



CONSERVATION LEADERSHIP PROGRAMME

CLP ID: 02247715

CLP project name: Where are the manta rays in Bahia de Banderas, México?

Host Country: México

Site location: Bahia de Banderas, México.

Dates in the field: august 2015, april 2016, June 2016

Parties involved in the project:

Manta trust, Gulf of California Marine Programme, Pelagios Kakunja, Pacific Manta Research Group, Fundación Punta de Mita.

Overall aim: identify giant manta movements and raise awareness about it in Bahia de Banderas, México

Authors:

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Date when the report was completed: 30/Dec/2016

Section 1

Project partners

- Manta trust
- Gulf of California Marine Program
- Pelagios Kakunja
- Pacific Manta Research Group

Project collaborators:

- Moises Leonardo Miranda Sanchez (ITBB student): He helped in the reef fish surveys and used part of the information to obtain his bachelor's degree in Marine Biology
- Miguel Gómez (CUCsur student): He helped in the laboratory, identifying zooplankton groups and counting individuals, to complete his social services
- Sarai Barcenas (ITBB student): She helped in the laboratory, identifying zooplankton groups and counting individuals, to complete her social services
- Anthony Fregoso (Marine biologist): He did the mural drafts and the final design, helping in the painting of the final mural.
- Eddy Aguirre (Yelapa High school student): He helped in the painting of Yelapa's mural
- Nevith Parra: She collaborated in the creation of the giant manta graphic story
- Alejandra Castelo: She collaborated in the creation of the giant manta graphic story
- Leonardo Arzumendi: He collaborated in the creation of the giant manta graphic story

Summary

Spatial and temporal information along with the use of habitat of mantas, can inform fisheries and boating activities to prevent interactions with mantas that can lead to injury or direct mortality, including identifying seasons, times and areas that should be avoided by boats or closed to certain types of activities. We tagged 30 giant manta rays with acoustic trackers, identifying important hotspots in a highly boat traffic area. Doing zooplankton tows, we related the manta presence with the dynamic of the zooplankton community. We got an insight in the importance of the giant manta ray for the reef fish community. Our work with the local community developed a change in perception and a feeling of pride for the local villagers of Yelapa. At least one fishermen cooperative is willing to follow good practices focused in the protection of the giant manta. The local schools are now willing to develop educational curricula based on giant manta ray's ecology and citizen science. With the help of local students, we created a mural about giant mantas and reef biodiversity and now the manta subject is being used in other murals and paintings around the study site.

Introduction

The giant manta, *Manta birostris* is a charismatic elasmobranch which is highly popular around the world. Due to the biological characteristics of this organism and the enormous lack of information its populations are now in risk. In Mexico, laws have been established to ban its fisheries, but accidental catches and occasional collisions between boats and mantas are a constant risk.

An understanding about giant manta's local movements around the study site is needed to prevent anthropogenic damage on giant manta population. The giant manta is a slow growing animal and is very vulnerable to fishing nets, garbage and bad touristic practices. In order to improve the chances of surviving of the giant manta an understanding of the organism biology and value as a resource is needed. A good Eco touristic plan on giant mantas can give thousands of dollars per manta (O'Malley *et al.* 2013). This will not only be benefic for the local manta population, who will improve his chances of survival and procreation, but the local fishermen communities will have an optional income who will improve their way of living, also making them to see the mantas as something that must be preserved.

Yelapa, the study site, is very relevant to the giant manta conservation. This site has great depths, rocky reefs and upwelling events occurring along the year. The main way of transportation to this site is by water taxis, a local public transportation service because there is no path by land. The giant manta presence in this place is widely known by fishermen and tourism operators but not well understood. The basic ecology of the giant manta ray is unknown and it is still an evasive and poorly understood animal. The main stakeholders are:

- **Fishermen cooperatives:** group of organized fishermen who follow certain rules to fish. The long nets used by some of these cooperativas get entangled on giant mantas very often.
- **Free fishermen:** Individuals who fish by and for themselves. Usually not following fishing norms and guidelines. As same as the cooperativas, some types of their fishing gear is damaging giant manta individuals.
- **Tourism operators:** There are dozens of different coastal based tourism enterprises who do activities in the study site. Some of them are known to damage or harass giant mantas by accident.
- **The water taxi cooperativa:** group of fishermen and no fishermen who offer transportation from two important touristic points to the study site and beyond. They are known to damage giant mantas accidentally.
- **Academic institutions and NGO's:** They are interested in the research and protection of Bahia de Bandera's coast and ocean.

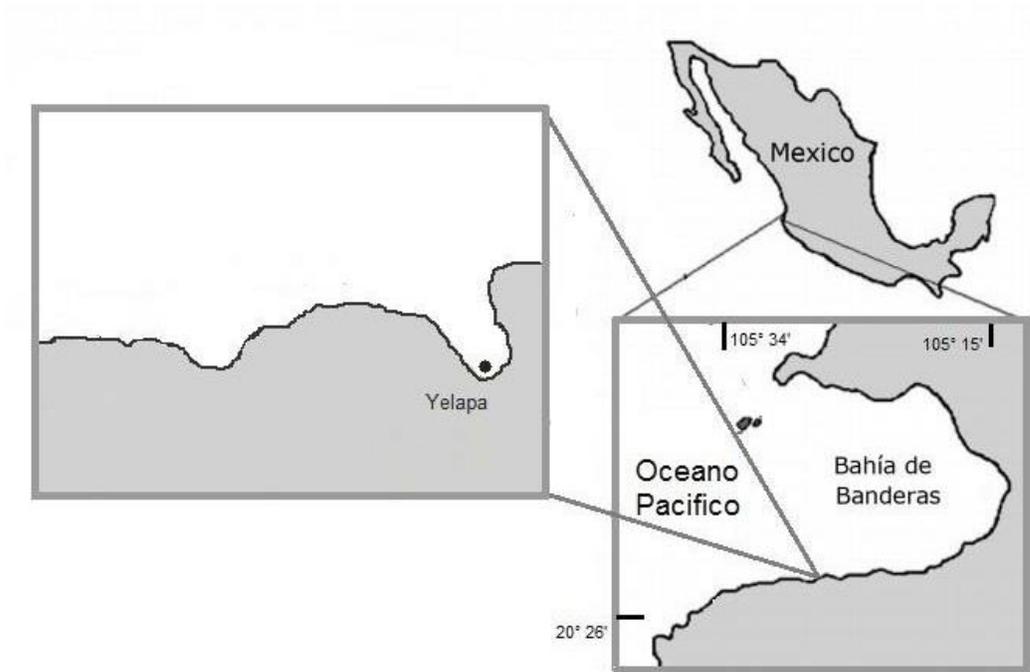


Figure. 1. Study site map.

Project members

1.) PROJECT LEADER

Name: Antonio Takahiro Ruiz Sakamoto **Nationality:** Mexican **Age as of December 31, 2016:** 25

Email: ruizsakamoto@gmail.com

Highest level of education achieved: Bachelor

Starting with most recent education level completed, provide a full background: Marine Biologist (2009-II-2013I). UABCS, Ciencias del Mar, La Paz, B.C.S.

Current occupation: Masters student

Team Role: Coordinator, acoustic tags analyser, diver-tagger

Relevant skills and experience: I have been field coordinator of investigation projects, giving me the skills to manage people and resources to achieve a common goal. I am Dive Master, with more than 500 dives, where about 150 have been with giant manta, giving me a good understanding of this organism movement and behaviours under water.

2.) **Name:** Aldo Alfonso Zavala Jiménez **Nationality:** Mexican **Age as of December 31, 2016:** 24

Email:aldozj@gmail.com

Highest level of education achieved: Bachelor

Starting with most recent education level completed, provide a full background: Marine Biologist (2010-II-2014I). Instituto Tecnológico de Bahía de Bandera, La Cruz de Huanacaxtle, Nayarit.

Current occupation: PhD student

Team Role: Etology and symbiotic relationships searcher, diver-tagger

Relevant skills and experience: I have knowledge of Bahía de Bandera's reef fishes. 8 years of scuba diving experience (Advance scuba diver PADI certification).

How many years of experience do you have working in the conservation sector (paid employment): < 3 yrs

3.) **Name:** Iliana Araceli Fonseca Ponce **Nationality:** Mexican **Age as of December 31, 2016:** 27

Email: ilianaffonseca@gmail.com

Highest level of education achieved: Bachelor

Starting with most recent education level completed, provide a full background: Marine Biologist (2010-II-2014I). Instituto Tecnológico de Bahía de Bandera, La Cruz de Huanacaxtle, Nayarit.

Current Occupation: Student

Team Role: Zooplankton analyser, diver-tagger

Relevant skills and experience: Open water scuba diver PADI certification. Knowledge of the marine zooplankton assemblage of Bahía de Banderas. I have done several talks in local schools about the marine ecology of Bahía de Banderas.

4.) **Name:** Ramiro Ilhuilcamina Gallardo Hernandez **Nationality:** Mexican **Age as of December 31, 2016:** 24

Email: leramram@hotmail.com

Highest level of education achieved: Bachelor

Starting with most recent education level completed, provide a full background: Marine Biologist (2010-II-2014I). Instituto Tecnológico de Bahía de Bandera, La Cruz de Huanacaxtle, Nayarit.

Current Occupation: Tourism activities provider.

Team Role: Graphic material editor and divulgation coordinator

Relevant skills and experience: I have knowledge in scuba diving experience (Advance scuba diver PADI certification) and scientific diving experience (Reef Check, ProMISES), i have knowledge in production and editing video.

Section 2

Aim and Objectives

Identify movement trends of giant mantas (*Manta birostris*) inside Bahía de Banderas, raising awareness among the local population about the species conservation value. Spatial and temporal information along with the use of habitat of mantas, can inform fisheries and boating activities to prevent interactions with mantas that can lead to injury or direct mortality, including identifying seasons, times and areas that should be avoided by boats or closed to certain types of activities. The information can also promote harmless ecotourism activities done by the local community.

Objectives:

Objective 1: Discover the use of the bay by the giant manta by tagging them and follow their track.

Objective 2: Search for feeding areas in the Manta ray's hotspots and determine their zooplankton composition.

Objective 3: Search and analyze relationships of the Giant manta rays with other organisms in Bahía Banderas.

Objective 4: Develop educational material for the tourism sector, fishermen groups and local community.

Changes to original project plan

Originally, it was planned to do an agreement with the fishermen and water taxi cooperatives about giant manta protection. These groups are very diverse and is hard to get everyone's approval. We couldn't get a signed agreement. Instead of that, we tried to reach the main fishermen groups using presentations, videos and mixed material.

Methodology

Objective 1: Discover the use that the giant manta gives to the bay, understanding and tracking their movements around by tagging them and detecting their signals in hotspots as seamounts and rocky reefs.

Methods:

We select the sampling point based on the location of the acoustic receivers, which were established in known hotspots according to local fishermen and scuba divers as shown in Figure 1.

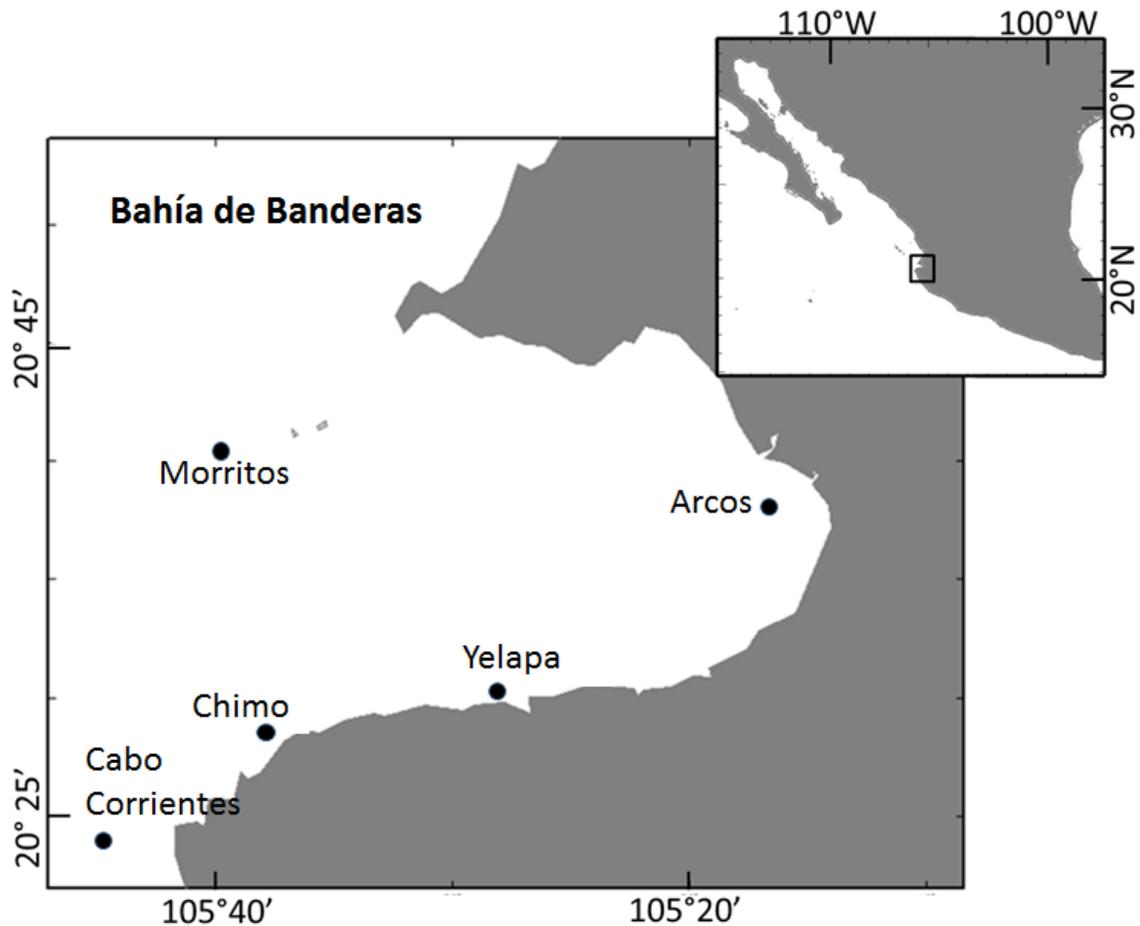


Figure1. Shows the different locations of the receivers in Bahia de banderas.

Once the receivers were installed, a total of 30 mantas were tagged. The receivers detected the individuals and register the activity of the organism from August 2015 to August 2016. We searched for movements patterns, stationarity and routes with the total of registers in the receivers.

Objective 2: Search for feeding areas in the Manta ray's hotspots and determine their zooplankton composition.

Methods:

Sampling site was determined according to previous information, the zooplankton tows were done on surface during ten minutes, a constant velocity of two knots. We used a conical net of 0.30 m in diameter and 333 μ m mesh size. We use a mechanical fluxometer to estimate the volume of filter water. The collected sample were putted in vials and preserved in alcohol 100%; the samples were kept freeze.

We used inverted microscope MOTIC A35 brand to identify and count the zooplankton samples to group level using databases (Haney, J.F. et al., 2014; Conway, 2012; Scripps database, 2014; IMAS, 2014).

We calculated the next diversity index: richness (S) Shannon-wiener index (H') Simpson dominance (D) and Pielou index (J), using Paleontological Statistics (PAST) software (Hammer *et al.*, 2001). Then, we conducted a nonparametric to analyze the seasonal variation between months. To correlate the zooplankton variability with the giant manta occurrence we performed a linear regression model.

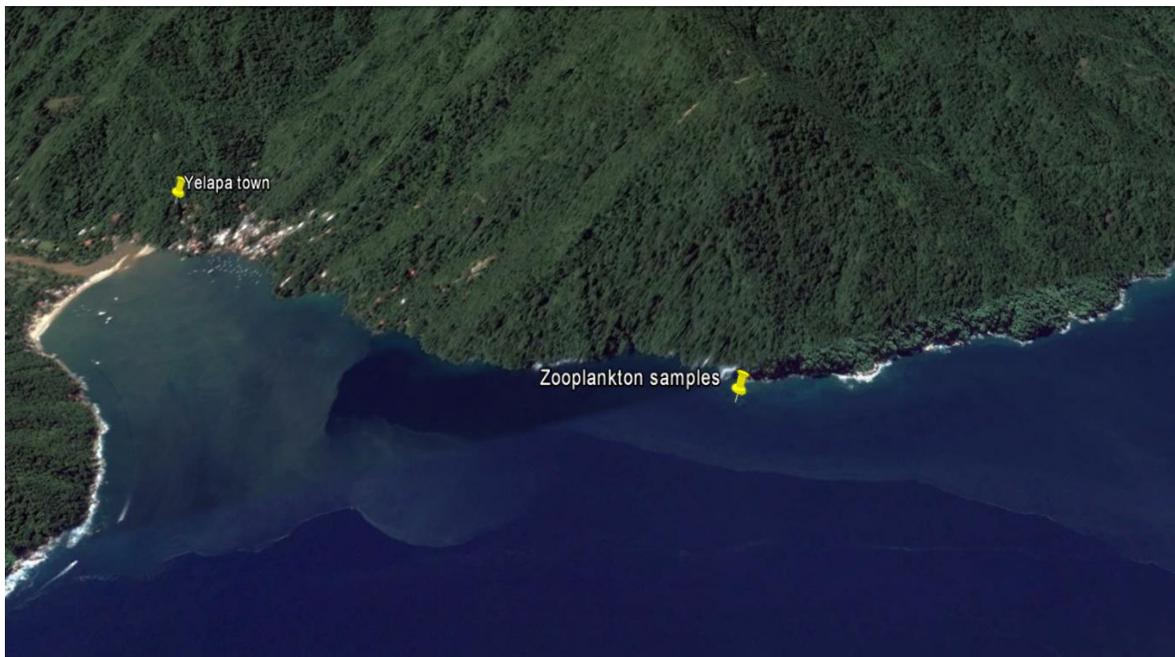


Figure 2. Zooplankton sampling site.

Objective 3: Search and analyze relationships of the Giant manta rays with other organisms in Bahía Banderas.

Methods:

Based in the previous information, we choose 5 sites located in giant manta ray hotspots: Chocota, El manguito, Tecomata, Pizota and Yelapa (fig 3.)

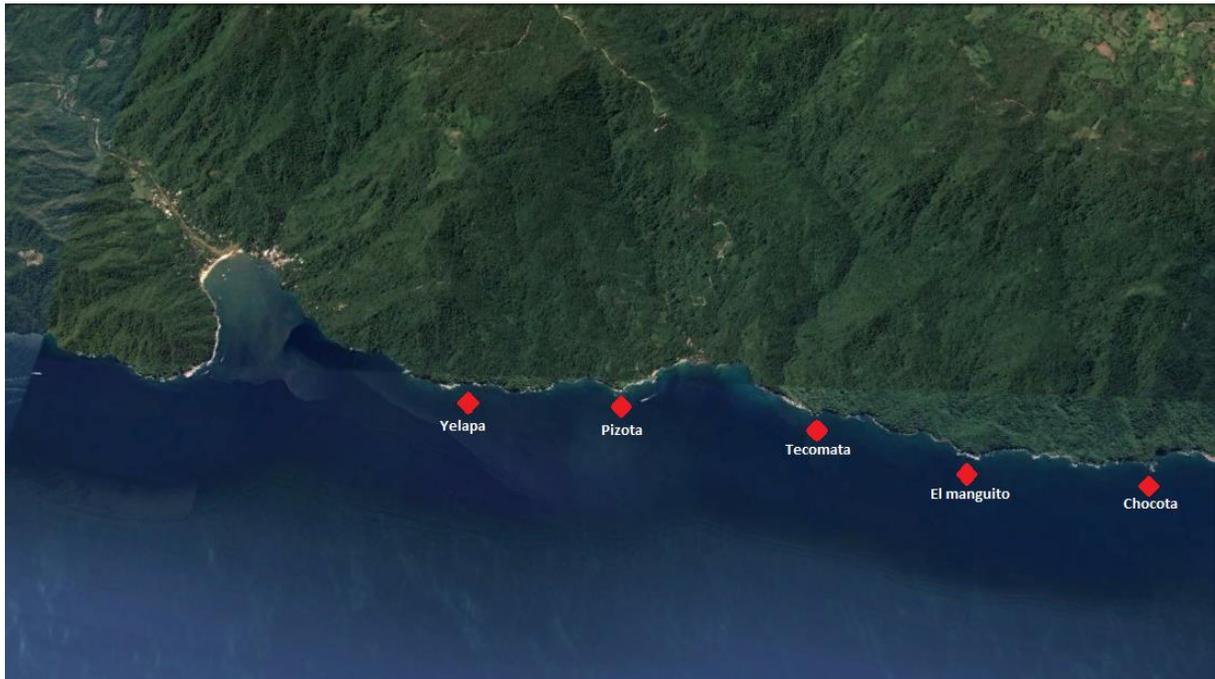


Figure 3. Fish survey map.

The study consisted in 9 survey campaigns, using the stationary point counts method (SPC) (Bannerot and Bohnsack, 1986) comprising October and November, 2015, at an average depth of 10 meters, ten minutes of duration and with 1km of distance between sites. We identified and counted conspicuous fishes, using fish identification guides according to the study site (Humann and Deloach, 2004; Allen and Robertson, 1994), ignoring the cryptic species because they weren't relevant to the focus of the study. We created a reef fish systematic list based on current literature (Nelson, 2006) and databases (Fishbase, 2016).

- Statistical analysis:

We proceeded to create a database with the obtained data and using information found in Fishbase (2016), assigned a type of cleaning behavior to each specie. We got the Simpson, Shannon and Pielou ecological indices using the Paleontological Statistics software (PAST) (Øyvind-Hammer, 2014).

Objective 4: Develop educational material for the tourism sector, fishermen groups and local community.

- Good practices manual

We developed a good practices manual based in previous information (Manta trust, etc..) and the types of audience. Based in the most common ways to watch manta rays done by tourism operators, we adapted previous information and made it simpler to understand and follow.

- Educational talks

We conducted 8 educational talks to Yelapa's and Bahia de Bandera's schools. The talk was planned to last 30 minutes average. We created games with the giant manta subject in mind and proceed to test the effectivity of the learning potential using surveys before and after the games and talks. in May, 2016 we organized an event in Yelapa to promote the project's ideals, using flyers and social media.

- Mural

We selected a wall on a busy street of Yelapa to paint a mural. After obtaining the approval of the owner, we involved Yelapa students and ITBB (a local University of Bahia de Banderas) students to paint the mural. We recorded the activity using a gopro hero 3+ silver to create a time lapse video for project promotion.

Outputs and Results

- **Objective 1**

We manage to tag a total of 30 Manta rays, 12 males and 18 females. From those we detect 19 organisms in our receivers. The receiver with more detections is Arcos receiver with 406 detections. This result was very surprising as it is the receiver closest to the city Puerto vallarta, which has the major boat traffic and population in the whole bay.

We found that some of the organisms have presence in the bay during the whole year, but there is an increase of detections during the winter season. Suggesting that there may be groups of organisms that use the bay only during this season, as it is reflected in the fig.4

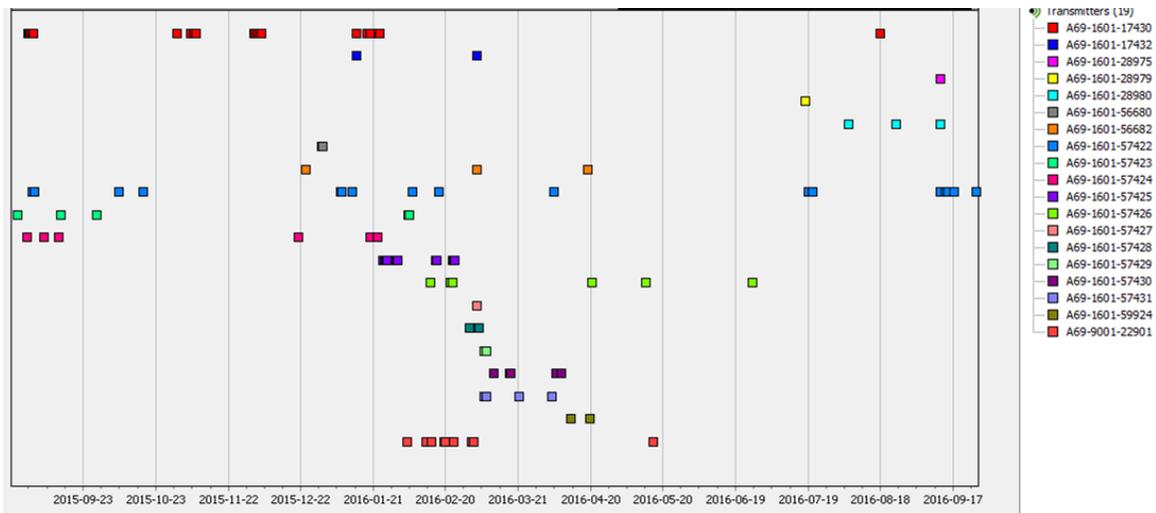


Figure 4. Shows the summarized detections of all the receivers between August 2015 and August 2016.

The giant Manta seems to use the south part of the bay as a road, going in and out the bay, and in some cases going to marietas islands in the north as a secondary path. (Fig 5.) This movements happens mostly during the early hours of the day.

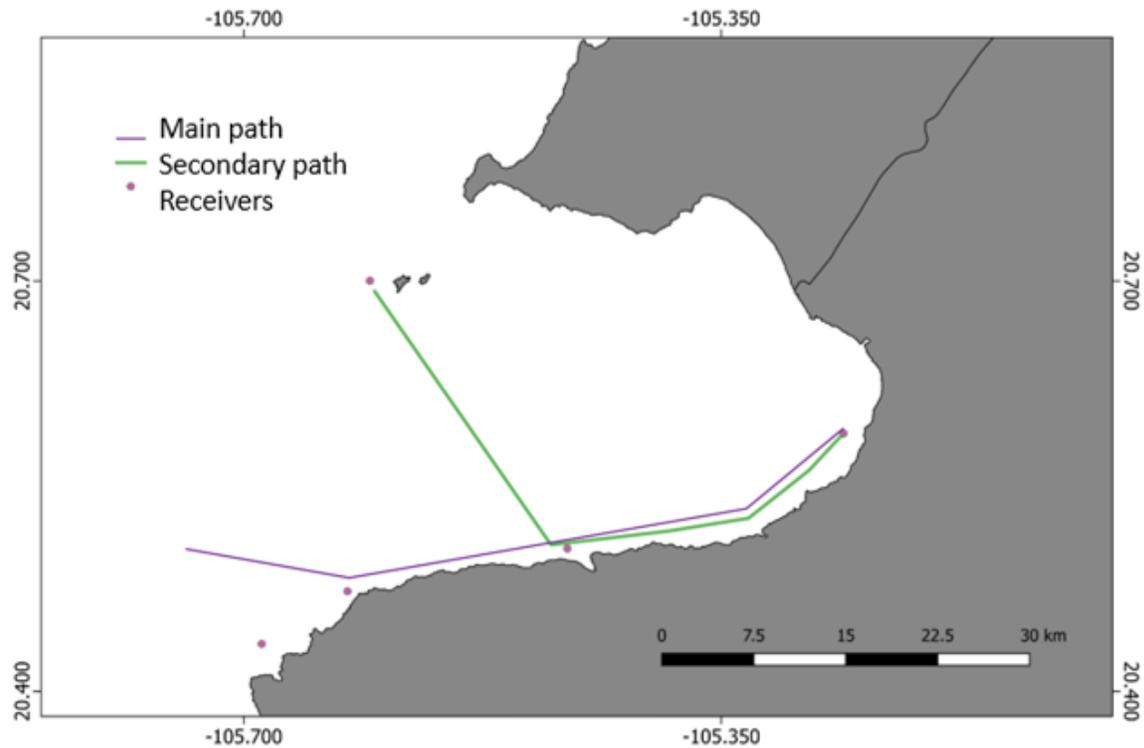


Figure 5. Main movement paths of the giant mantas in Bahia de Banderas.

This result is very interesting and can make a significant one as this same paths are used by most of the water taxis. It is a great necessity to analyze alternatives or strategies to avoid collisions. This can be talked with the local communities now that the paths have been proved.

- **Objective 2**

A total of 37 samples were collected during the period of August- December 2015 and January- April 2016. 25 groups of zooplankton belonging to two kingdoms, 12 phyla, 5 subphylums, 14 classes and 10 orders were grouped.

The groups with major abundance during the sampling months were copepods, cladocers, fish eggs and radiolarians. the others 21 groups were less dominants during the surveyed months (Table 1).

The months of January, February and April had greater abundance of zooplankton, that coincide with the greater number of detection of giant manta in the sampling site, and also the decrease of zooplankton is reflected in the decrease of detections of mantas in the month of march (Table #2).

The temporal variation of the ecological indices of the zooplankton groups showed a heterogeneous pattern during the sampling months. The composition of zooplankton is discontinuous by the environmental responses of each of the zooplankton groups (Table 3)

Table 1.

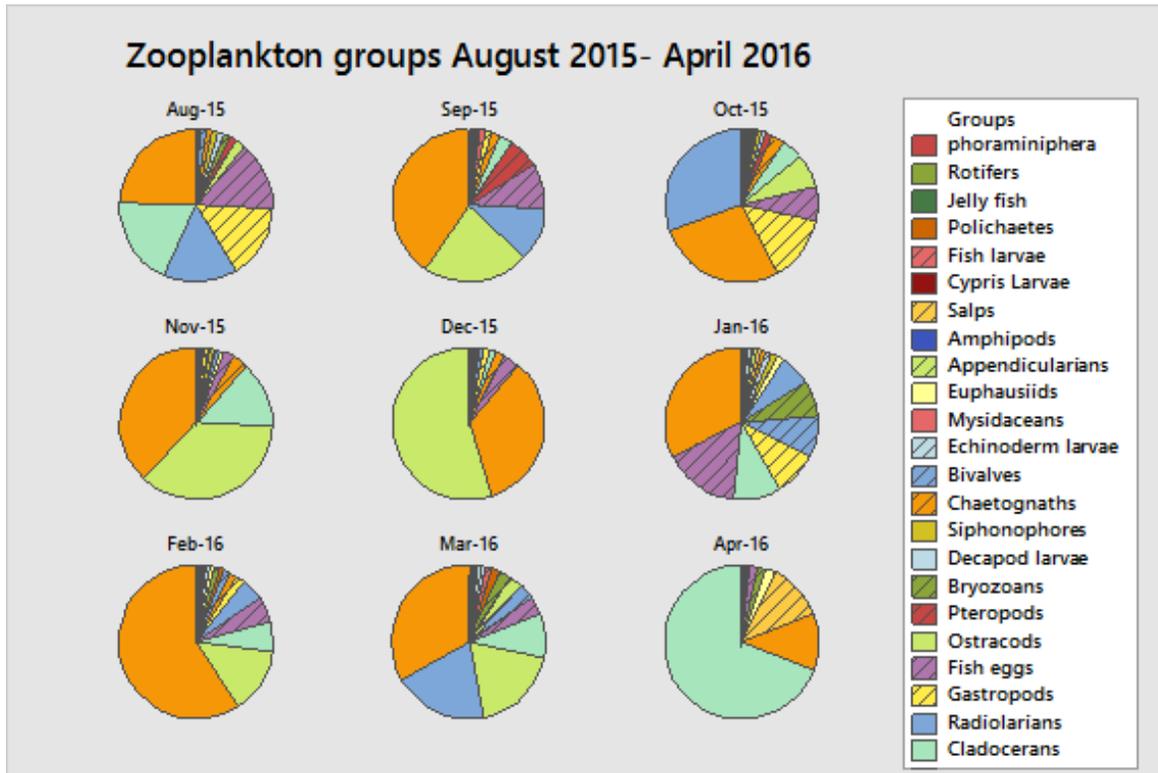


Table 2

Zooplankton ecological indices

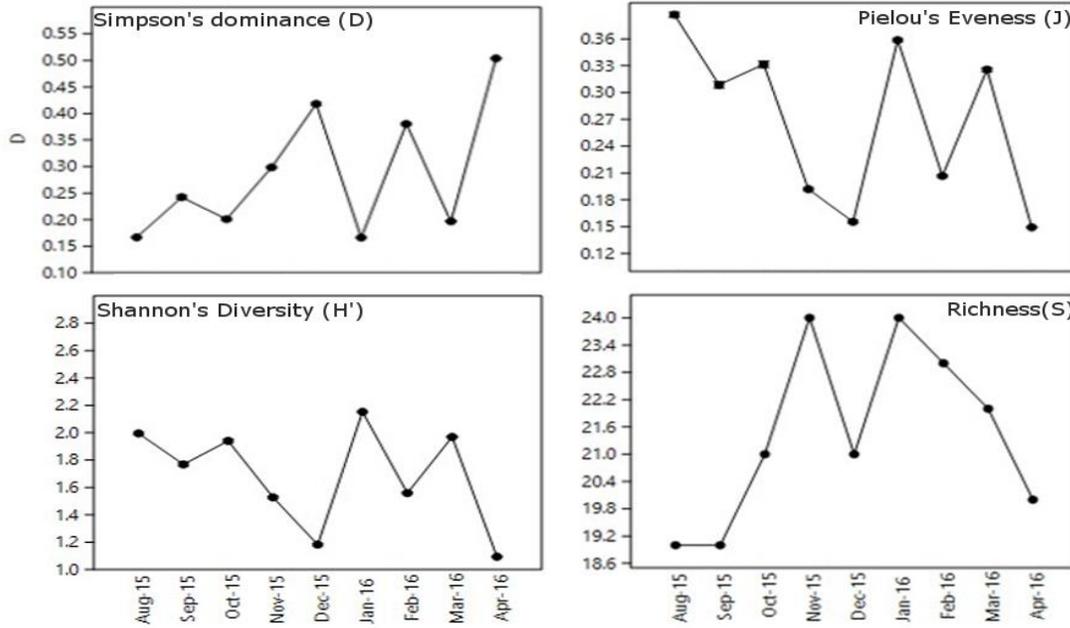


Table 3

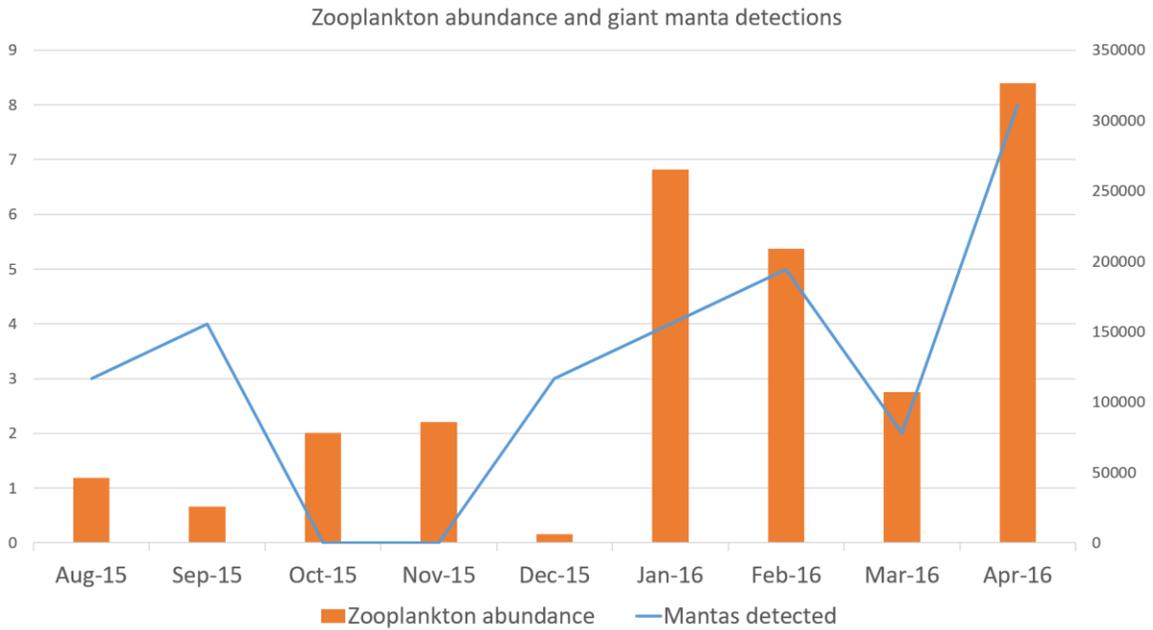




Figure 6. Shows the Zooplankton net been recovered after a tow.

- **Objective 3**

We recorded 9,944 organisms belonging to two taxonomic classes, nine orders, 34 families, 60 genres and 83 species. The most abundant species were *C. atrilobata*, *T. lucasanum*, *A. troschelli* and *H. maculicauda*. These species represent 47% of the total relative abundance, 19 species were presented as moderate abundance (1%-5%) and 60 species with less than 1% were considered as less abundant species.

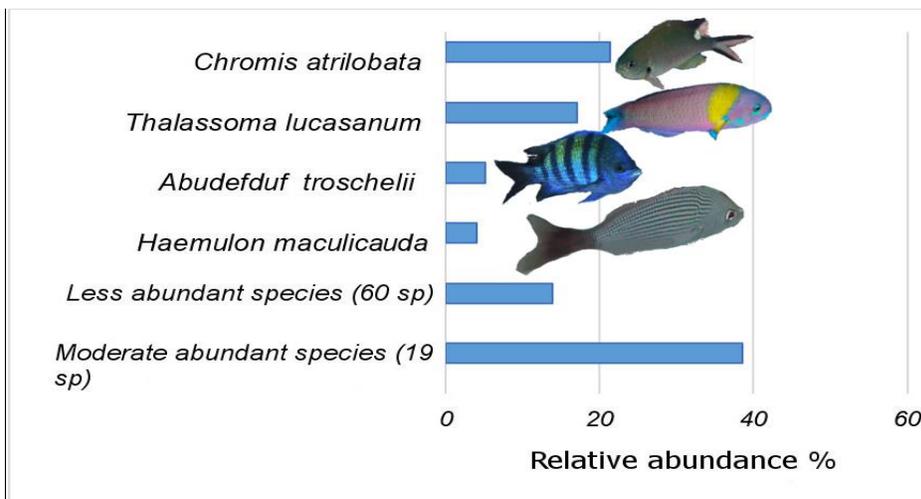


Figure 7. Relative abundance of reef fishes in the zone.

The data showed a marked dominance in fishes with cleaning behavior in the study site, being the fishes who clean at their juvenile stage the most abundant, followed by fishes who clean all their life.

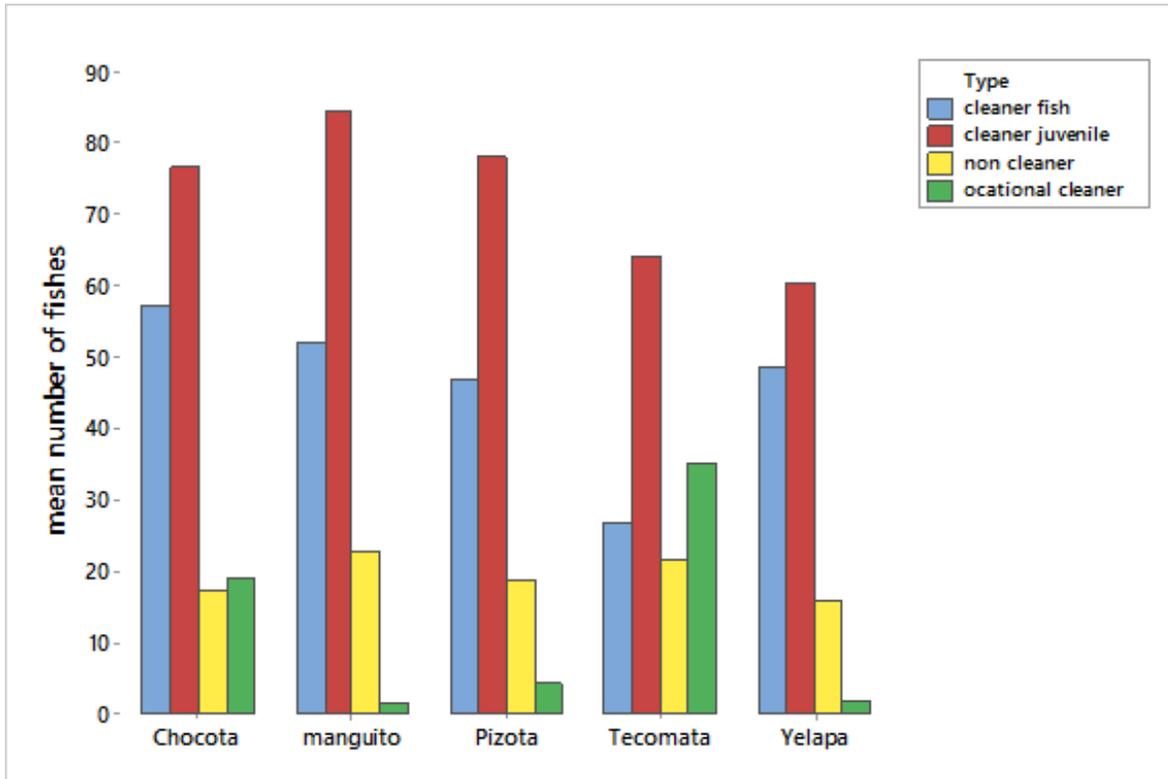


Figure 8. Average abundance of different types of cleaning behavior among fishes in the study site.

- **Objective 4**

We did a good practices manual to do giant manta tourism in PDF format.

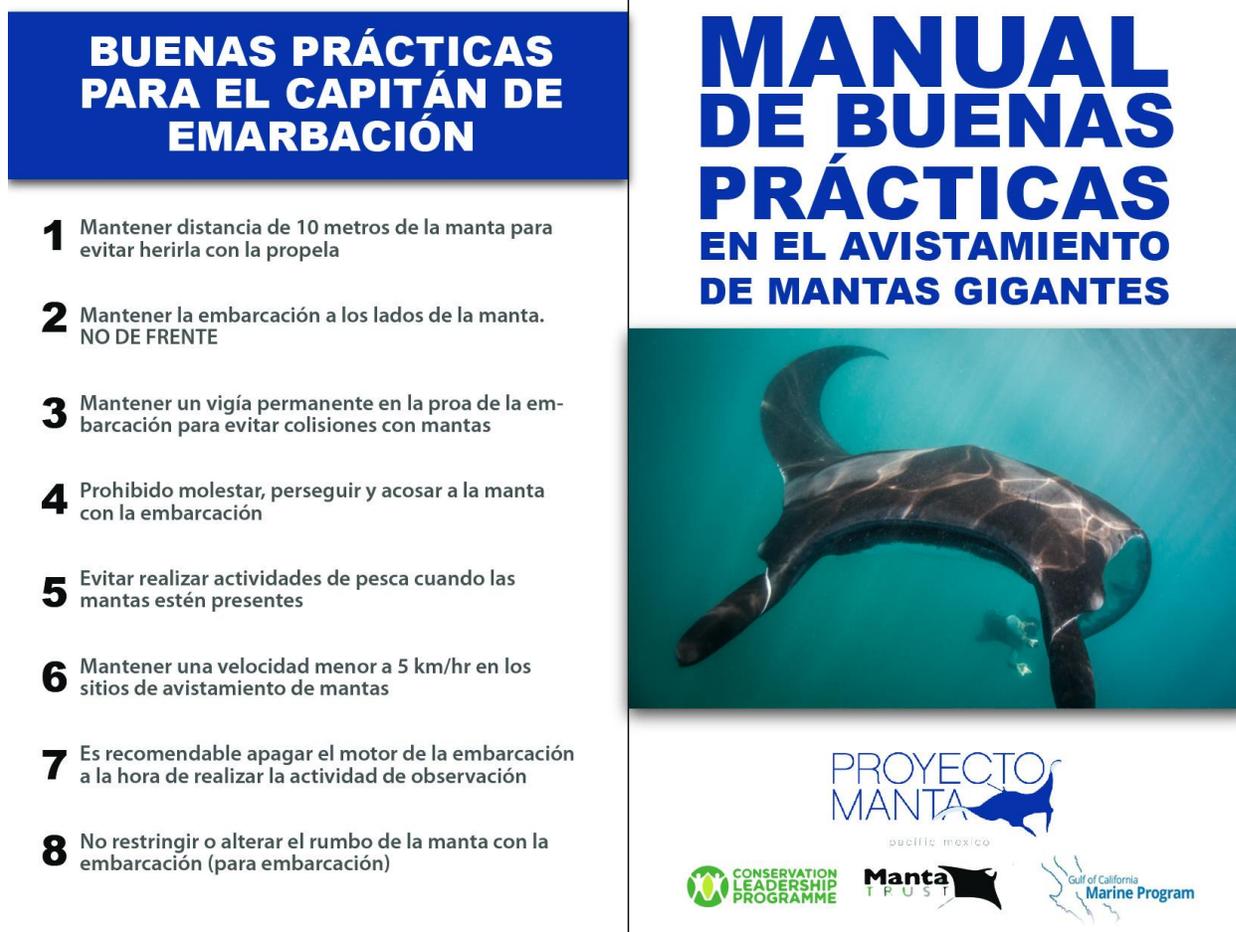


Figure 9. Good practices manual cover

Communication & Application of results

We had several invitations to local radio stations to talk about the project. One of these radio stations was focused on environmental and biological subjects. Several talks were carried on in local universities to biology and tourism students. Thanks to this talks we got the support of more students who were interested in volunteering or doing their final grade work with us. The result was the creation of traditional Mexican games and tales done for some of the interested students. Some of the biology students developed extra information about the giant manta ray, helped in the zooplankton studies and fish surveys. A tourism student and a graphic design student helped

us in the development of the good practices manual to watch mantarays. We created interest in the local student community about conservation.

We did a big talk in Yelapa to communicate the project goals to everyone, thanks to this talk we got the support of the younger generation of Yelapa. The Yelapa students and sons of fishermen are now a strong part of the project, helping us in the field and in communicating the project's goals and objectives. Some people of the water taxi cooperative is showing respect and interest in what we are doing.

We gave 20 talks, one newsmagazine interview and two radio interviews.



67 people attended to our big talk in Yelapa's Casino (a community center).

We did 3 surveys in three different schools to assess the awareness gained by the children, which increased before and after.

“Giant manta in Bahia de Banderas” talk preliminary results

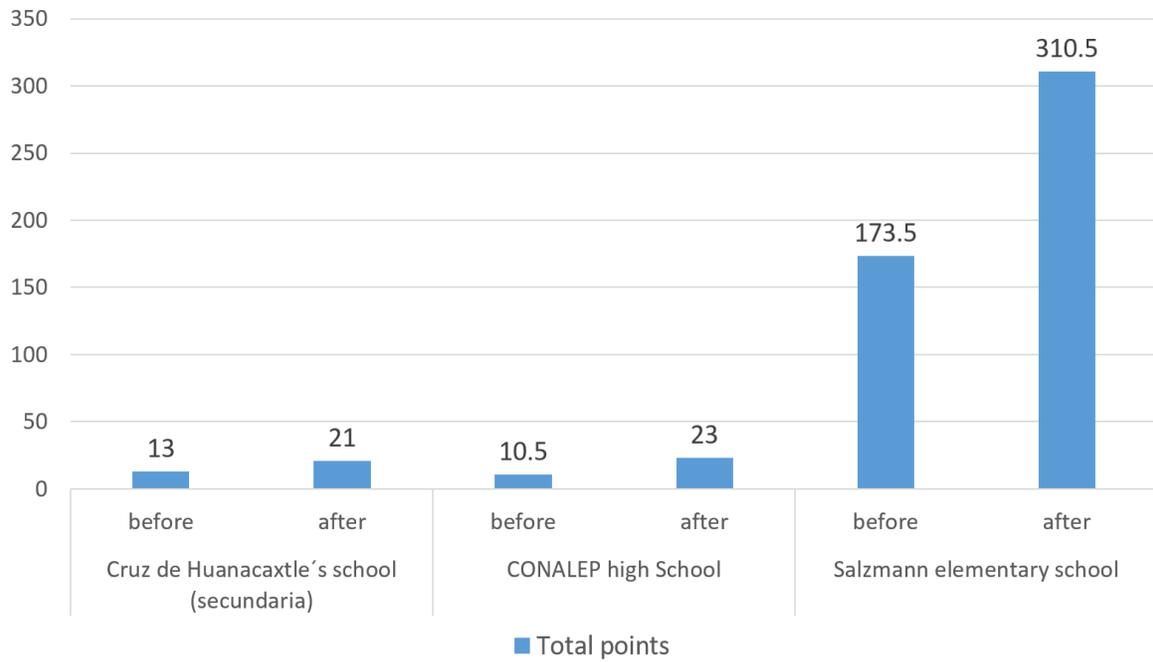


Table 4

We promoted the project in Yelapa using flyers and involved Yelapa students in the activities.

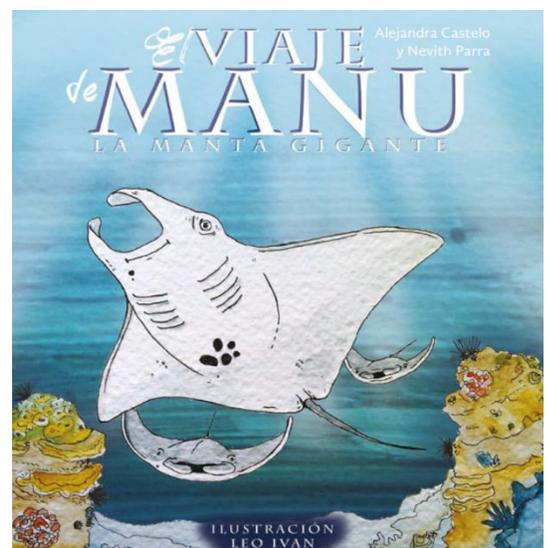
Figure 10. Yelapa kids.



We created a mural with help from a local Yelapa student



Students of marine biology, graphic design and education wrote a graphic tale about the giant manta ray of Bahía de Banderas (cover below)



Seven Yelapa high school students helped us in the zooplankton sampling and in the practice of



the correct sighting methodology

Cesar, Yelapa's high school student helping to collect zooplankton



Luis, Yelapa's high school student, learning how to swim with giant mantas

Monitoring and Evaluation

Objective 1. Monitoring report's and increment in information gathered

Objective 2. Monitoring report of databases, the gradual increment in zooplankton samples and exploratory statistics to check the correct sampling design.

Objective 3. Databases to organize the gathered information, a taxonomic list of fishes

Objective 4. Surveys and photographic material, the finished mural, a good practices manual

Achievements and Impacts

- We found that there is major activity and presence of the giant manta during the winter season, but even during the summer there is a small presence of some individuals. We also discovered that the south of the bay has a deep canon which is frequently used by the manta rays as a path to follow.
- Zooplankton seasonal variation: We check a certain pattern in the number of manta rays visiting the bay and the zooplankton abundance.
- Reef fish composition in Manta ray hotspots: We identified a large abundance in a certain group of cleaner fishes and identified the composition of cleaner fishes between sites.
- Engagement of students and young Yelapa people in the project goal's: We generated a huge amount of interest in Yelapa's and Bahia de Bandera's young people by taking them with us
- Giant manta ray mural in Yelapa: We created a Mural in one of the busiest roads in Yelapa with the help of young Yelapa's art enthusiasts and University students. (video shared by CLP)
- Educational material: We now have games, photos and videos about manta rays that we show to kids and adults about what we did, what we are doing and what we want to do. The good practices manual to watch giant manta rays is complete.
- Manu, the giant manta ray graphic story: A group of students developed a graphic story with the sustainability and giant manta subjects.
- Yelapa's big talk: We communicated our progress to Yelapa's town and it did a great progress in gaining their trust and help.

Capacity Development and Leadership capabilities

The project helped us to focus in our style of leadership and in how we teamwork together. It showed us the importance of planning to overcome troubles.

Section 3:

Conclusion

The giant manta population of Bahia de Banderas, can be considered as a population with high levels of residency having presence during the whole year, with an increase during the winter. The population has a certain pattern with the zooplankton blooms present in the south coast. Even when they are present all along the year the chances to actually see one during the summer are low. The fish fauna inhabitants of the south coast are composed mainly by reef fishes but the cleaning behavior by mantas was not seen regularly. One of Yelapa's fishermen cooperative is not using floating long nets to catch fishes, who will reduce the amount of floating nets in the giant manta hotspots. The project brought awareness to the young people of Yelapa using different methods like murals, talks, videos and photos. There is a group of local young people who now has the knowledge to do giant manta surveys.

Problems encountered and lessons learnt

- *Which project activities and outcomes went well and why?*
Giant manta monitoring, Zooplankton studies and fish surveys, Bring awareness to young people of Yelapa and Fishermen cooperatives

The scientific aspects of the project went really well because was done mainly by us and using a standardized methodology. The younger generations where really curious and eager to get knowledge from us. One of Yelapa's fishermen cooperatives was really helpful and aware of the sustainability problems of Yelapa. They showed interest to help giant mantas because they saw a great profit for them in the touristic aspect and for Yelapa in general.

- *Which project activities and outcomes have been problematic and in what way, and how has this been overcome?*
Most of the adult population of Yelapa was a wary and closed to us. They agree with us in some aspects of the project but we couldn't find a way to make a strong bond with them. We tried to overcome this by working with their younger relatives who were more enthusiastic and open minded. The Yelapa water taxi cooperative was really closed and it was difficult to talk with them. In the latest days, we finally have made a connection with

some of them. We think that we need more time in Yelapa to really get into their group and try to convince them to change their behavior in giant manta seasons.

The climatic oscillations known as El Niño brought us some troubles finding mantas, but we overcame this by doubling the sampling effort.

- ***Briefly assess the specific project methodologies and conservation tools used.***

Stationary Point Count method: It was necessary to assess the specific fish assemblage in the Giant Manta hotspots as it gives an insight of the composition of the fishes that may have a stronger interaction with the manta ray when it's cleaned.

Zooplankton surveys: Specific methodology to assess the zooplankton density

Acoustic tagging: It showed the presence of the organisms even when we couldn't detect them by normal monitoring.

Awareness activities: Involving the local community as an informal activity allow us to constantly adapt to behavioral changes from the community

- ***Please state important lessons which have been learnt through the course of the project and provide recommendations for future enhancement or modification to the project activities and outcomes.***

Now that we have an insight in the Yelapa's way of living, how they think and how they got involved in the giant manta conservation subject, we think it's time to involve them in more deeply into the marine conservation area, trying to get help from the younger generations to involve the older ones. We need more time to understand the manta movements and to promote cautionary measures in their seasons. We need to improve the survey methodology to make it more acceptable for the younger and older population to get better results. We need to think in better ways to make stronger bonds with the water taxi community and fishermen.

In the future

- Keep getting information about giant manta ray movements. Involve more stakeholders to sustain the project.
- Establish workshops to create a citizen science project focused on young Yelapa students, fishermen and water taxi drivers.
- Expand the project area to involve neighbor Communities like Chimo, Pizota and Majahuitas.

- Explore the effect of the Climatic oscillations like El Niño and La Niña in the Giant manta populations.

Financial Report

<i>Itemized expenses</i>	<i>Total CLP Requested (USD)*</i>	<i>Total CLP Spent (USD)</i>	<i>% Difference</i>	<i>Details & Justification (Justification must be provided if figure in column D is +/- 25%)</i>	<i>Proposed Spending (Preliminary Report Only)</i>
PHASE I - PROJECT PREPARATION					
<i>Communications (telephone/internet/postage)</i>	0.00		#DIV/0!		
<i>Field guide books, maps, journal articles and other printed materials</i>	60.00	61.97	3%		
<i>Insurance</i>	0.00		#DIV/0!		
<i>Visas and permits</i>	0.00		#DIV/0!		
<i>Team training</i>	0.00		#DIV/0!		
<i>Reconnaissance</i>	0.00		#DIV/0!		
<i>Other (Phase 1)</i>	0.00		#DIV/0!		
EQUIPMENT					
<i>Scientific/field equipment and supplies</i>	725.00	1319.30	82%	<i>we needed more equipment that originaly tought</i>	
<i>Photographic equipment</i>	499.00	594.38	19%		
<i>Camping equipment</i>	0.00	2.94	#DIV/0!		

<i>Boat/engine/truck (including car hire)</i>	750.00	494.47	-34%	<i>chance in prices(the rest was used to complete equipment, transportation and outreach difference)</i>
<i>Other (Equipment)</i>	0.00		#DIV/0!	
PHASE II - IMPLEMENTATION				
<i>Accommodation for team members and local guides</i>	900.00	488.00	-48%	<i>chance in prices(the rest was used to complete equipment, transportation and outreach difference)</i>
<i>Food for team members and local guides</i>	2,000.00	994.85	-50%	<i>chance in prices(the rest was used to complete equipment, transportation and outreach difference)</i>
<i>Travel and local transportation (including fuel)</i>	940.00	1362.95	45%	<i>it was more expensive the local transport (because cooperativas agreements of change of price)</i>
<i>Customs and/or port duties</i>	92.00		-100%	<i>chance in prices(the rest was used to complete equipment, transportation and outreach difference)</i>
<i>Workshops</i>	0		#DIV/0!	

<i>Outreach/Education activities and materials (brochures, posters, video, t-shirts, etc.)</i>	200.00	403.23	102%	<i>we needed more material for new perspectives of activities</i>	<i>12,000 pesos (we need to print the good manners manual)</i>
<i>Other (Phase 2)</i>	0.00		#DIV/0!		
PHASE III - POST-PROJECT EXPENSES					
<i>Administration</i>	0.00		#DIV/0!		
<i>Report production and results dissemination</i>	100.00		-100%	<i>We still have to print and disseminate the good manners manual</i>	
<i>Other (Phase 3)</i>	0.00		#DIV/0!		
Total	6,266.00	5,722.09			

Section 4:

Appendices

Appendix 1: Outputs table

Output	Number	Additional Information
Number of CLP Partner Staff involved in mentoring the Project	3	
Number of species assessments contributed to (E.g. IUCN assessments)	0	
Number of site assessments contributed to (E.g. IBA assessments)	0	
Number of NGOs established	0	
Amount of extra funding leveraged (\$)	\$5000	For next year activities
Number of species discovered/rediscovered	0	
Number of sites designated as important for biodiversity (e.g. IBA/Ramsar designation)	0	
Number of species/sites legally protected for biodiversity	0	
Number of stakeholders actively engaged in species/site conservation management	2	
Number of species/site management plans/strategies developed	1	
Number of stakeholders reached	3	
Examples of stakeholder behavior change brought about by the project.		
Examples of policy change brought about by the project		
Number of jobs created	4	Panga Captains

Number of academic papers published		We plan to produce 3 in the next years
Number of conferences where project results have been presented	1	

Appendix 2: Event poster

Yelapa ustedes son parte de esto, están todos invitados al evento

"Conociendo a la Manta gigante en Yelapa"

ACTIVIDADES

- Plática de inauguración "Conociendo a la Manta gigante"
- Presentación del capítulo: "Yelapa: mantas gigantes" De la serie: "Voces del Mar: Historias de los Mares Mexicanos" (producción y dirección Tania Escobar, Producción ejecutiva Octavio Aburto).
- Presentación de el cuento "El viaje de Manolo"
- Presentación del mural

FECHA:
Lunes 30 de Mayo
12:00 p.m.
Lugar: Salón "El Casino"
Yelapa, Jalisco.

 **PROYECTO MANTA**
pacific mexico

 **CONSERVATION LEADERSHIP PROGRAMME**

 322 27 80 687

Appendix 3: Project images

Mural



Mural



“Yelapa bajo el agua”

Al mar estamos ligados desde el principio de nuestra historia.
De nuestro respeto a los océanos depende la pesca, las playas, la biodiversidad y nuestra propia supervivencia.
Aquellos que cuidan el mar hoy, garantizan la pesca de mañana.

Artistas:
Anthony Fregoso
Eddy Aguirre



Yelapa event



Community Centre talk





Talk





Table 5.

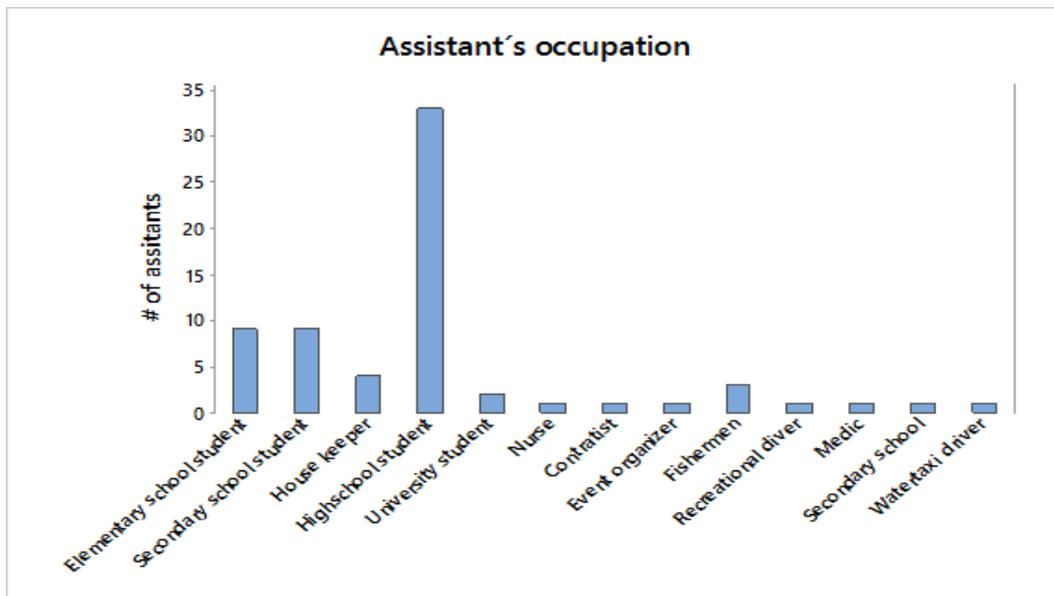


Table 6.

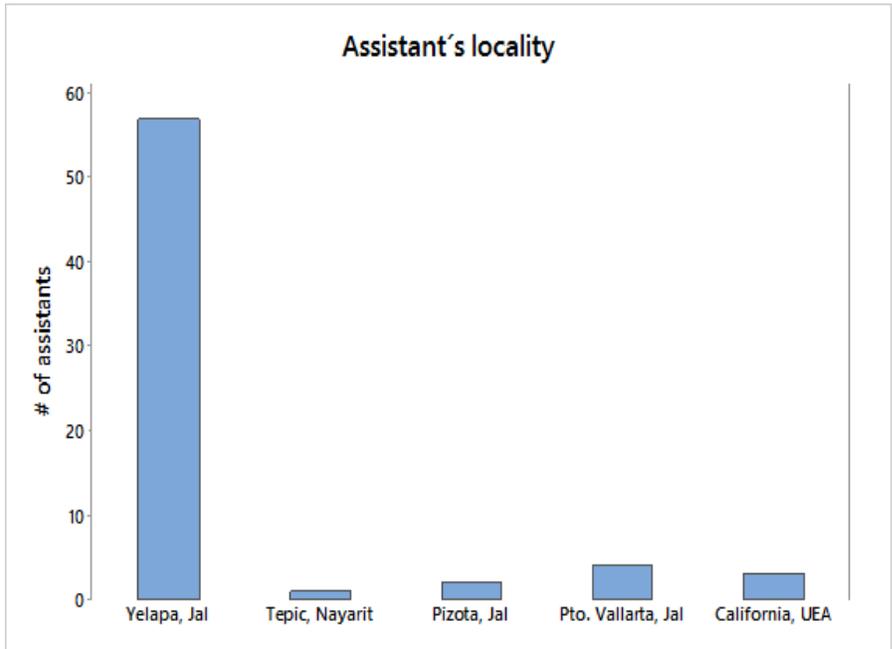
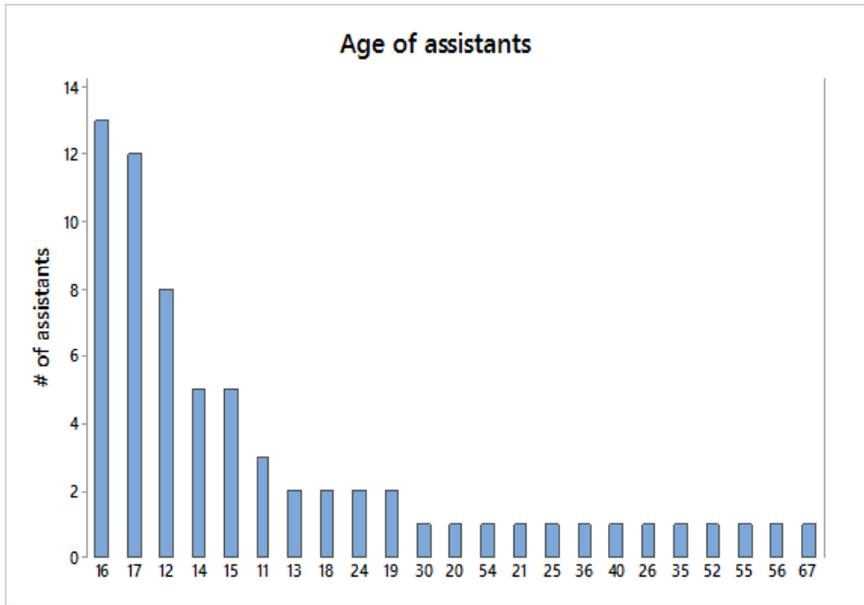


Table 7.



Bibliography

List all the sources that you used, highlighting the most important ones. Also include the publications and communication outputs from the project as well as papers being prepared for publication by project members.

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Address list and web links

<https://www.facebook.com/proyectomanta/?fref=ts>