

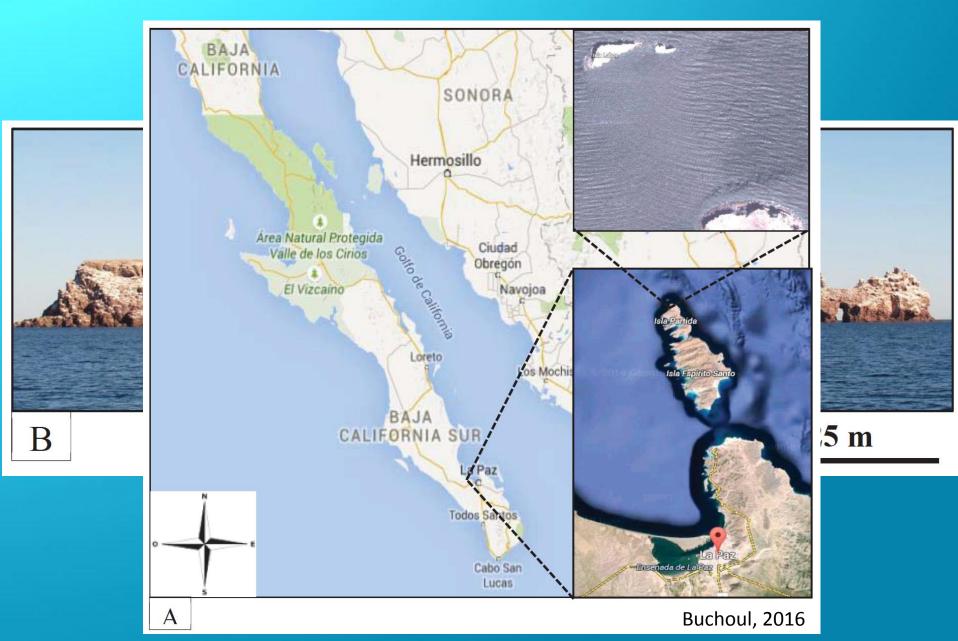
How biological data has contributing to management plans in the bay of La Paz: Los Islotes sea lion rookery as case of study

Dra. Vanessa Labrada Martagón

# Content:

- Los Islotes location and description
- Biological study and human activity monitoring
- Using biological data for public policies
- After 10 years

### Los Islotes



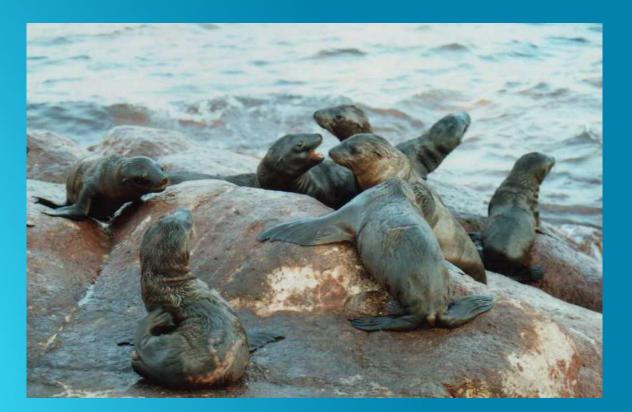


- Rocky Reef and Coral reef (8% total area) Pocillopora
- 102 spp. fishes; 19 spp. echinoderms; 10 spp. mollusks

- 1978. Protection for all islands of Gulf of California, Presidential Decree
- 1995. "Worldwide Biosphere Reserve", UNESCO
- 2000. "Flora and Fauna Protected Area, Islands of Gulf of California", SEMARNAT
- 2000. Management Program "Archipelago Espiritu Santo" SEMARNAT

# Sea Lion Rookery Importance

- The southern limit for California sea lion (*Zalophus californianus*) reproduction
- The smallest breeding rookery in Gulf of California
- 2000 ≈300 sea lions; 2017 ≈500 sea lions



- Breeding period from May to August
- June ≈84% of pup births

- Protection:
  - Federal Penal Code, Article 254
  - "Special protection" (NOM-059-ECOL-1994)
  - "Least Concern" (IUCN, 2017)

# Socio-Economic Importance

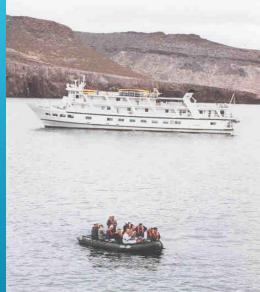
- The colony most visited by tourists in Mexico
- Natural attraction internationally known
- Novel ecotourism around pinnipeds
- The most important economic industry in La Paz bay



- 1990 increasing tourism activity
- Grew without any control
- 1994 \$1200 usd/day
- 273% grow in 6 years





















SECRETARÍA DE MEDIO AMBIENTE Y **RECURSOS NATURALES** 

- 2000 Concern about human impact to Los Islotes rookery
- Funding for research by International Conservation Program
- Funding for graduate studies by CONACYT •
- **Research permit by SEMARNAT** •

# **Objective Research Project:**

 To determine the effect of tourism activities on the behavior of sea lions, in order to help design regulations to assure better use and conservation of the site.

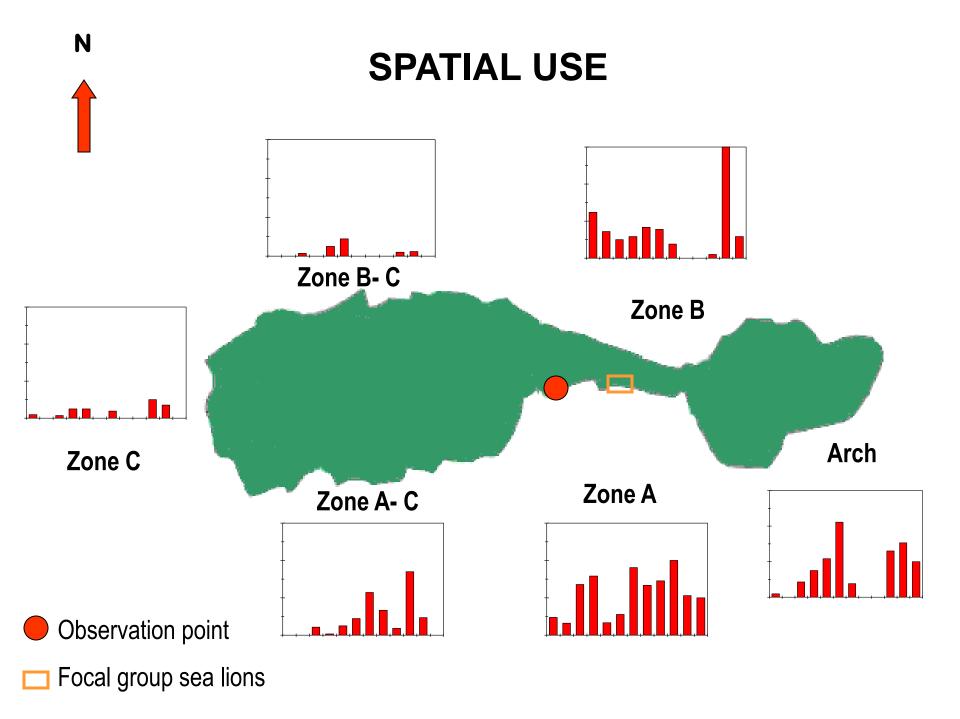


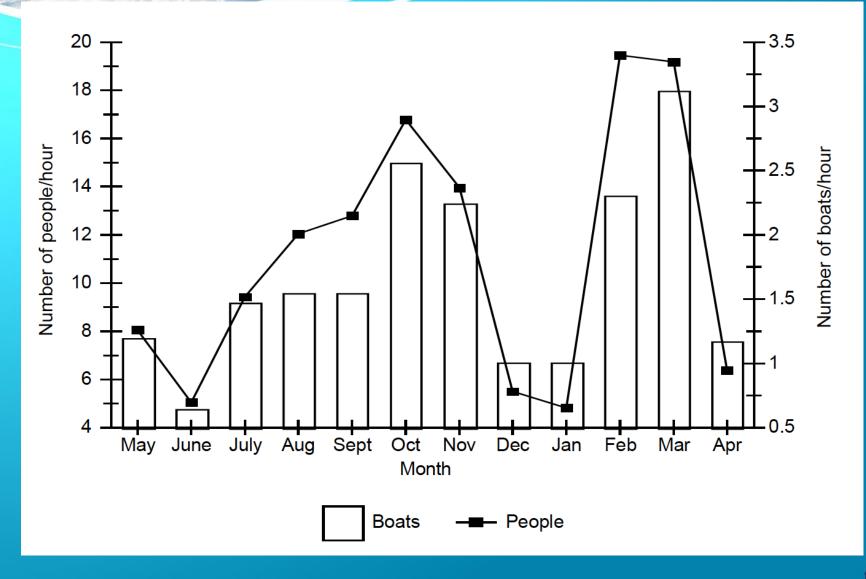
2000 – 2001 Monthly sampling 8:00 to 18:00

Behavioral ecology Tourism monitoring

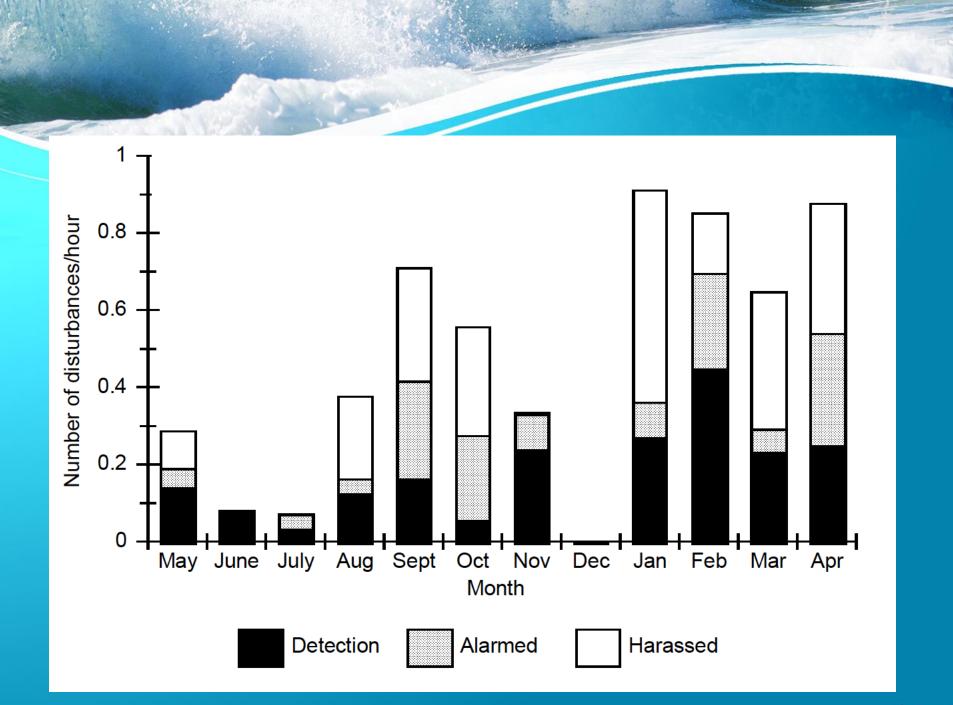


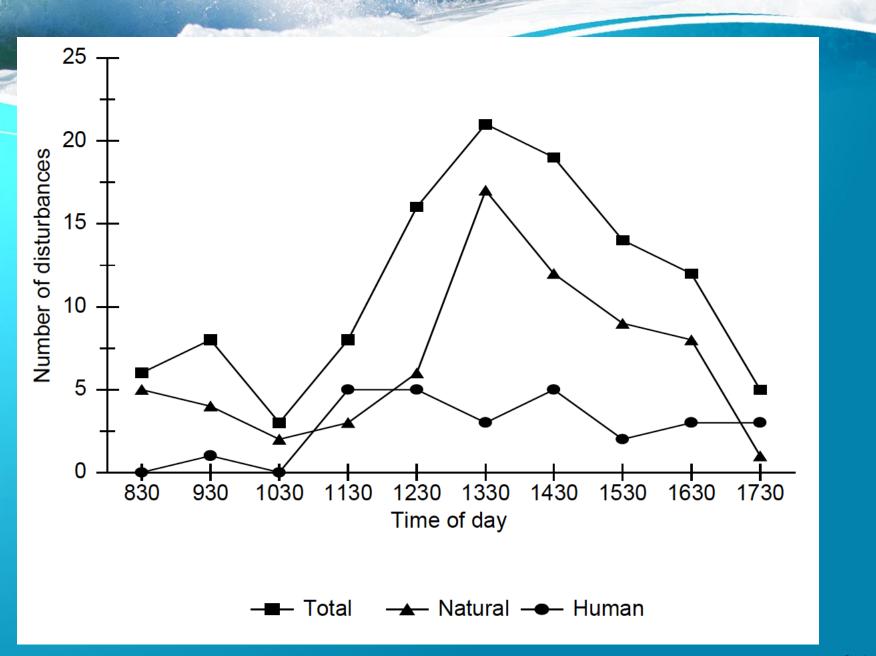






fppt.com







	Source	DETECTION	ALARMED	HARASSED	TOTAL
Natural Disturbance	Adult and Subadult Males	14	19	22	
	Pups	4	0	3	
	Noise of birds	3	1	1	
	Total (%)	21 (31)	20 (30)	26 (39)	67 (60)
Human Disturbance	"Panga" type vessel	6	3	6	
	Noise	4	1	1	
	Swimmers and divers	1	1	2	
	Other vessels	3	0	0	
	Total (%)	14 (50)	5 (18)	9 (32)	28 (25)
Unknown Disturbance	Total (%)	5 (29)	4 (24)	8 (47)	17 (15)
Total					112

# Conclusion behavior: Sea lions habituated to human presence

1221 1010-1491

LAJAM 4(2): 175-185, July/December 20

NATURAL AND HUMAN DISTURBANCE IN A ROOKERY OF THE CALIFORNIA SEA LION (ZALOPHUS CALIFORNIANUS CALIFORNIANUS) IN THE GULF OF CALIFORNIA, MEXICO VANESSA LABRADA-MARTAGÓN<sup>1, 2</sup>, DAVID AURIOLES-GAMEOA<sup>1</sup> AND SERGIO FRANCISCO MARTÍNEZ-DÍAZ<sup>1</sup>

ABSTRACT: Los Islotes is the southernmost breeding site of the California sea hon (Zalophus californianus californianus) in the ABSTRACT. Los Isiotes is the southernunost breeding site of the California sea ion (Zalopuis californiants californiants) in the Northern Hemisphere and represents one of the principal lourist attractions for the city of La Paz, Mesico. The lourism has Vorthern Hemisphere and represents one of the principal tourist attractions for the city of La Paz, Messoo. The courism has seen growing without control and could be the cause of perturbation in the reproductive and haul-out patterns of the sea lon. reen growing without control and could be the cause of perturbation in the reproductive and haul-out patterns of the sea ion. The aim of the present study was to determine the effect of tourism activities on the behavior of sea lions, in order to help before monitoring to the present study was to determine the effect of tourism activities on the behavior of sea lions, in order to help before monitoring to the present study was to determine the effect of tourism activities on the behavior of sea lions, in order to help before monitoring to the present study was to determine the effect of the study of the s It is aim of the present study was to determine the effect of tourism activities on the behavior of sea lions, in order to help less regulations to assure better use and conservation of the site. The nature and intensity of tourism activity and sea lion iesign regulations to assure better use and conservation of the site. The nature and intensity of tourism activity and sea ion what or were determined based upon monthly sampling over a one-year period (May 2000, April 2001). Tourist activity was venavior were determined based upon monthly sampling over a one-year period (May 2000-April 2001). Tourist activity was lighter during autumn and winter, with visits by "panga" boats being the most numerous. A total of 112 disturbances were broaded the sensingly of which being non-orthographic boats. ugher during antumn and winter, with visits by "panga" boats being the most numerous. A total of 112 disturbances were scotted, the majority of which being non-anthropogenic causes. A quarter of disturbances were triggered by human activity which of the reducer and only being non-anthropogenic rate from favorable rates in 30% of the anthropogenic disturbances and the second s vecorded, the majority of which being non-anthropogenic causes. A quarter of disturbances were triggered by human activity within 20m of the rookery and with harassment reaction (animals going into the water) in 32% of the anthropogenic disturbances. viuul com of the rowery and with hardsoment reaction (artimus going into the water) in 243 of the antiaopogene, universitation Philippal component analysis (PCA) described the conditions under which disturbance was generated (74% of the variation of the state of rmcipal component analysis (PCA) described the conditions under wrach disturbance was generated (74% of the variation splained). Using three factors (47% of the total variation) the major contributing variables were month, total level, relative humdity, splained). Using three factors (47% of the total variation) the major contributing variables were month, tidal level, relative humdity, Seator number, total number of boats and number of powerboats and sailboats. In Los Islotes, the perturbation occurs mostly in subservers and states considered and the bolisment of powerboats and sailboats. In Los Islotes, the perturbation occurs mostly in Seaulor number, total number of boats and number of powerboats and sautoats. In Los Blotes, the perturbation occurs mostly in ultima and winter coinciding with the highest frequency of tourism, large number of adult and subadult makes and unavorable subcommendation from the basil cut make to back tota basil short and anonymends. The basil and subscription of a sub-

utumn and writer conciding with the fughest frequency of tourism, large number of adult and subadult males and unfavorable nvironmental conditions for haul-out, such as high tide level and strong winds. The lowest number of disturbances occurred in sty and minerical constituents for Halls-out, start as high for even data strong winnes. Fire to animer, during the breeding season of the sea lion. Most of these, however, were caus

RESUMENT Los Islotes es el sitio más sureño de reproducción del lobo marino de Calife n el Hemisferio Norte y representa la principal atracción turística de la ciudad de L ungin control y puede ser causa de perturbación de los patrones reproductivos y de

utgui voituvo y pueur sei vausa ur persuoritori ur ito patriare repretactuvo y ur ste trabajo fue determinar el efecto de la actividad turística en el comportamiento de nformación util para el diseño de acciones que garanticen un mejor aprovechamiento ntorunacion uni para el usono de acciones que garacidera un mejor aprovecnamiento nantificó la actividad turística y se realizó un seguimiento del comportamiento con z uantinco la acuvidaa turisnca y se realizo un seguimiento dei comportanuento con a Mayo 2000 - Abril 2001). La actividad turística fue mayor los meses de otoño e invien niayo 2000 - Auru 2003). La actividatu turisutar iue mayor nos ineses ue utuno e mivera "panga" la más numerosa. Se registraron 112 disturbios, la mayoría de los cuales fueron panga in has numeroa. Se registrator a La unimoto, in mayoun se no cunter and on In cuarto de los disturbios fueron ocasionados por causas humanas generándose a o via cusario un ivo uniculito i necrois ocanonanto por causar numerare paracanatore a s Casionando un efecto intenso (animales se van al agua) en el 32% de los disturbios h Un anàlisis de componentes principales, ACP, describió las condiciones bajo las cua en anances un componentes principares, ACE, concrition no community sono no can replicada). Usando tres factores (47% de la varianza total) has variables de mayor i septicana). Usanato tres naciones (4/7% tre la valtanza locar) no valuatores de ausyor umiedad relativa, la categoría de Beaufort, el número total de embarcaciones y el n suncuan relativa, la cargoria de beautori, el número tola de envarianzones y el la reletos. En Los Islotes el disturbio ocurrió principalmente en otoño e invierno cuan renzus, su Los pastes es ustratuto ocurno principalmente en otorio e mivierno ciam gran número de machos adultos y subadultos y condiciones ambientales desfavorables stantinumero un manino anuno y samanuno y cumurante aninemanes eminerates estatorantes omo marea alta y viento intenso. El menor número de disturbios se registró en veri obo marino, sin embargo la mayoría de estos disturbios fueron ocasionados por la a Krs words: disturbance, lourism, tolerance, PCA, California sea lion, Zalophus califor

#### introduction

commercial purpo

As the southernmost breeding colony of California sea ions (Zalophus californianus californianus) in the Northern Hemisphere (Aurioles-Gamboa and Zavala-González, (994), Los Islotes is of biological importance and one of he smallest breeding rookeries of the Gulf of California Le Boeuf et al., 1983; Aurioles-Gamboa and Zavala-González, 1994). Los Islotes rookery is also the California sea lion colony most visited by tourists in Versico (SEMARNAP, 2000), due to its proximity to the ity of La Paz, in Baja California Sur. A variety of vessels risit this site, contributing to making marine mammal ourism an important economic industry in the area SEMARNAP, 2000; López-Espinosa, 2002).

2000). In 1976, the the Mexican Gove protected (Auriole because many of th Protected Areas Sy for the conservatio loss and disturb fisheries and touri The charismatic n proximity to the c of the marine-man

The California sea the Pacific coast Mexico, original

Centro Interdisciplinatio de Ciencias Marinas, Instituto Politécnico Nacional. Av. IPN 5/ Paz, Baja California Sur, C.P. 23096, México. E-mail: vlabradam@ipn.mx; vlabrada@hotmail.com.

2003-2005 **Technical Report Thesis Master in Science Published Paper** 



CICIMAR

INSTITUTO POLITÉCNICO NACIONAL CENTRO INTERDISCIPLINARIO DE CIENCIAS





TESIS

Que para obtener el grado de Maestro en Ciencias Con especialidad en Manejo de Recursos Marinos

PRESENTA:

Biol. Vanessa Labrada Martagón

Mayo 2003

La Paz, B.C.S., México



MONITOREO DE LA ACTIVIDAD HUMANA Y DISEÑO DE ACCIONES DE CONSERVACIÓN EN LA COLONIA REPRODUCTORA DE LOBO MARINO DE CALIFORNIA EN "LOS ISLOTES", B.C.S., MEXICO.

Informe Final para The Nature Conservancy











SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES





- Workshops organized by regional office CONANP-SEMARNAT
- Researchers, service tourism providers, and governmental personnel



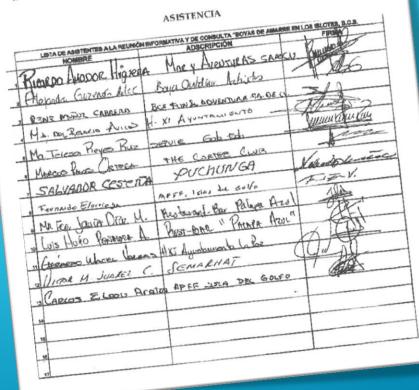


MINUTA DE LA REUNIÓN CELEBRADA EL DÍA 7 DE MARZO DE 2005 SALA DE JUNTAS DEL EDIFICIO DE LA SEMARNAT BOYAS DE AMARRE EN LOS ISLOTES, COMPLEJO INSULAR DEL ESPÍRITU SANTO

AGENDA DEL DÍA

JUSTIFICACIÓN DE LA INSTALACIÓN DE LAS BOYAS DE AMARRE UNIDADES MUERTO-BOYA A UTILIZAR Y ARREGLO DE LAS MISMAS PROPUESTA DE REGLAMENTO DE USO DE LAS BOYAS DE AMARRE

- OBSERVACIONES, CRÍTICAS, COMENTARIOS Y APORTACIONES 2.
- 3.
- Δ



Day schedule 7 March 2005:

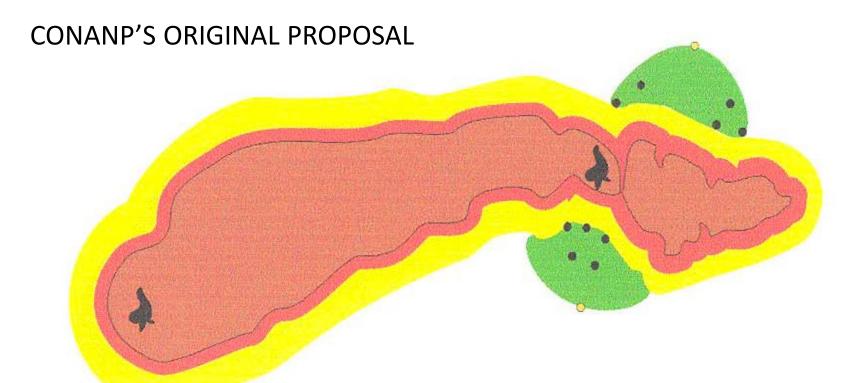
- Justification for the of buoy system 1. installation
- Technical details about buoy 2. system
- Proposal for zoning and use of site 3. Critical, comments & suggestions



# **ZONING PROPOSAL**









Zona sin tránsito de embarcaciones, libre de nadadores y sin anclaje, 0-10 metros desde la línea de agua (mdla)



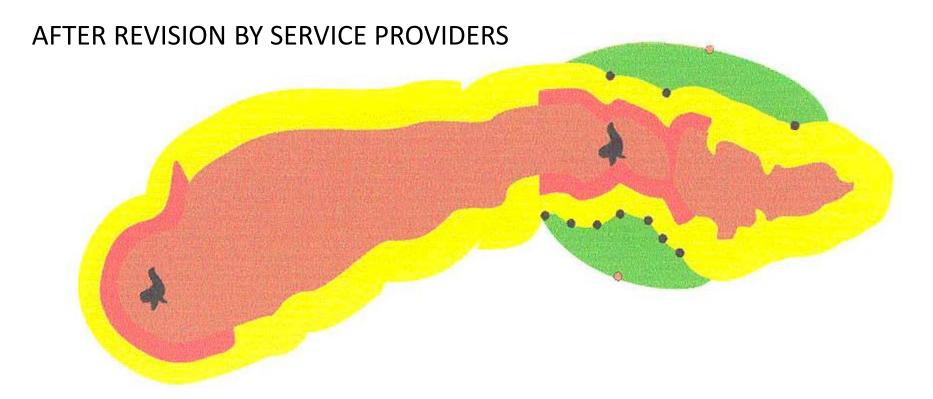
Zona de tránsito lento de embarcaciones, natación permitida, anclaje no permitido, 10-30 mdla



Zona de tránsito, amarre permitido para embarcaciones menores, 30 mdla



Zona de tránsito, amarre permitido para embarcaciones mayores, 40 mdla



Boats >40 m don't need buoy system

Duration:

2 h observation boats

4 h divers boats



Zona sin tránsito de embarcaciones, libre de nadadores y sin anclaje, 0-10 metros desde la línea de agua (mdla)



Zona de tránsito lento de embarcaciones, natación permitida, anclaje no permitido, 10-30 mdla



Zona de tránsito, amarre permitido para embarcaciones menores, 30 mdla



Zona de tránsito, amarre permitido para embarcaciones mayores, 40 mdla



COMISIÓN NACIONAL DE ÁREAS NATURALES PROTEGIDAS Camino al Ajusto # 200, Col. Jardines en la Montaña, Delegación Tlalpan, C.P. 14210, México, D.F. Conmutador (55) 52 55 5449 7000 e-mail: info@conanp.gob.mx www.conanp.gob.mx

ÁREA DE PROTECCIÓN DE FLORA Y FAUNA ISLAS DEL GOLFO DE CALIFORNIA Dirección en Baja California Sur

5 de Mayo No. 1035 Int. 1 e/Primo Verdad y Marcelo Rubio Col. Centro, La Paz, Baja California Sur. Tel. (612) 128 4170 e-mail: lapaz@conanp.gob.mx http://islasgc.conanp.gob.mx



Dáselo a alguien más.



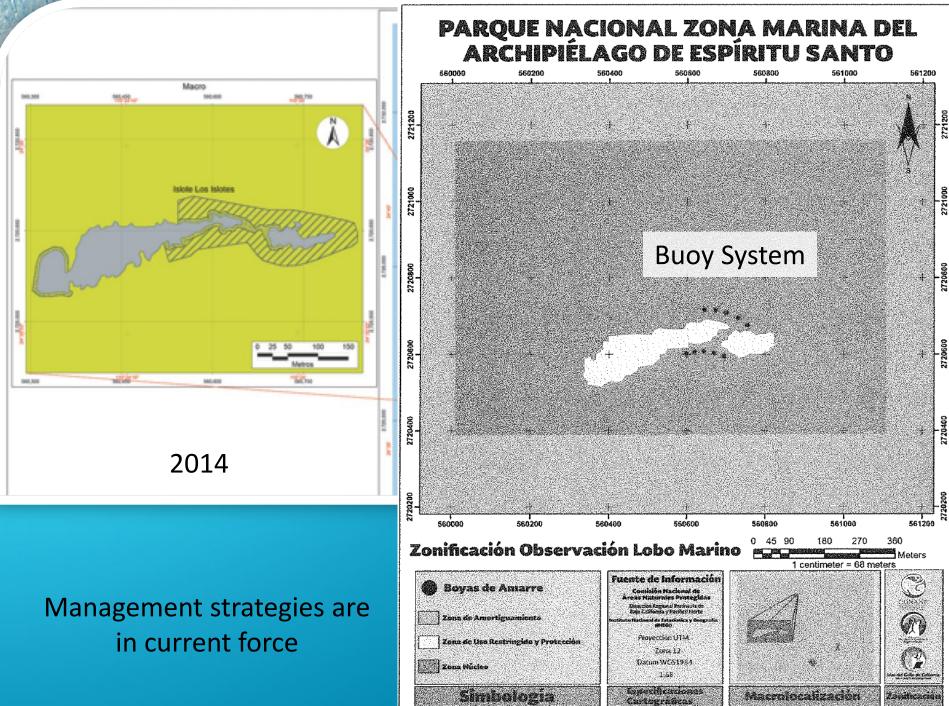
Utiliza las boyas de amarre, en tu visita a la Isla Espíritu Santo



#### Helps protect **Reefs and sea lions**



19•8 2005. Flyer Tie Up! Tourism activity Regulation Plandential Decree
19•5 2007. National Park exclusive for Marine Zone Archipelago
2000 Espiritu Santo, Presidential Decree
SE•1/2014. Management Program Marine Zone, SEMARNAT
20•0 2014. Carrying capacity, tourism in Espiritu Santo, SEMARNAT



Zoniticació

#### **Acknowledgments**











Dr. David Aurioles Gamboa Dra. Claudia J. Hernández Camacho Technicians and workers of CICIMAR M.Sc. Victor H. Flores de Sahagún

"AN" BA THINK PARTY AND AND ADDRESS OF A DECK OF A DECK