

An aerial photograph of a small boat with a white canopy and a green stripe, moving through clear, turquoise water. The water's surface is covered in gentle ripples. The boat is positioned in the lower center of the frame, leaving a small wake behind it.

# TAKATA

RESEARCH CENTER

Annual Activity Report  
—— 2018 - 2019 ——

## *Words from the director*

### CASSIOPEA CARRIER DONEYS

Anyone who sets foot in Mahahual cannot help but feel overwhelmed by the natural beauty of the place. This little lost paradise is an ode to the delicacy and importance of coastal ecosystems and the incredible biodiversity that makes them up. Any activity in Mahahual depends on it, be it tourism or fishing. Since 2000, when an important cruise port was established in this fishing village of a few hundred inhabitants, a rapid transformation has been going on. Our paradise, once home to the Caribbean's greatest marine biodiversity (Cinvestav, 1999), is beginning to feel the effects of human development on its coasts. Natural habitats are declining and biodiversity is becoming poorer. When Takata opened its doors in 2016, it was with conviction that its founding members aimed to make positive change. Why not believe that it would be possible to make this little Eden, lost at the end of the Caribbean, a destination where ecotourism can become the engine of healthy and sustainable development, respecting the ecosystems that it comprises? Why not have the ambition to create together a place where the conservation of the environment and the restoration of natural systems are at the base of development actions, and this, with the inclusion and respect of the local population? With this in mind, for three years Takata Research Center has established a variety of programs and projects. These programs focus on conserving nature and the local community, protecting biodiversity and natural environments, as well as restoring the richness of the ecosystems and wildlife that inhabit them...



## *Words from the director*

CASSIOPEA CARRIER DONEYS



...The new generations show us that a paradigm shift is possible. It's happening. We can have hope in the future, in the ability of humans to make informed decisions, but also in the resilience of nature. Together, we can and must shape history and create a just future for all.

It is with great pleasure and pride that we present to you our 2018-2019 activity report. I wish to thank from the bottom of my heart all of those who, from near and far, have been able to carry out, day after day, actions as important as they are necessary.





# TABLE OF CONTENTS

DESCRIPTION OF THE ORGANIZATION_____	5
HOURS WORKED_____	12
COMMUNICATION _____	13
RESULTS OF PROGRAMS AND PROJECTS_____	15
PARTNERSHIPS _____	36
ACKNOWLEDGEMENTS_____	41

# Description of the Organization

Our Research Center works to restore the biodiversity of the Caribbean Sea at a time when urgent action is needed. Takata Research Center is an NGO specializing in marine ecology, sustainable coastal management, and public awareness. Our organization ensures that its work is based on effective collaboration with the local community and government.

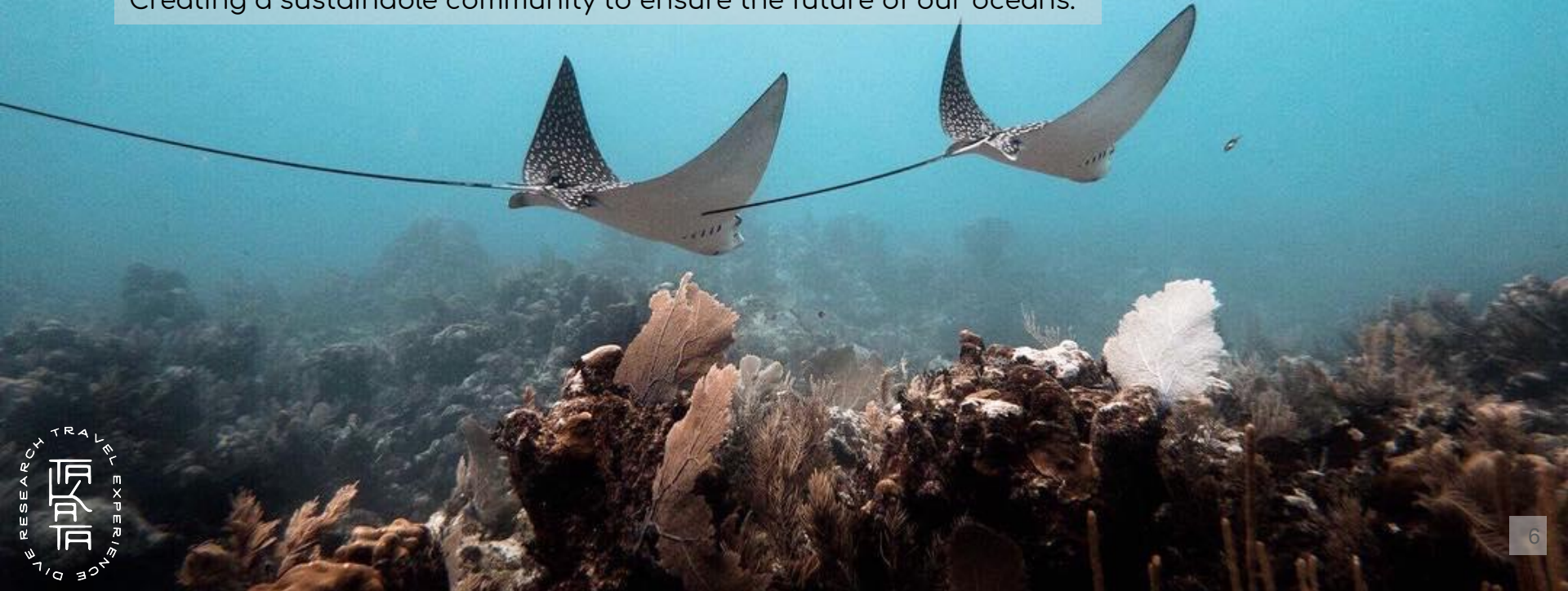


# The Mission:

Protecting marine biodiversity through education, research and conservation.

# The Vision:

Creating a sustainable community to ensure the future of our oceans.





*Research at Takata is  
organized into three main  
principles:*

- CONSERVATION & RESTORATION
- ENVIRONMENTAL MANAGEMENT
- ENVIRONMENTAL EDUCATION

Our research and conservation activities are divided into a variety of programs and projects, which are open to interns from universities around the world. We also welcome volunteers throughout the year.

We believe in a fairer world, where human activities do not have a negative impact on nature. This world and this generation are ready for a change that involves a new healthy way of interacting with our planet. Our collective efforts and actions will help restore and protect our ecosystems. Each of us should aim to contribute to creating a healthy and sustainable future where the importance and fragility of our environment is understood, respected and valued.



# General and Specific Objectives



## *Conservation of biodiversity*

- Contribute to the protection of biodiversity and endangered species.
- Implement environmental characterizations and biodiversity inventories in the territory in order to improve knowledge of the state of its conservation.

## *Restoration of key ecosystems*

- Establish projects to restore the coastal-marine ecosystems of Mahahual: mangrove, marine prairie, reef, etc.
- Work with local people to protect, restore and improve Mahahual's coastal-marine ecosystems.

## *Education and environmental awareness*

- Raise awareness and educate about biodiversity and coastal ecosystems.
- Sensitize people, youth, and visitors to the fragility of ecosystems and the importance of preserving them.

## *Implementation of sustainable coastal development*

- Act as positive leaders in development decisions.
- Offer our expertise in environmental management and sustainable development.
- Participate in constructive partnerships with the community, business sector, and government.



# Major Achievements

<i>Conservation of natural habitats and endangered species</i>	<ul style="list-style-type: none"> <li>• Cleaning of natural environments, beaches and diving sites.</li> <li>• Creation of the Turtle Conservation Program.</li> <li>• Creation of a Conservation Plan for sea turtles in Mahahual.</li> </ul>
<i>Habitat characterization</i>	<ul style="list-style-type: none"> <li>• Cartography of 12 km of coastline: coral reef, seagrass meadows, and mangrove forest.</li> <li>• Cartography of the hydrology of the territory.</li> <li>• Comparative study of vegetal cover between 2000 and 2019 in the area.</li> </ul>
<i>Monitoring</i>	<ul style="list-style-type: none"> <li>• Monitoring of reef: benthos, corals, fish, and megafauna.</li> <li>• Monitoring of seagrass prairies and associated species.</li> <li>• Planning the monitoring of mangrove forest and associated species.</li> </ul>
<i>Educating the local and foreign populations</i>	<ul style="list-style-type: none"> <li>• Environmental education every week to the public and in Mahahual schools.</li> <li>• Creation of environmental education activities in the community.</li> <li>• Organization of an environmental festival.</li> <li>• Presentation of workshops and talks.</li> <li>• Creation of educational content and dissemination on social networks.</li> </ul>
<i>Training and accompaniment for local businesses</i>	<ul style="list-style-type: none"> <li>• Creation of an Eco-Responsibility Guide.</li> <li>• Creation of Eco-Mahahual Certification.</li> <li>• Accompaniment of companies that wish to make an eco-responsible turn.</li> <li>• Training for company managers and employees.</li> </ul>



# Major Achievements

## *Waste management*

- Participation in street cleaning activities.
- Establishment of a recycling program in the community and businesses.
- Establishment of transport for recycled material.
- Organization of waste separation days.

## *Collaboration*

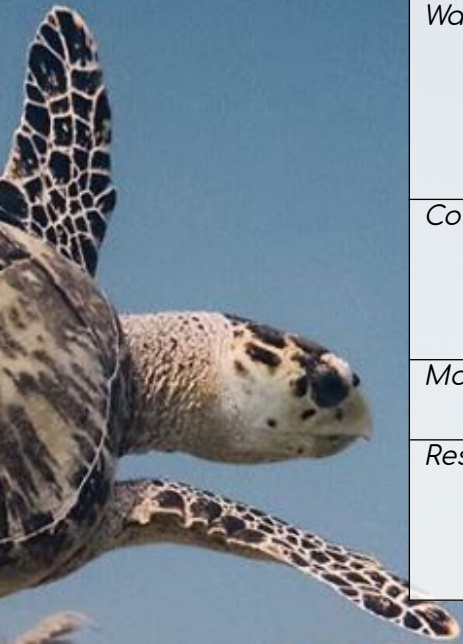
- Collaborations with government.
- Collaborations with local and foreign universities.
- Collaborations with local and international organizations.
- Collaborations with researchers and research centers.

## *Mobilization*

- Organization of the Eco-Mahahual Campaign.
- Campaign organization for a Healthy Urbanism in Mahahual.

## *Restoration*

- Establishment of a coral restoration program.
- Construction and installation of underwater coral nurseries.
- Coral nursery monitoring and maintenance.
- Creation of a 5-year coral restoration plan.



# Structure and Teamwork

General Assembly of the Members

Administrative Council

Director - Cassiopea Carrier Doney

Project Manager - Juliana Acero

Scientific Collaborators - Andres Larrea  
/ Sadhana Carrier Doney

University Interns

Volunteers





## *Hours Worked*

TOTAL EMPLOYEE HOURS:	3,850 hours
TOTAL HOURS OF INTERNS:	9,800 hours
TOTAL VOLUNTEER HOURS:	1,230 hours
GRAND TOTAL:	14,880 hours worked



# Communication



Our communication strategy aims to strengthen ties with the local community, raise awareness and educate the local and foreign populations, and stimulate a change in current practises and values. Through this strategy, we are able to show our diverse programs, fieldwork, presentations of results, and the main problems and threats affecting tropical coastal ecosystems. To do this, our team has developed an important marketing plan. The creation of our photo and video content, accompanied by educational texts, attracts the attention of Internet users. This content is shared on our social networks (Instagram and Facebook) as well as on our website.

Our website has received many improvements throughout the year and the image of the research center has become clearer. The professionalism of our organization, as well as the work done, is presented in a simple and structured way using attractive images. The different pages are straight forward to navigate and all information is easily accessible.

Most of our communication work is done on social networks through publications and campaigns. In addition to our biannual publications on our programs and environmental news, we present a series of informative announcements as part of our FeBLUEary campaign. With this four week campaign we published more than 15 photos and videos accompanied by explanatory texts...

# Communication

... In addition, we regularly publish "Marine Biology Monday" and "Turtle Tuesday", sharing information on the biology and ecology of the species and ecosystems found in the region. Our Instagram has more than 3400 followers, and our Facebook has more than 5000.

An alliance with the world's largest diving organization, PADI, has put our work and several of the environmental problems and solutions on the map. PADI has shared many of our videos in addition to posting articles on their blog. The director of Takata's research center, Cassiopea, even received the PADI Ambassadiver Award and her biography can be found on their website. Also, articles in journals (En Profondeur) and newspapers (Journal de Montréal) helped spread our work and message.

During the year, we have had the opportunity to give several lectures at the following locations:

- Takata
- Quebec BESIDES Festival
- Instituto Tecnológico de Chetumal: Cycle of conferences towards a sustainable use of the oceans and their ways of life
- Acting for Climate Change: Oslo climate workshop
- Museum of the Sea of the Magdalena Islands
- University of Québec in Montréal - Institute of Environmental Sciences





# RESULTS OF PROGRAMS AND PROJECTS



# Monitoring of Coastal Ecosystems

## DESCRIPTION

Our reef monitoring program allows us to collect data on the condition of the reef through long-term methodical sampling of reef organisms and populations. The data obtained informs us about the population and health of a variety of different species observed on the reef, seagrass, and mangrove, including fish, corals and mega-fauna. Monitoring the dynamics of the reef and its biodiversity allows us to understand the causes of its degradation. The data collected also serves as a scientific basis for proposing and promoting concrete conservation measures. One of the main goals of the program is to provide reliable scientific support to the different local conservation and land management initiatives.



# Monitoring of Coastal Ecosystems

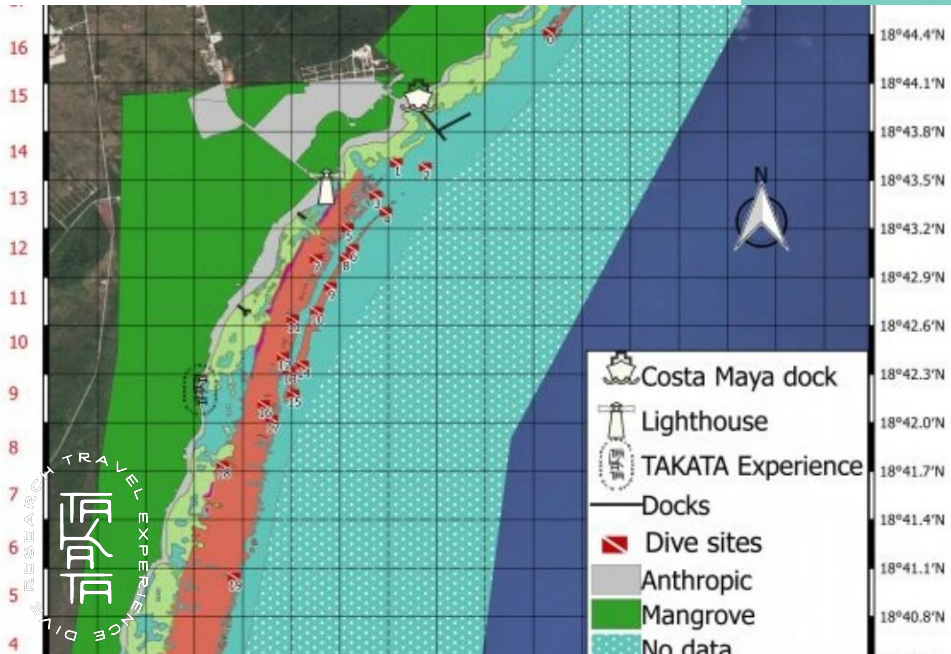
<i>Objective</i>	Monitor reef dynamics and biodiversity to understand the causes of reef degradation.
<i>Results 2018-2019</i>	Coral monitoring Benthos monitoring Megafauna monitoring Monitoring of seagrass and associated species
<i>Project manager</i>	Juliana Acero
<i>Interns</i>	Jordan Guillarmé Coralie Bernier Eliana Lapierre
<i>External collaborators</i>	AGRRA Healthy Reef for Healthy People



# Habitat Mapping

## DESCRIPTION

Takata's habitat mapping program serves to create geospatial analysis tools for the study and conservation of the rich habitats present in Mahahual, which are: reefs, seagrass beds, and mangrove forests. Project data collection methods include remote sensing based on satellite and sonar imagery, land expeditions, diving or snorkeling, and participatory mapping workshops. Data is processed and analyzed using geographic information systems (GIS) tools, which allow us to centralize a wide variety of factors. The resulting maps are used by our reef monitoring, turtle conservation, and coral restoration programs and are available to support local conservation initiatives. The maps subdivide Mahahual's territory into habitats and study sites, simplifying analysis of reef status and dynamics, as well as anthropogenic pressures. The project has developed a series of maps of Mahahual's underwater habitats covering 12 km of coastline.



# Habitat Mapping

<i>Objective</i>	Create geospatial analysis tools for the study and conservation of the habitats present in Mahahual.
<i>Results 2018-2019</i>	Mahahual Reef Mapping Mahahual Seagrass Mapping Mahahual Mangrove Mapping Comparative study in time of the vegetal cover of the forests of Mahahual
<i>Project manager</i>	Andres Larrea
<i>Interns</i>	Camille Mulatero Victor Basly
<i>External collaborators</i>	University of Quintana Roo



# Coral Restoration

## DESCRIPTION

With this program, we want to restore 2,000 m<sup>2</sup> of degraded reef, planting 10,000 coral fragments over the next five years. In the first year of the project, we will cultivate 500 coral fragments in two nurseries, located on two separate reefs. In the second year we will increase this number to 1,000 coral fragments, adding one more nursery at each reef site. In the third and fourth year of the project, we will again increase the number of coral fragments to 3,500 and 5,000 respectively - this is to reach our ultimate goal! Thanks to our team of scientists and volunteers, we hope to return Mahahual to one of the most pristine and healthy reefs in the Caribbean Sea. One of the main goals of this project is to unite the entire community of Mahahual around a common goal: to save our reef!





# Coral Restoration

<i>Objective</i>	Restoring the degraded reef of Mahahual.
<i>Results 2018-2019</i>	Development of a five-year action plan for coral restoration. Construction and installation of the first coral nursery. Monitoring of the nursery and its resistance.
<i>Project manager</i>	Juliana Acero
<i>Scientific collaborator</i>	Andres Larrea
<i>Intern</i>	Solène Jonveaux
<i>External collaborators</i>	Cinvestav El Colegio de la Frontera Sur (ECOSUR) University of Sherbrooke



# *Turtle Conservation*

## DESCRIPTION

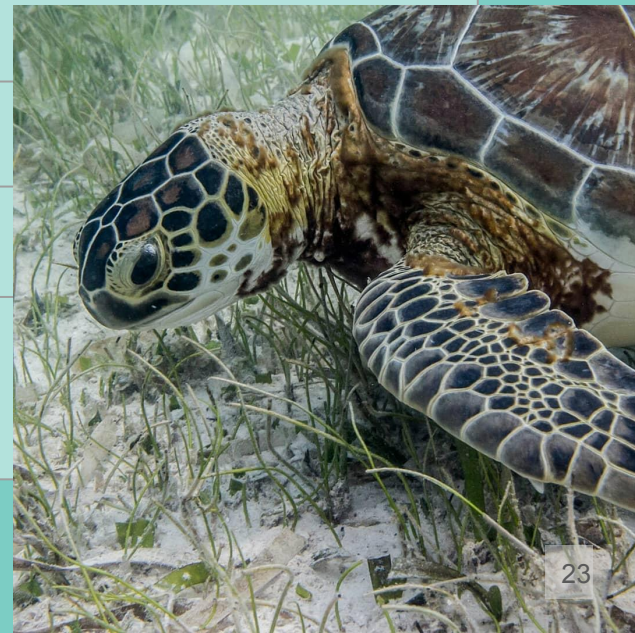
Mahahual's turtle conservation program is the result of collaboration with the Aak Mahahual Project, an organization that specializes in protecting sea turtles on Mahahual's beaches, and technical advice from engineer Roberto Herrera, a specialist in the field of sea turtles at the Colegio de la Frontera Sur. This program has three areas of intervention:

1. Monitoring the local turtle population by collecting data on: the population's demography and health, the location of nesting and foraging sites, and any possible conservation challenges. The information obtained allows us to promote pragmatic actions for the management and conservation of these beautiful animals.
2. Surveillance and protection of nesting sites using permanent, vigilant committees that include volunteers to monitor nesting beaches during the nesting season to mark nests and build incubation corrals.
3. Environmental education activities with turtle conservation present important learning opportunities for the local population, as well as for students at all levels.



# Turtle Conservation

<i>Objective</i>	Ensure sea turtle conservation through a better understanding of the species, their habitat, and threats. the degraded reef of Mahahual.
<i>Results 2018-2019</i>	Monitoring sea turtles on the beaches, seagrass beds, and Mahahual reef. Monitoring egg-laying and hatching success. Creation of a conservation plan for sea turtles.
<i>Project manager</i>	Cassiopea Carrier Doney
<i>Scientific collaborator</i>	Andres Larrea
<i>Interns</i>	Sarah Lecuyer Éléonore Cusson
<i>External collaborators</i>	Proyecto Aak Mahahual Roberto Herrera University of Quintana Roo University of Sherbrooke





# Environmental Education

## DESCRIPTION

At Takata we believe in the value of educating for a better relationship between the individual, the community, and the environment. We want to empower the community by creating with them the knowledge and tools necessary to protect the ecosystems on which we collectively depend. Our center collaborates with local stakeholders and organizations to coordinate a variety of intervention strategies. These include public debates, conferences, clean-up campaigns, film screenings, family games, art projects, among other activities. We work with local schools to motivate children to develop an emotional connection with their environment from an early age. We work with the community to inform them about environmental problems in Mahahual and existing solutions. We educate our dive center clients, who are often interested in reef ecology and marine environmental issues.



# Environmental Education

<i>Objective</i>	To empower and sensitize young people and adults in the community to environmental challenges.
<i>Results 2018-2019</i>	Weekly workshops and talks in Mahahual schools. Development of educational material. Organization of activities in the community. Organization of an environmental festival. Talks at Takata, universities, and festivals.
<i>Project manager</i>	Cassiopea Carrier Doneys
<i>Scientific collaborator</i>	Andres Larrea Juliana Acero
<i>Interns</i>	Gabrielle Dutil Julie-Ann Dupré Emma Orellana Pepin
<i>External collaborators</i>	Menos Plástico es Fantástico en Mahahual Primaria Vicente Kau Chan Telesecundaria Jorge Luis Cortes Mugartegui Bachilleres Emsad Mahahual

# *Social Perception of the Environment*

## DESCRIPTION

Our program of social perception of the coastal environment aims to produce a description of the collective planning of the local environment. The aim of this program is to identify the main local stakeholders, to describe the perception of the coastal environment from the perspective of these stakeholders, to map the different uses of the coast, to collectively identify the main local socio-environmental problems and their possible solutions. The programs data collection methods include individual interviews, collective discussion workshops, participant observation of land management activities, participatory mapping workshops, among others. The information obtained allows us to develop intervention measures and support territorial management initiatives in Mahahual.





# Social Perception of the Environment

<i>Objective</i>	Understand the social dynamics of Mahahual in order to empower the community in the face of the collective challenges of territorial management.
<i>Results 2018-2019</i>	Interviews with fishermen. Interviews with tourism sector workers. Interviews with people in the community.
<i>Project manager</i>	Cassiopea Carrier Doneys
<i>Scientific collaborator</i>	Andres Larrea
<i>Intern</i>	Clara Malbos

# Recycling and Composting

## DESCRIPTION

As part of a solution to Mahahual's waste management problems and their consequences for human health, biodiversity, and coastal ecosystems, our research center initiated a local recycling program. We consider recycling and composting to be a common practice in many countries and think that Mahahual should not be left behind, but rather should be a pioneer in the countryside and an example for any city that boasts an ecotourism industry. So far, 58 establishments in Mahahual are participating in our recycling program and 15 are registered to participate in our composting program. Many individuals also bring us their recyclable household products. In addition, we are working with local schools, which have started recycling programs. These initiatives are redefining how we treat our environment as a community and we will continue to work hard to ensure that our waste materials are properly cared for to keep our beautiful region clean and prosperous.



# Recycling and Composting

<i>Objective</i>	Reduce the amount of waste ending up in nature and in landfills.
<i>Results 2018-2019</i>	10 tons of waste diverted from the landfill to be recycled. Two participating schools in recycling programs. 58 participating companies. Weekly transport offer for collection.
<i>Project manager</i>	Cassiopea Carrier Doney
<i>Interns</i>	Jacob Buisson Gabriel Danneault Coralie Cante Alice Tarog
<i>External collaborators</i>	Mahahual Limpio University of Sherbrooke





# Eco-Mahahual Certification

## DESCRIPTION

In 2018, the Takata research center created an eco-certification program to help local businesses on their journey toward eco-responsibility. The purpose is to help resolve the environmental crisis that is occurring in Mahahual and ensure a prosperous future for the city's incredible natural heritage. Participants who wish to obtain Takata's Eco-Mahahual Certification can achieve four levels of recognition, depending on their participation. These companies implement a variety of actions related to waste management, responsible sourcing, and sustainable use of energy and water. Takata's team provides the tools and support needed to achieve each facility's environmental goals and help them achieve the desired Eco-Mahahual Certification. By participating in this program, local businesses are positioning themselves in favor of a more sustainable form of tourism. It is a testament to their commitment to the environmental integrity of the region, the economic prosperity of the city and the well-being of the Mahahual community.



# Eco-Mahahual Certification

<i>Objective</i>	Promote eco-responsible actions in the private sector.
<i>Results 2018-2019</i>	Creation of an Eco-Responsibility Guide. Creation of an Eco-Responsible Action Plan. 11 companies with the Eco-Mahahual Certificate.
<i>Project manager</i>	Cassiopea Carrier Doneys
<i>Interns</i>	Anthony Galvin Frédérique Thibault
<i>External collaborators</i>	University of Sherbrooke

# Sustainable Urbanism

## DESCRIPTION

In the last year, we have worked to prevent Mahahual from developing in a way that is aggressive and harmful to ecosystems and the local community. For the sustainable urban development of Mahahual, we have worked with urban development professionals to write an urban development proposal that takes into account the biological and ecological characteristics found in the area. This proposal was presented as a counterpart to the Urban Development Plan (PDU) that had been proposed by the Quintana Roo state government for Mahahual. This PDU was planning an urban development that would have had severe consequences for the mangrove forest and the environment of our community.





# Sustainable Urbanism

<i>Objective</i>	Influence sustainable urban development to be in accordance with coastal ecosystems.
<i>Results 2018-2019</i>	Healthy Urbanism Campaign in Mahahual. Creating an alternative PDU.
<i>Project manager</i>	Cassiopea Carrier Doneys
<i>Scientific collaborator</i>	Sadhana Carrier Doneys

# Sustainable Tourism

## DESCRIPTION

To make Mahahual a socially and ecologically sustainable destination, one cannot forget the greatest economic source: tourism. Mahahual has the second most important cruise ship port in Mexico and receives tourists from all over the world. This small coastal town depends on tourism for its development and currently, the growth does not benefit all parts of the community and is often done without taking into account the protection of the environment. We are working on making Mahahual into a sustainable tourism destination and finding ways in which the entire local community can directly benefit from tourism. We are in contact with the port and the cruise companies of the ships that arrive in Mahahual, as well as with the tourist establishments and tour operators in the area. In parallel, we work with the community to see what sustainable and local goods and services can be offered to tourists, in order to meet the current tourism demand.



# Sustainable Tourism

<i>Objective</i>	Make Mahahual an ecotourism destination that benefits the local population.
<i>Results 2018-2019</i>	Survey data collection at the cruise ship port. Interview relevant tourism stakeholders, which includes guests in tourist establishments, tour operator managers, local community members, and members from governmental organisations Conduct research on the local population. Development of an action plan for sustainable tourism.
<i>Project manager</i>	Cassiopea Carrier Doneys
<i>Interns</i>	Loreen Scharf Elisabeth Boon Nadia El-Edrissi
<i>External collaborators</i>	University of Sherbrooke





# PARTNERSHIPS

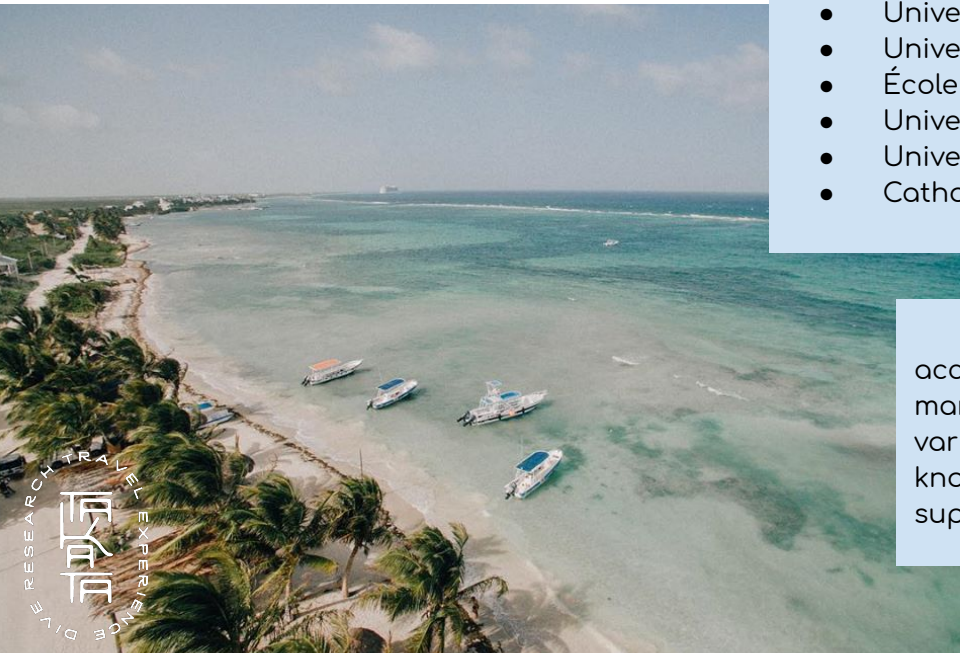
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# Collaborations

INTERNS WHO ARE IN UNDERGRADUATE, GRADUATE, AND MASTER'S STUDIES JOIN US FROM

- Universidad Autónoma Metropolitana (Mexico)
- University of Sherbrooke (Canada)
- Université du Québec à Montréal (Canada)
- McGill University (Canada)
- Cégep de Saint-Laurent (Canada)
- University Paris Descartes (France)
- University of Montpellier (France)
- École supérieure d'agronomie de Toulouse (France)
- University of Wageningen (Netherlands)
- University of the Netherlands of Applied Sciences (Netherlands)
- Catholic University of Chile (Chile)

Collaborations with national and foreign universities allow us to accept bachelor's, master's, and doctoral interns to work as project managers in our programs and to conduct research. This helps us at various levels: it is a source of experts who come to share their knowledge, they help carry out projects, collect and analyze data, and support as volunteers in different projects.

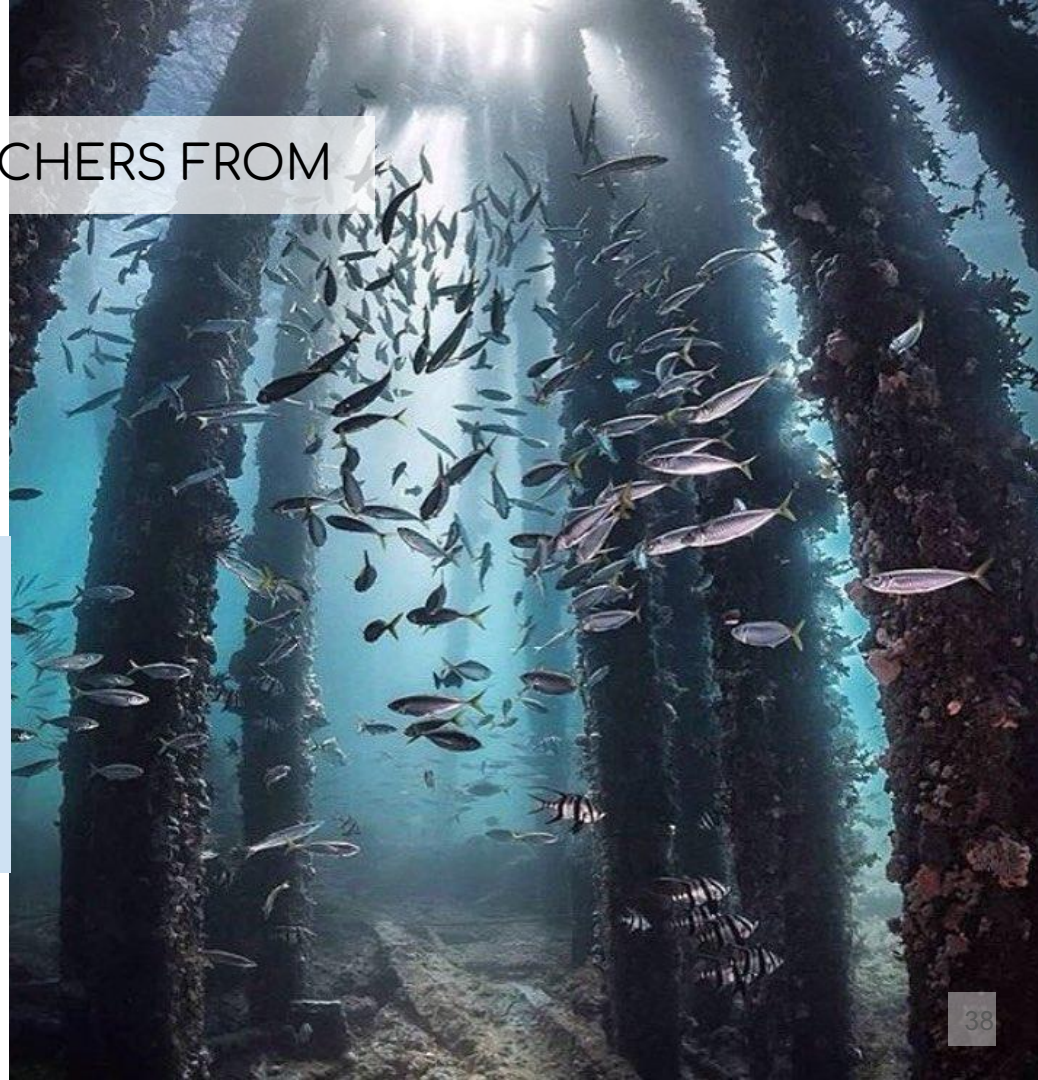


# Collaborations

## WE COLLABORATE WITH RESEARCHERS FROM

- Cinvestav
- El Colegio de la Frontera Sur (ECOSUR)
- University of Quintana Roo
- Healthy Reef for Healthy People

Collaborating with national and international researchers allows us to share work, protocols, data, and results. We can often support each other with materials, equipment, and/or infrastructure. As active members of the scientific community, our research center offers free access to the data that is collected, as well as to our research results.





# Collaborations

## WE COLLABORATE WITH SEVERAL LOCAL ORGANIZATIONS

- Aak Mahahual
- Menos Plástico es Fantástico en Mahahual
- Mahahual Limpio

Collaborating with local organizations allows us to share knowledge, contacts, expenses, and the work we do with the community. We frequently pool our common efforts to join forces and move faster on projects.

We also welcome all of Mahahual's dive centers, hotels, restaurants, fishermen, youth, and seniors to participate in the active and passive restoration of our coral reef and help make this project a success.



# FINANCIAL PARTNERS

We have always worked with Takata Dive Center, which supports us with logistics and funds. This allows us to have access to infrastructure, boats, diving equipment, etc. We share the same workspace and materials. The little funding support we have received from Takata Dive Center has allowed us to carry out multiple programs and projects.

For the first time this year, we have begun collaborating with Canadian companies on funding campaigns. Folia Design, a plant company, sold "coral" cacti for one month and donated the proceeds to our research center. Escape Coffee, a coffee company, did the same with the sale of a Mexican coffee beans.



# ACKNOWLEDGEMENTS

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# Acknowledgements

We are grateful for the help of our collaborators and our community. Environmental conservation work is complex and can be difficult. However, with support, it's amazing how much can be achieved. We are grateful for your trust, support, participation, and consideration.

Thanks to your invaluable support, we were able to carry out our various projects and implement our mission. We are proud to share our achievements with our collaborators and we are happy to continue working with so many people and organizations that stand for the natural environment and for the well-being of future generations.

We also thank all those who work to protect the environment of Mahahual and the world including employees, partners, interns, and volunteers who help care for our planet and the incredible life it harbors.

Thank you!

