader award from the University of California Santa Cruz. She is now the director of Chile's Marine Governance Initiative, working for the United Nations Food and Agriculture Organization.





ANDREINA PERNIA, Architect Project: Creating a landscape conservation Plan for Parita Bay, Panama.

**Key strategies:** Organized a working group of municipalities, agencies, producers, and community leaders to define a joint conservation vision for the region.

Impact to date: The eight municipalities within Parita Bay signed an agreement to enact a conservation plan to protect 80,000 acres of wetlands that are home to thousands of shorebirds, as well as diverse communities and economic activities. She also partnered with the Cattle Ranchers Association and landowners to protect 6,000 acres of coastal habitats, and pilot hydrological restoration projects with support from the U.S. Fish and Wildlife Service. Andreina coordinates the policy initiatives at the Ramsar Wetland Center for the Western Hemisphere.







**Flavio Sciaraffia** 2020 Coastal Solutions Fellow

Flavio, a landscape architect from Chile, helped conserve three coastal urban wetlands in Arauco, a key site for shorebirds of the Pacific Americas Conservation Strategy, while developing a proposal for the regulations of Chile's Urban Wetlands Protection Law.



Throughout his career, Flavio Sciaraffia has built the road he travels.

As a graduate student in Chile, Flavio could not find a program that combined his training as an architect with his passions for land-use planning and conservation. He went to Harvard University to get what he was looking for—a Master's in land-scape architecture.

Then as director of GeoAdaptive, Chile, Flavio recognized that his profession had moved away from its roots. "I realized landscape architects were, before the 1970s, dealing with issues of water, soil, sustainability, before veering toward specific design and qualities of space. I, for one, understand that science is adjacent to design and needs to inform our field."

Under new regulations informed by this project, **100 protected urban wetlands** across Chile are now subject to **several conservation measures** that meet minimum sustainability criteria.

Still seeking the optimal niche, Flavio discovered Coastal Solutions Fellows.

"What I immediately liked about the fellowship is that the Cornell Lab of Ornithology was taking a leap forward," Flavio says. "They understood that to do effective conservation, you need to work with designers and planners, incorporate other disciplines, and collaborate with communities."

#### Timing is everything

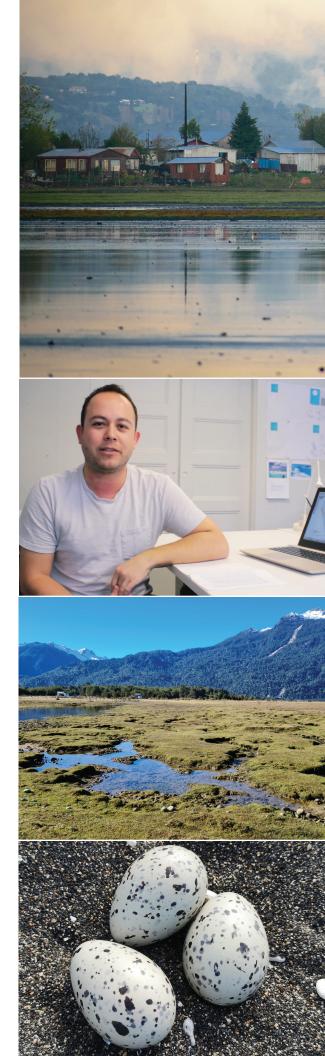
Before Flavio applied to the program, he intentionally expanded his expertise in wetlands conservation. Working for the Chilean Ministry of Environment, he evaluated the conservation value of all the country's wetlands. This experience set the stage for his 2020 acceptance into the Coastal Solutions Fellows Program with a project initially focused on voluntary management agreements for the wetlands of Valdivia, including Laraquete Beach, a priority site for Pacific Flyway shorebirds.

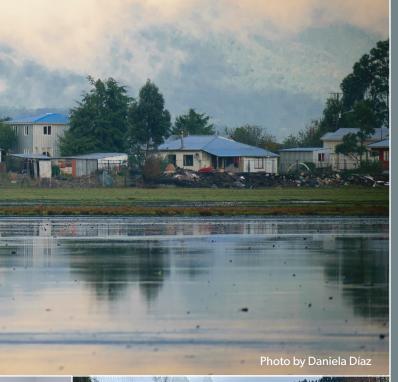
However, that same year, the Chilean Congress brought greater attention to the wetlands in and around all the country's cities with the passage of the Urban Protection Wetlands Law. With this legislation as a starting point, the Ministry turned to Flavio and the project's collaborators to help draft the regulations needed to enforce the law. His mentor, Ignacio Rodriguez-Jorquera, saw a unique opportunity.

"I advised Flavio to change the scope of his project—from local to national, from voluntary agreements to policy," recalls Rodriguez-Jorquera, founding executive director of the Río Cruces Wetlands Center and a faculty member at Universidad Austral de Chile. "Every productive fellowship should take advantage of the unexpected."

Flavio restructured the project to incorporate policy in conjunction with conservation to advance real changes that also supported wetlands and shorebird conservation.

"Working with the Cornell Lab is great because often you have policy and planning people who lack scientific knowledge," he says. "I feel very comfortable—even though I'm not a watershed scientist or bird ecologist or hydrologist—coordinating these areas of expertise and bringing everything together."









# Scaling up conservation measures across Chile

Flavio's project drove change at the local level by designating three coastal urban wetlands of the highest biodiversity value in Arauco, southern Chile. And thanks to the conservation recommendations he, his colleagues, and collaborators made to the Ministry, these wetlands—and dozens more across Chile spanning 27,000 acres, a quarter of them essential for shorebirds—now have an effective management framework, spanning policy, science, enforcement, and public engagement.

This far-reaching impact is just the beginning.

"Now we're collaborating with the Ministry of Public Works on implementation," says Flavio. "They need to figure out how to work within the law to build the roads and bridges across wetlands and how to do environmental impact assessments."

"This new work is much larger, with more funding and a wider range of professionals for implementation—and our team will help set up the criteria for project design and standards for measuring success. This is about Chile's future, its natural resources, and the shorebirds and other species who rely on these fragile ecosystems."

Macaulay Library Photos: American Oystercatcher by Terence Zahner; American Oystercatcher eggs's (opposite page) by Tamara Catalán Bermudez

# Scaling-up the Coastal Solutions Impact

As evidenced by the stories in this report, in just five years, the Coastal Solutions program has helped early-career leaders change the face of conservation along the Pacific Flyway. Working with communities, non-profits, agencies, academia, and industry, fellows have moved beyond the status quo to institute science-based projects that are transforming behaviors and policies. The impacts of their work will be felt for years to come.

But the need and urgency for solutions is greater than ever. We must rise even higher to meet the increasing challenges that migratory birds and coastal ecosystems face in our changing world.

Building upon the many lessons learned over the past five years, we are excited to sustain and grow the Coastal Solutions community. For the coming decade, we plan to scale our impact to the most important and threatened places along all of the major coastal flyways of the Americas – the Pacific, Mid-continental, and Atlantic flyways. We will expand and evolve our proven model, working with dozens of future Fellows eager to spark a lifetime of positive change.

The successful scaling of the program will require strong partnerships with leaders, communities, and institutions on the ground as well as with donors worldwide. Together, we can achieve an even-bolder vision to build a better future for coastal communities across the Americas.



#### Thank you for your support!

With support from generous individuals, foundations, and partners, the Coastal Solutions Fellows Program is demonstrating that a new way to reach on-the-ground conservation at scale is achievable. The program is only possible given the generosity of our donors and partners. It is this foundation that is encouraging us to expand our work to protect birds for everyone's future.



Cover photo: Long-billed Curlew by Ryan Sanderson / Macaulay Library Graphic Design by Amaranta Delgado

To find out more about our program and its vision please contact:

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