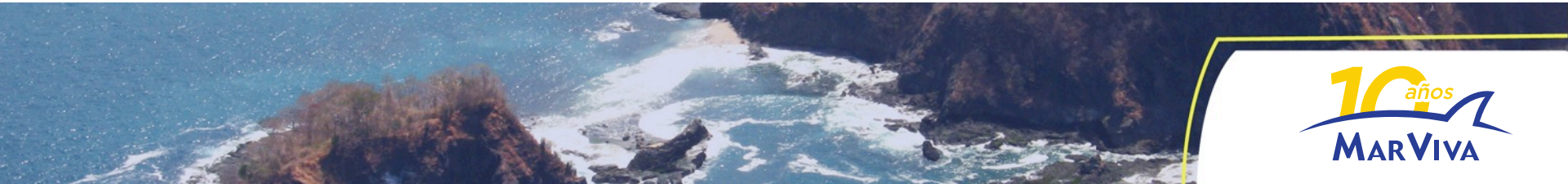
The Terraba-Sierpe Delta Complex

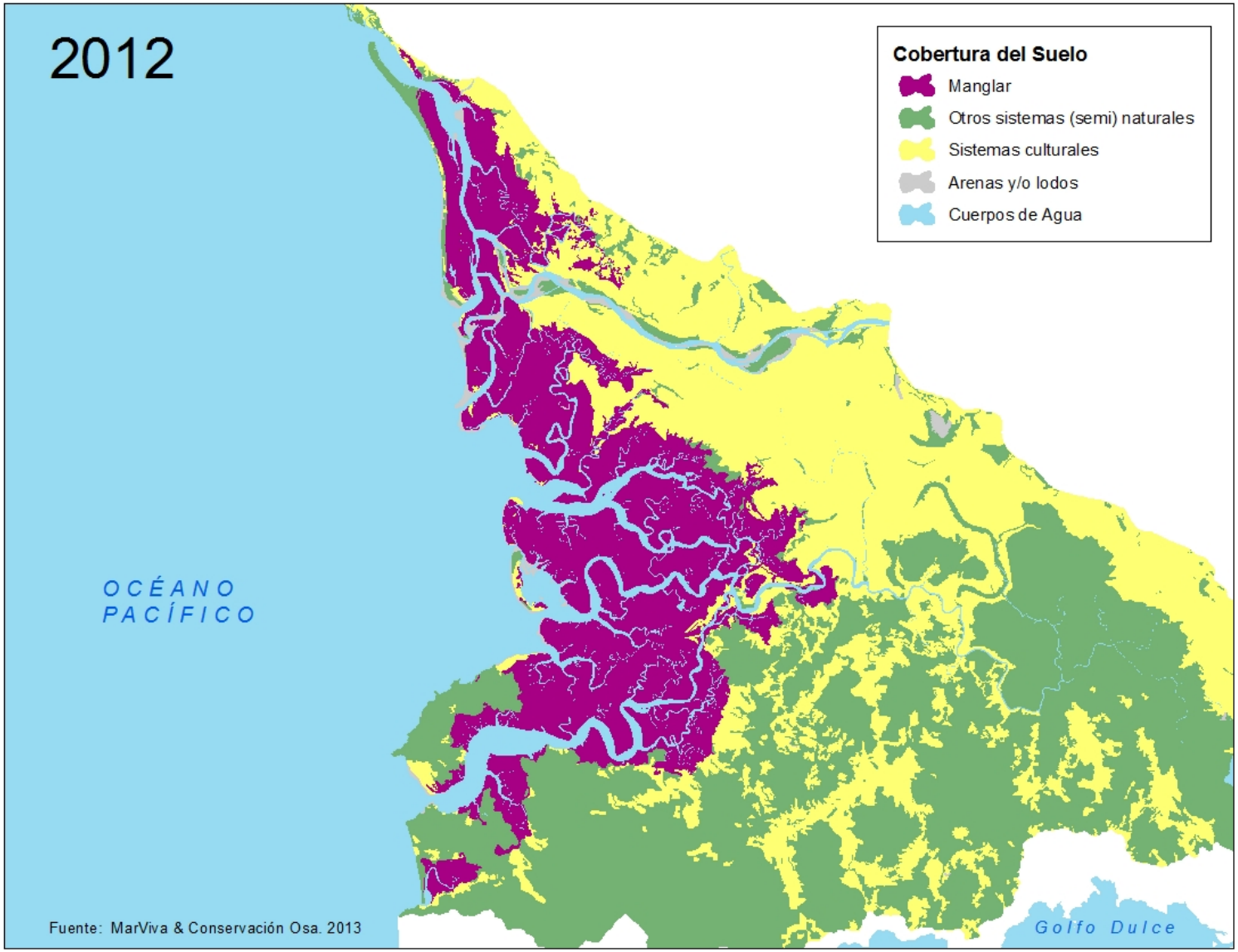
43,000 Has

99% Pacific



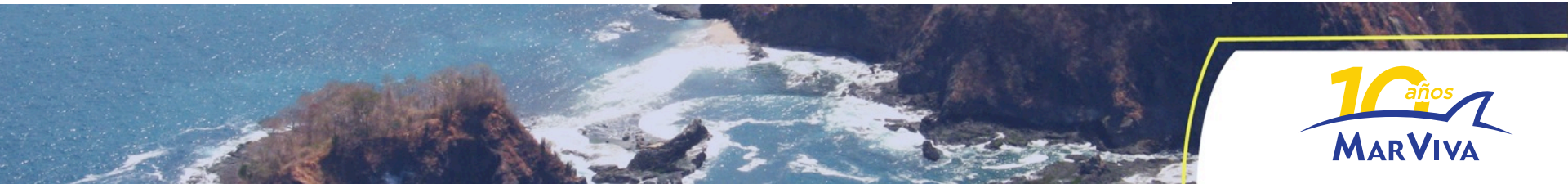
The Sierpe-Térraba Deltaic Complex

- Terraba-Largest Watershed in the Country (10% of country)
- Largest Mangrove Unit
- Feed by Two Watersheds
- Link Between Freshwater Swamps and Mangroves



Wetlands Coverage

Other Coverages



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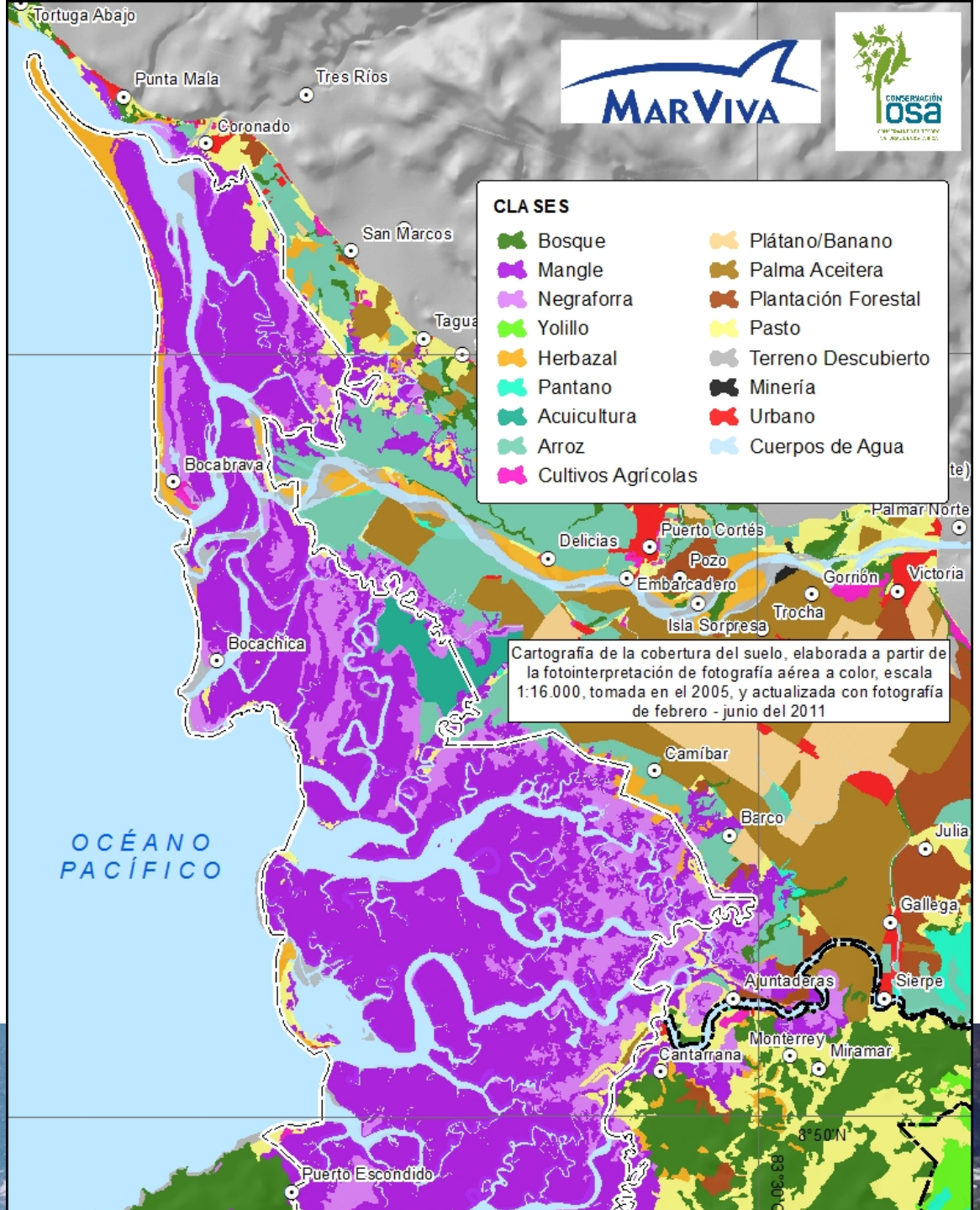
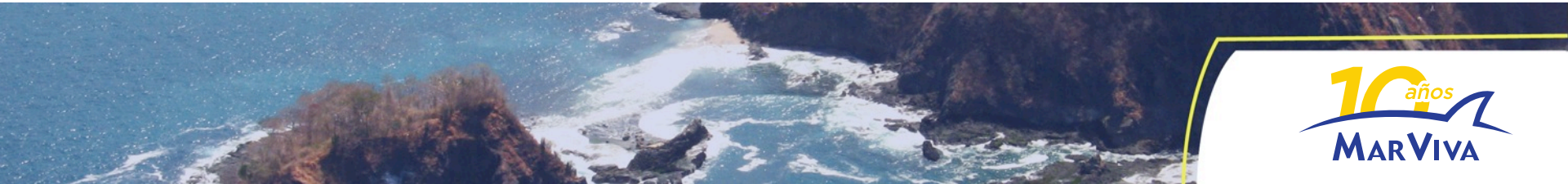
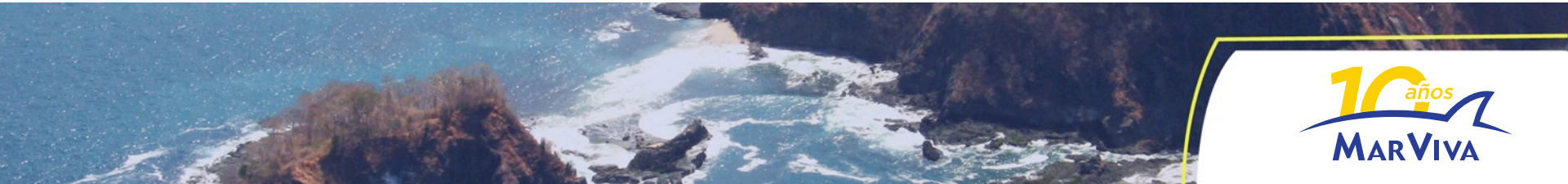

Tortuga Abajo
Punta Mala
Tres Ríos
Coronado
San Marcos
Bocabrava
Bocachica
Delicias
Puerto Cortés
Pozo
Embarcadero
Isla Sorpresa
Gorrión
Trocha
Victoria
Palmar Norte
Camibar
Barco
Julia
Gallega
Ajuntaderas
Sierpe
Monterrey
Miramar
Cantarrana
Puerto Escondido
8°50'N
OCÉANO PACÍFICO
CLASES
Bosque
Mangle
Negraforra
Yolillo
Herbazal
Pantano
Acuicultura
Arroz
Cultivos Agrícolas
Plátano/Banano
Palma Aceitera
Plantación Forestal
Pasto
Terreno Descubierto
Minería
Urbano
Cuerpos de Agua
Cartografía de la cobertura del suelo, elaborada a partir de la fotointerpretación de fotografía aérea a color, escala 1:16.000, tomada en el 2005, y actualizada con fotografía de febrero - junio del 2011

Relevance in the Local Economy



Main Trawling Grounds Offshore

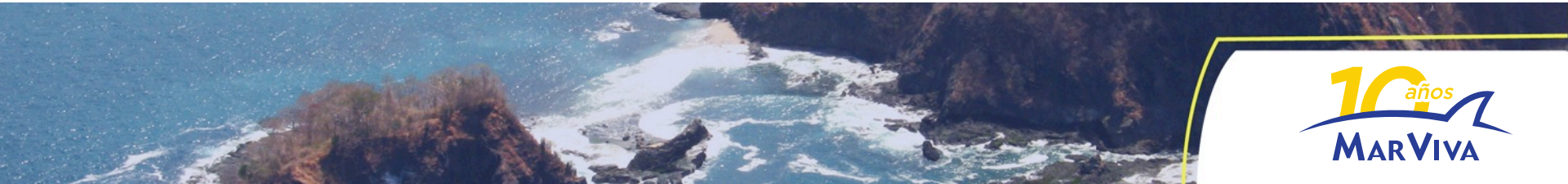
Main Breding Ground for Hamerhead Shark



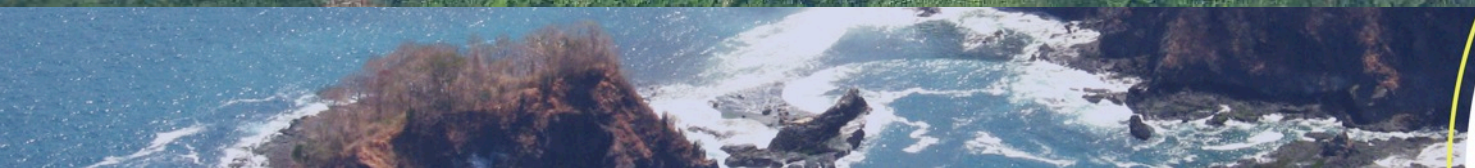
Pianguas

Anadara tuberculosa

6 million/yr



Local Navegation Routes



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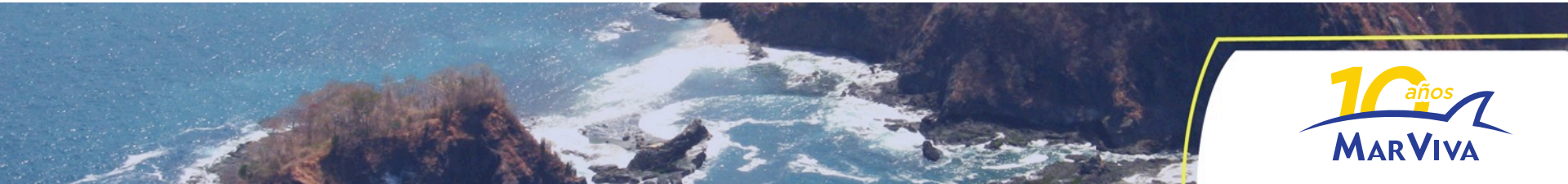
Forest Composition
&
Characteristics

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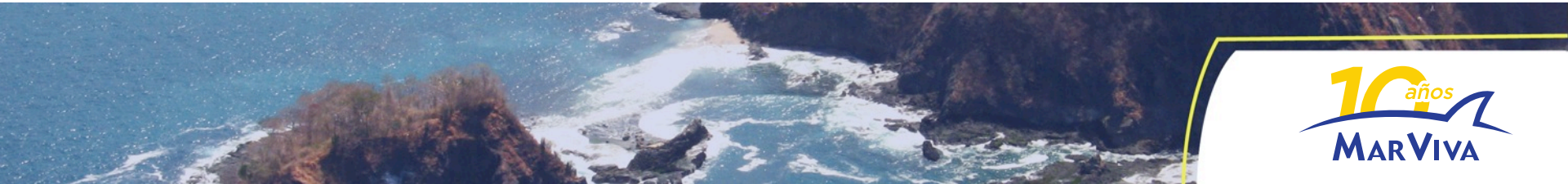
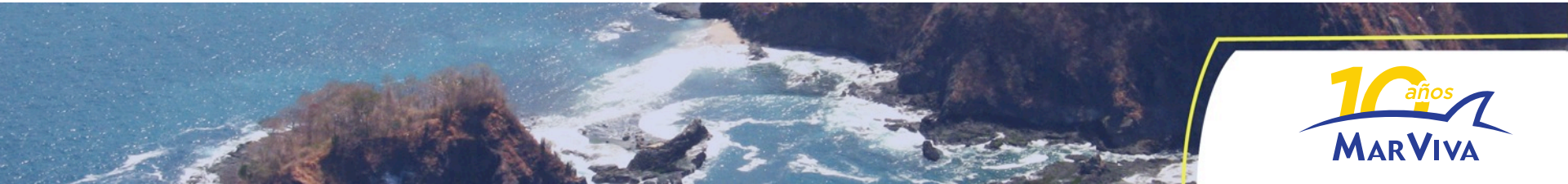
Rhizophora mangle
Rhizophora racemosa

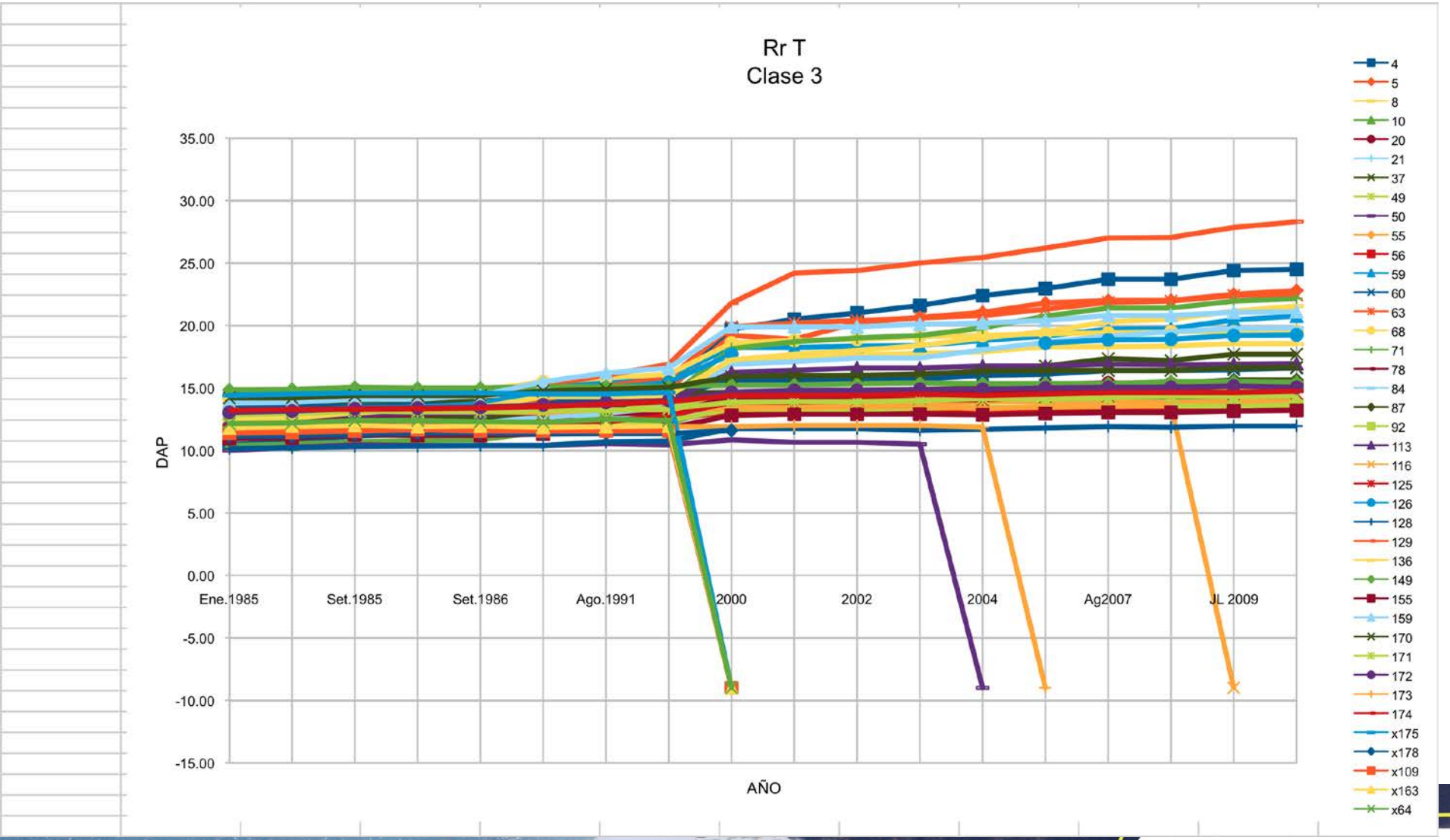


	Wet Volumen (m3/ha)	
Rhizophora	163	Garza-Terraba
	116	Encanto-Terraba
	256	Darién
	129	Tripa Pollo-Sierpe

Flooding Tolerance- Roots



Rhizophora- Growth Rates



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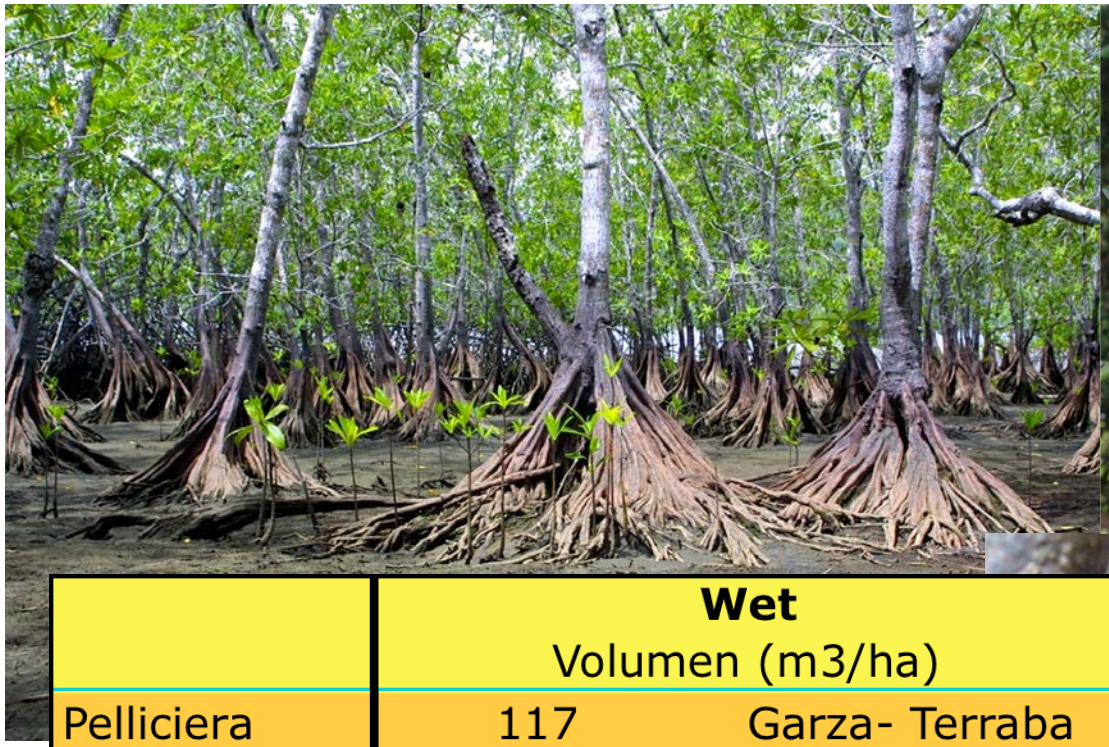
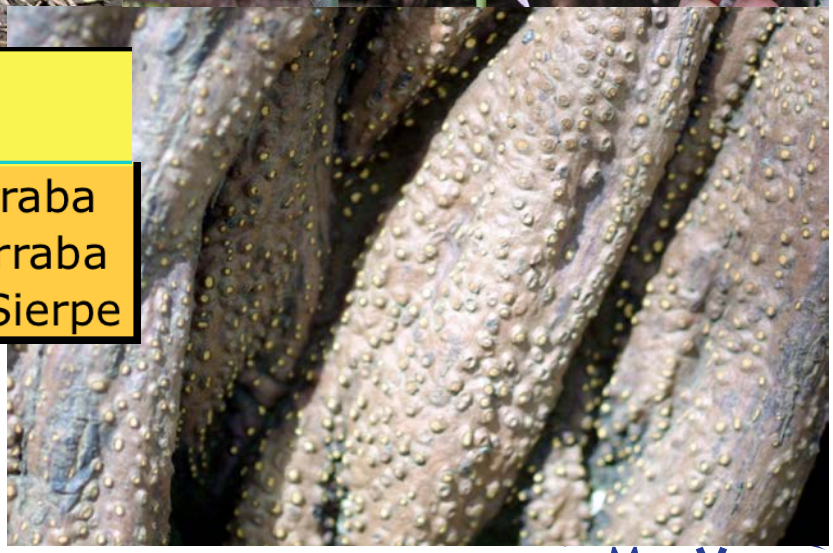
Pelliciera rhizophorae

Piñuela, mangle piña

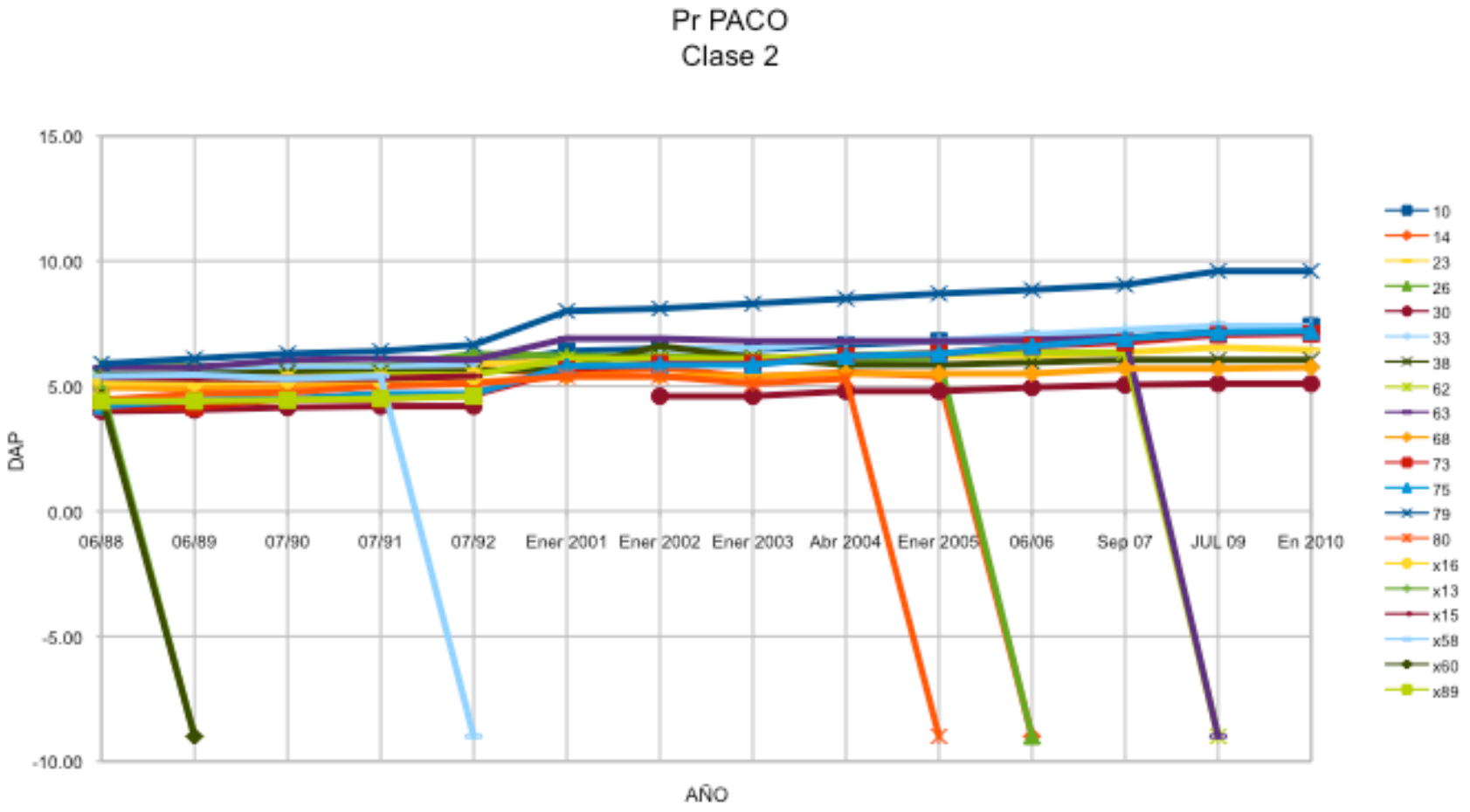


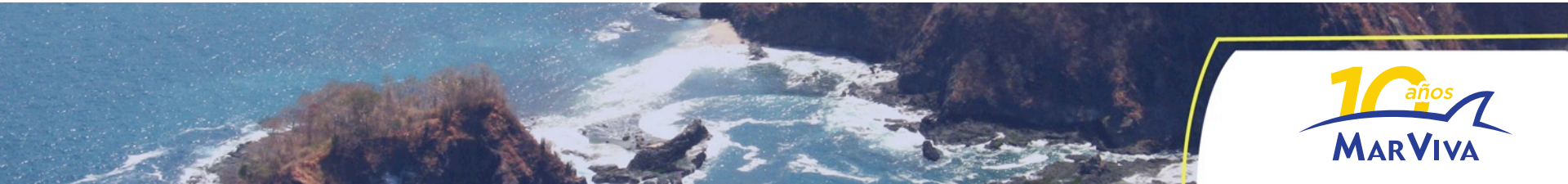
	Wet Volumen (m3/ha)	
Pelliciera	117	Garza- Terraba
	306	Encanto-Terraba
	71	Tripa Pollo-Sierpe



Flooding Tolerance- Roots

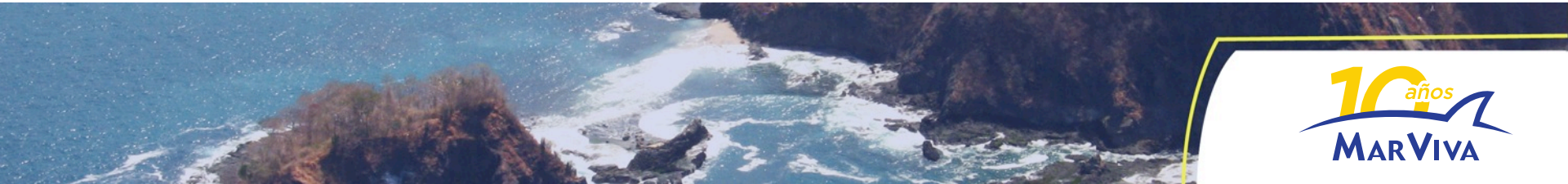
Pelliciera rhizophorae-Growth Rates

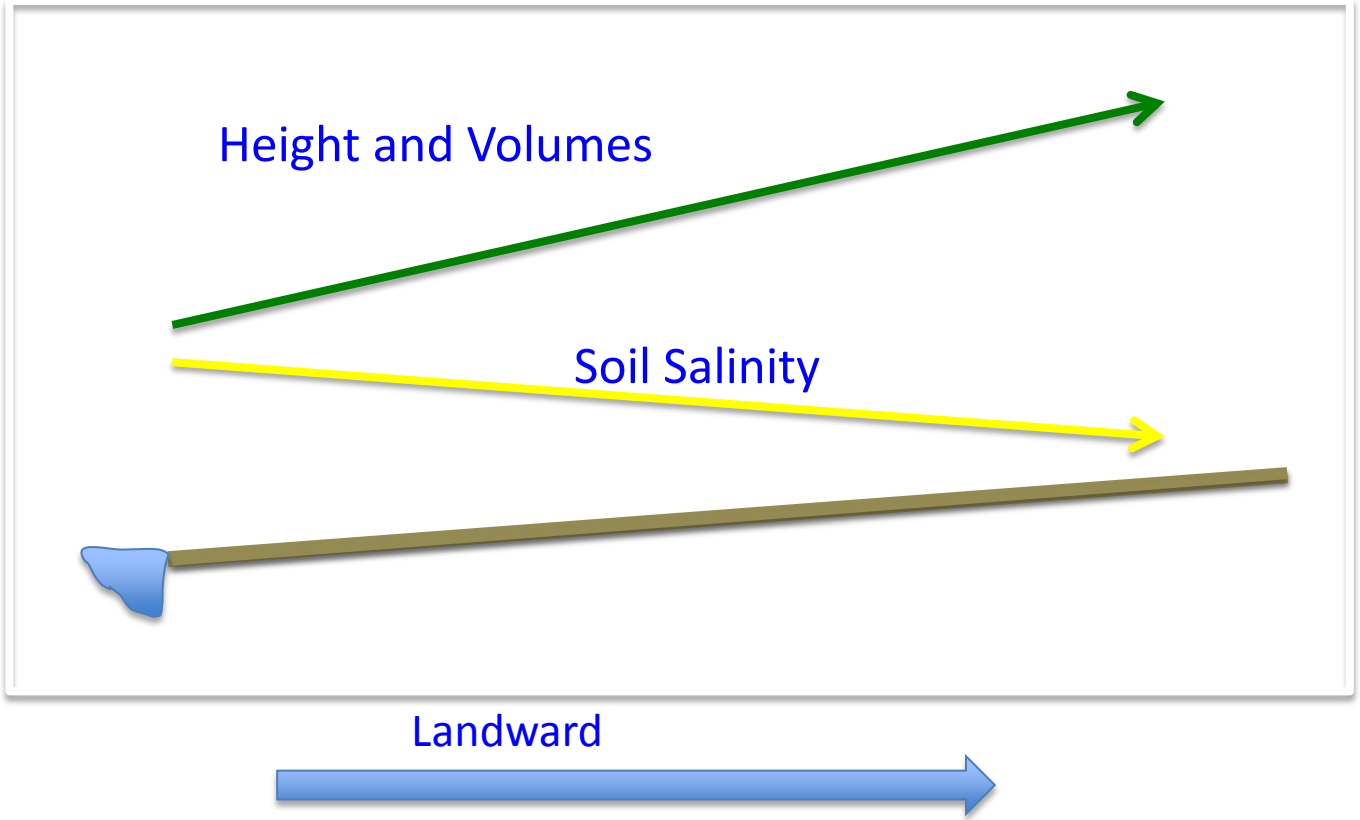


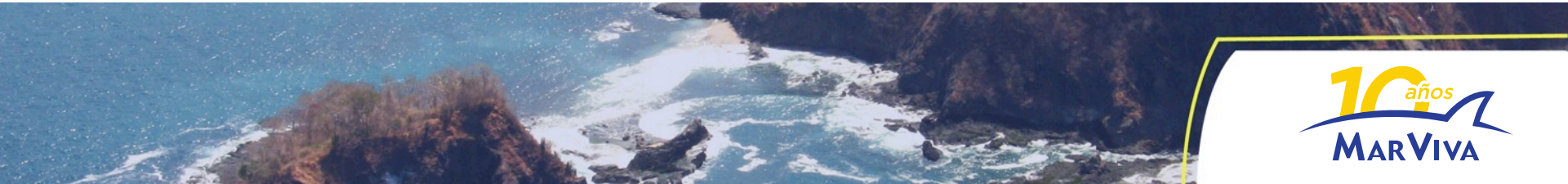


Theoretical Transect




Height and Volumes
Soil Salinity
Landward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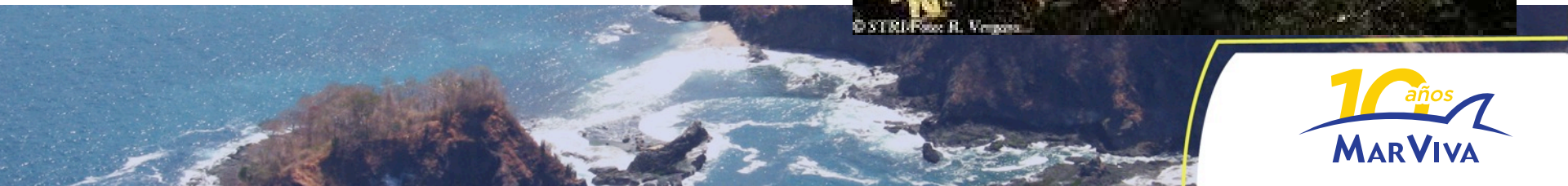
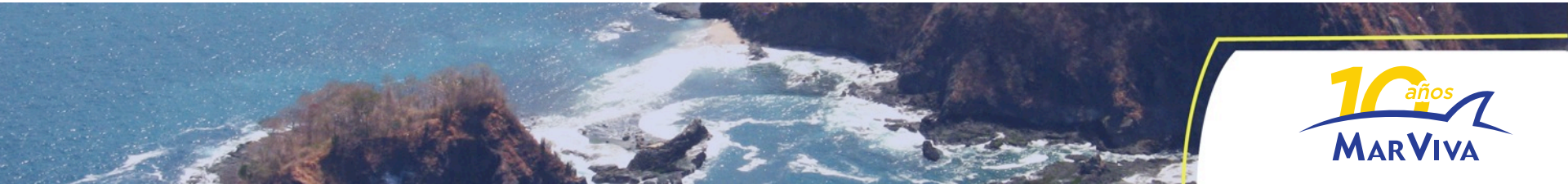
Growth Rate Gradient

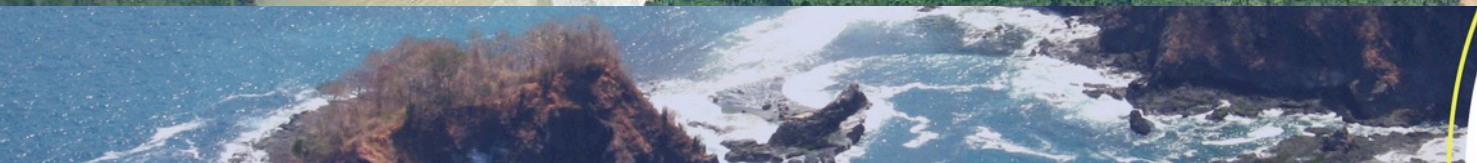
Negra Forra

Acrostichum aureum



The Role of Sediments in the Dynamics of the Mangrove





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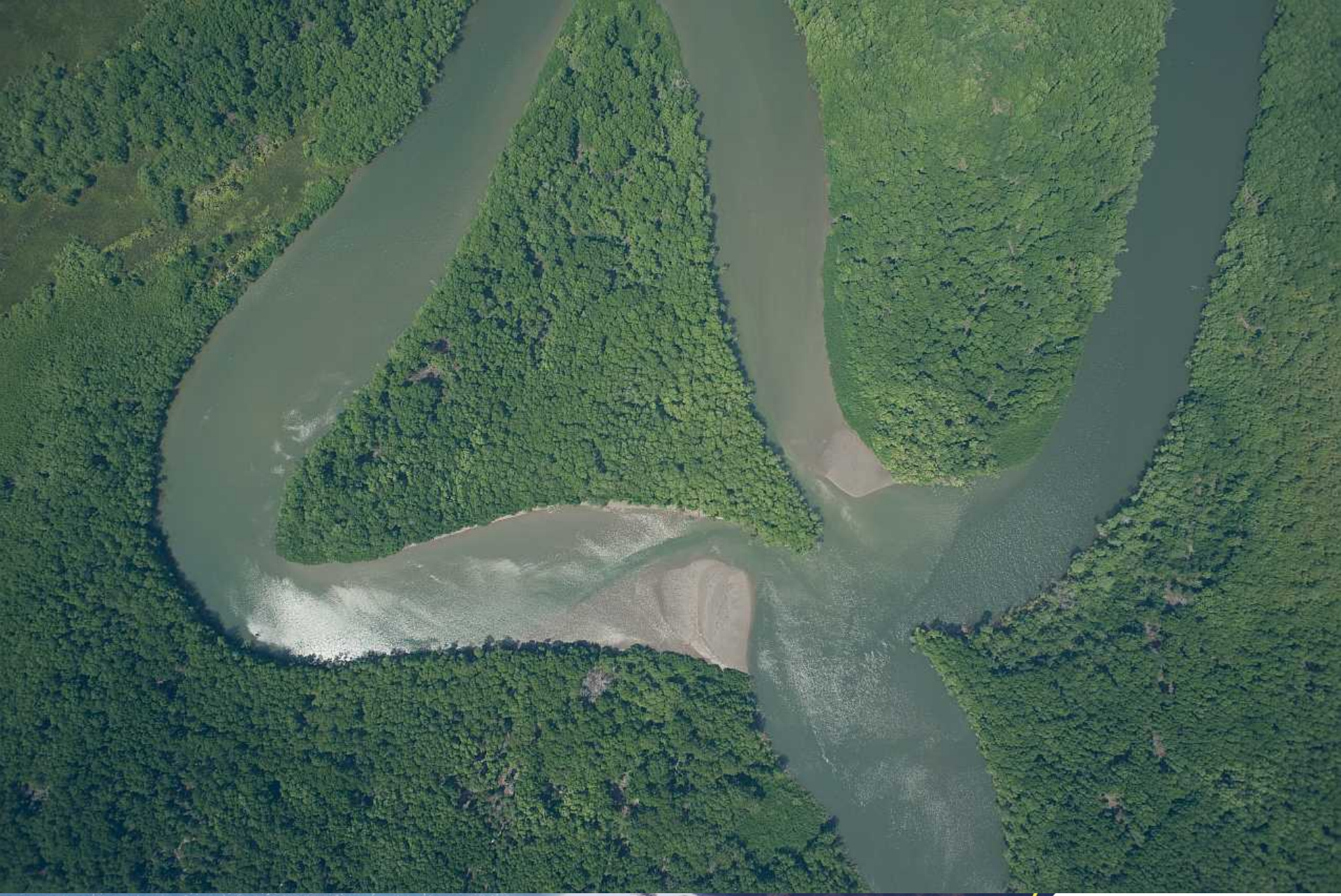
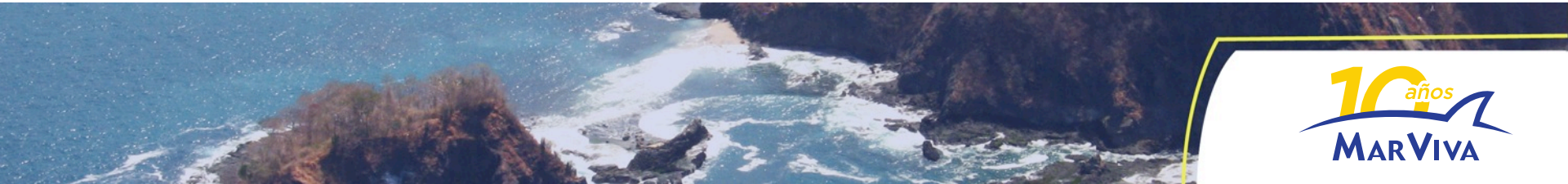
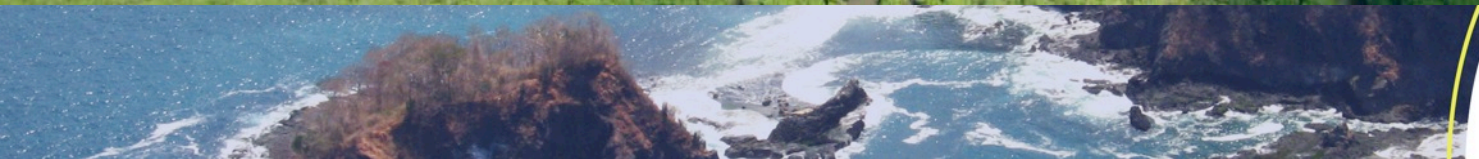


10 años
MarViva

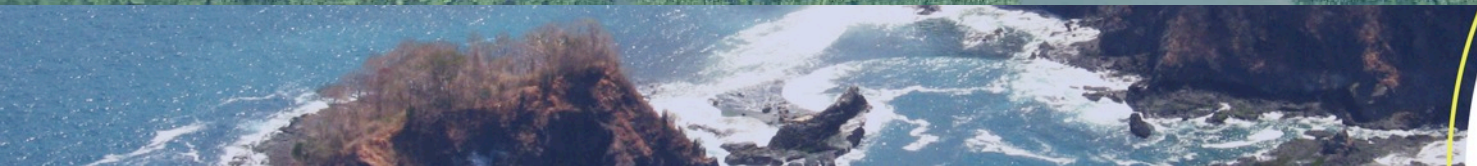


10 años
MarViva

10 años
MarViva



10 años
MarViva



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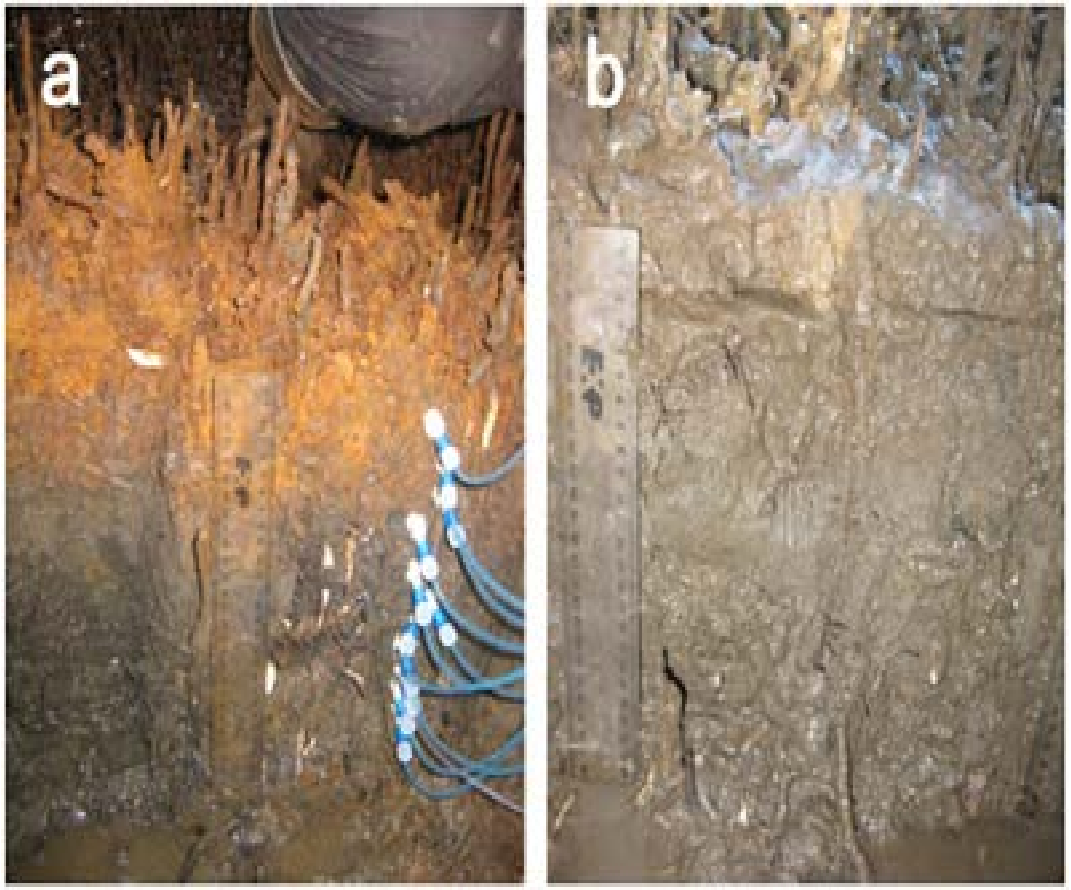
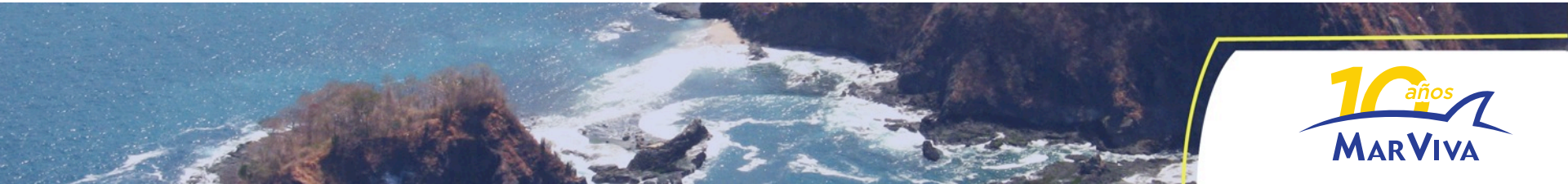
MarViva

Mangrove Soil at this Site accumulates 76% of total carbon in the system. Trees accumulated 20%

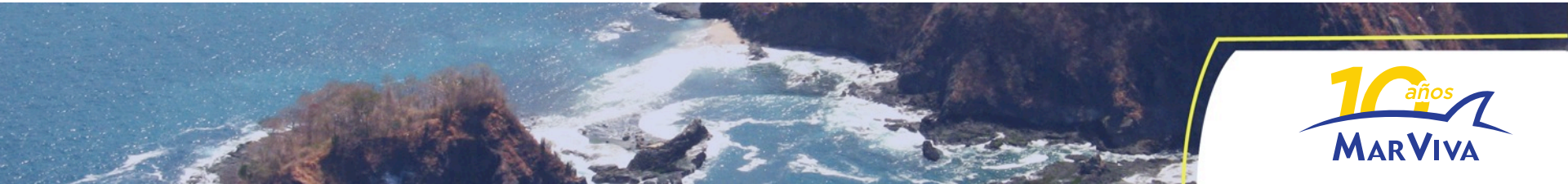


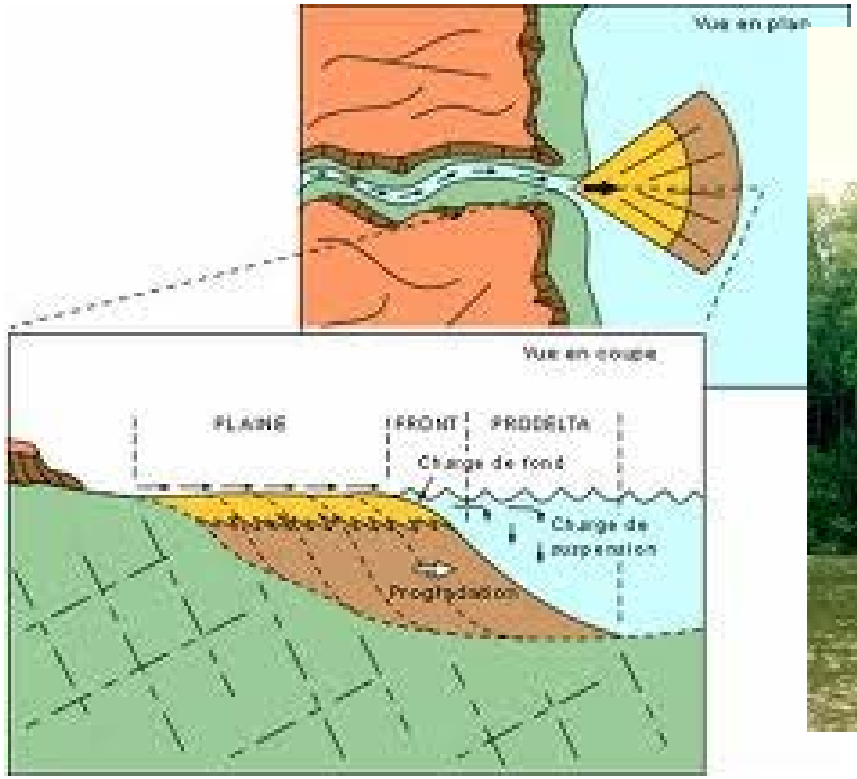
Trees: 73 y 75 MT/Ha

Soil : 391-438 MT/ha
(down to 1 m depth)



The Sea Front

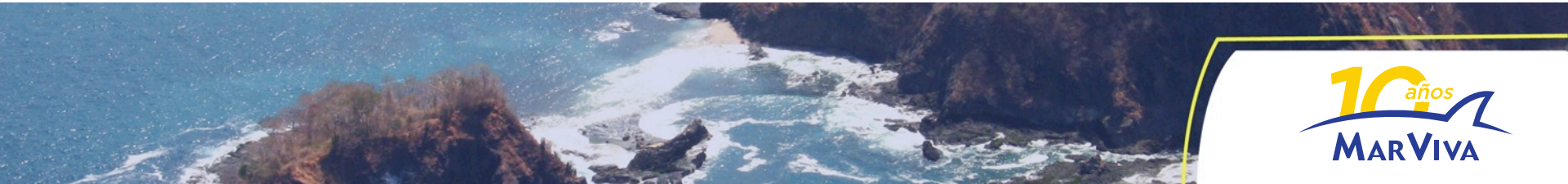




Association with geo-morphological history:

Old Sediments- Old Forests in the back,

New Sediments-New Forests in the Front..



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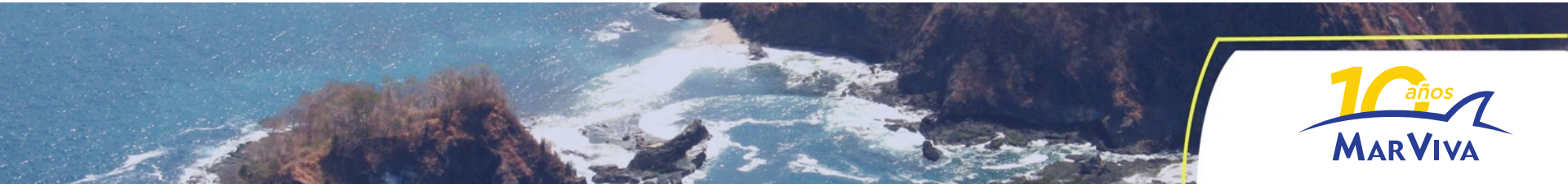
River borne sediments

Longshore Transport

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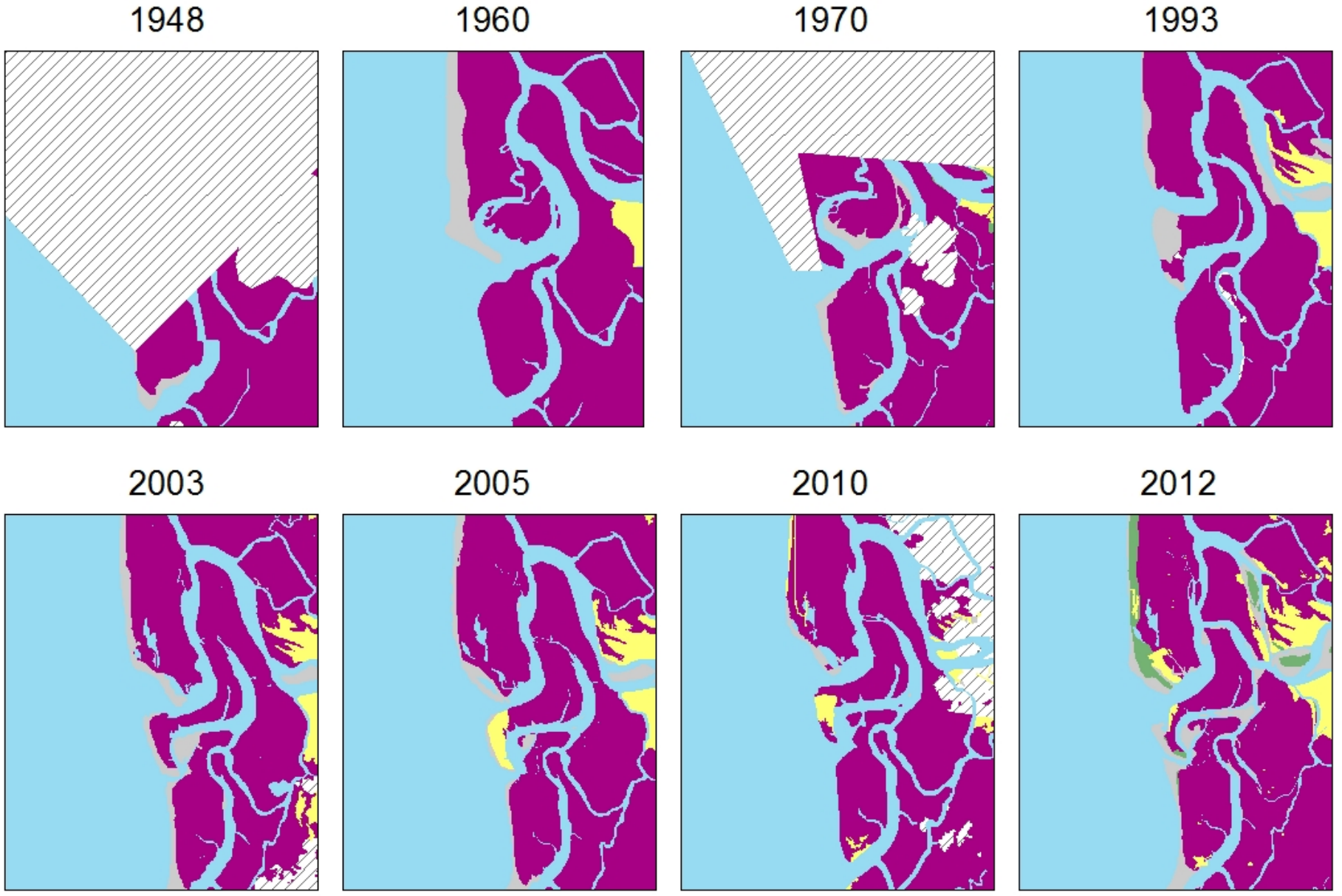
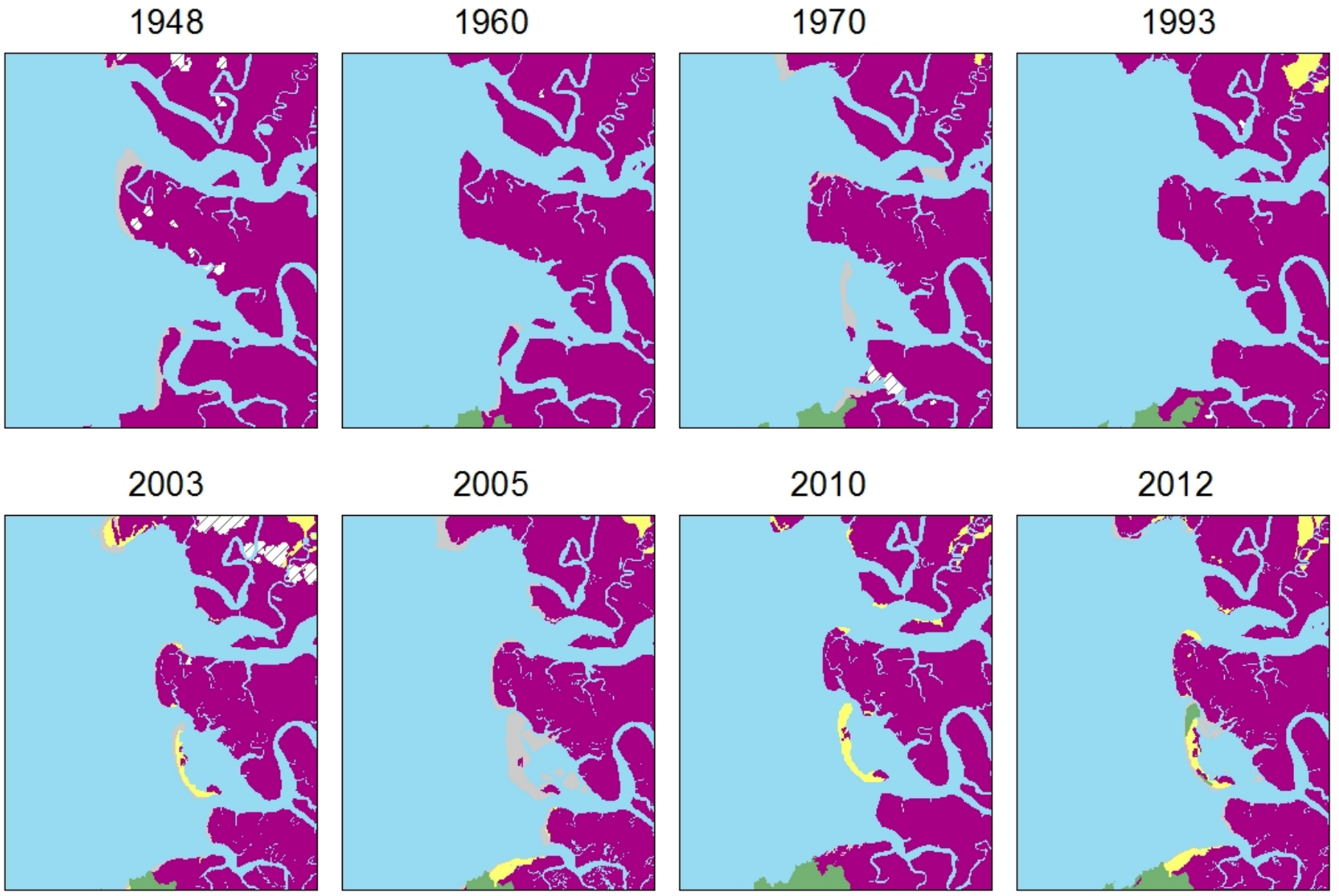
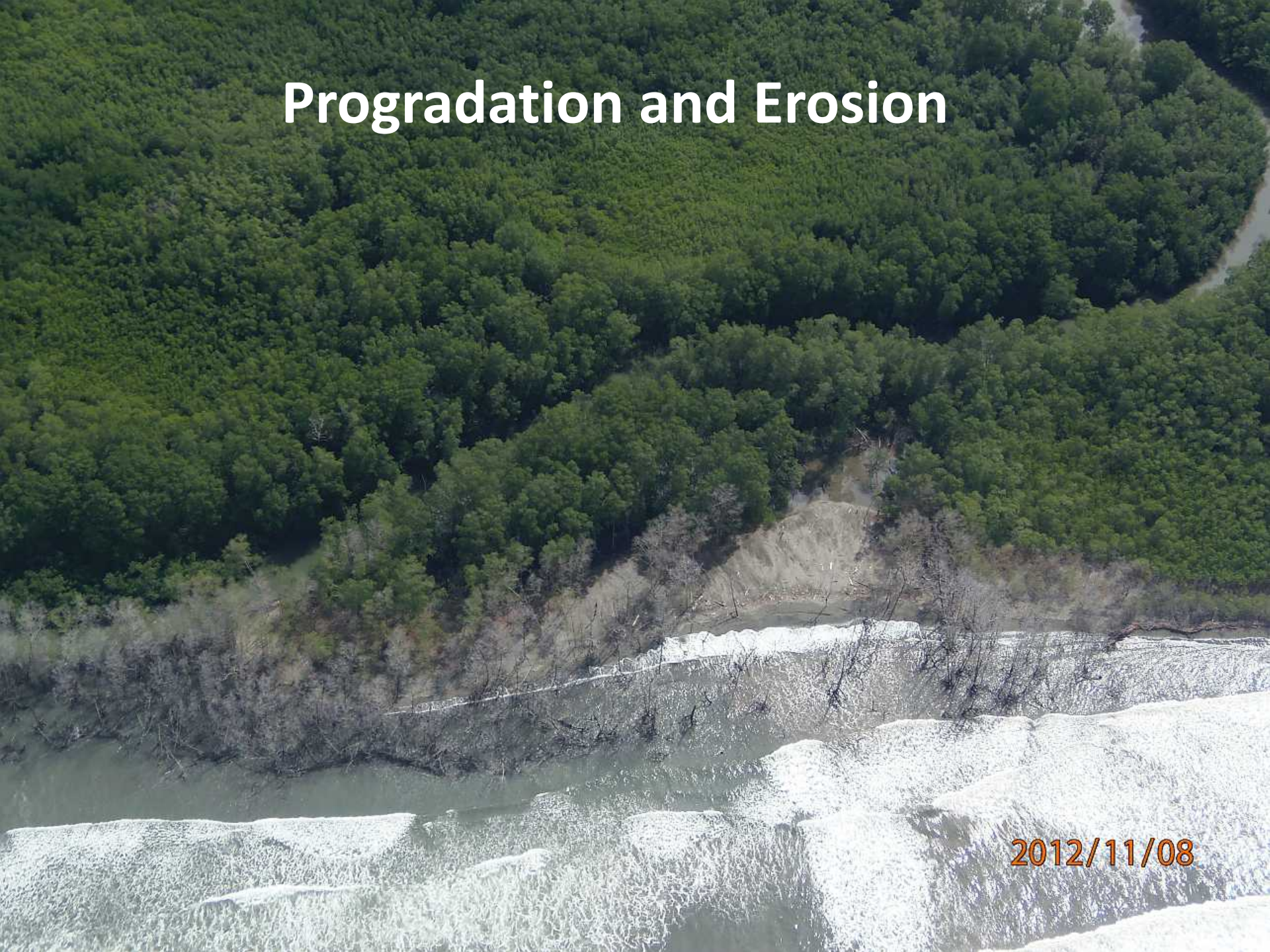
DESEMBOCADURA PRINCIPAL DEL GRANDE DE TÉRRABA



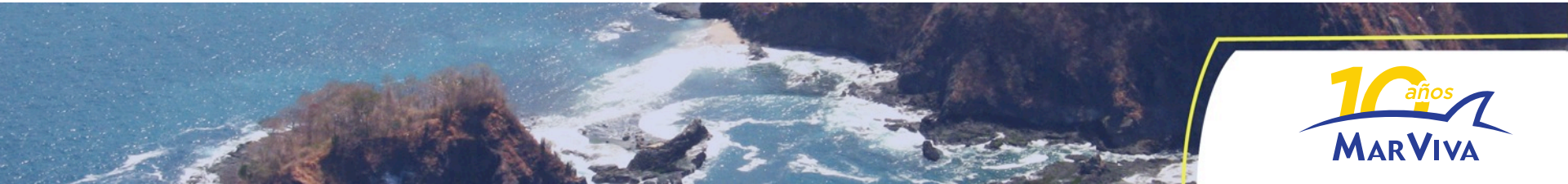
BOCAS GUARUMAL Y ZACATE

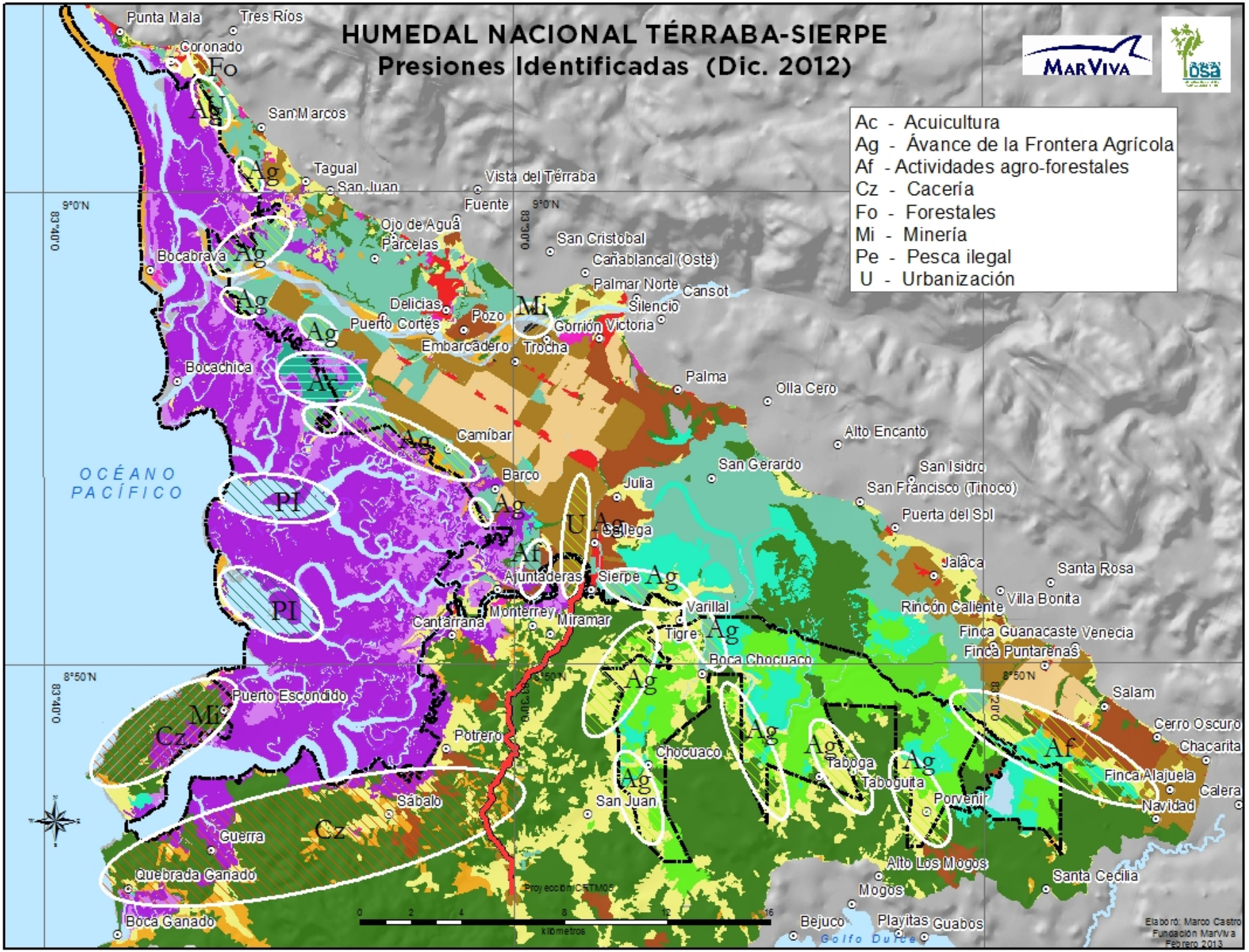


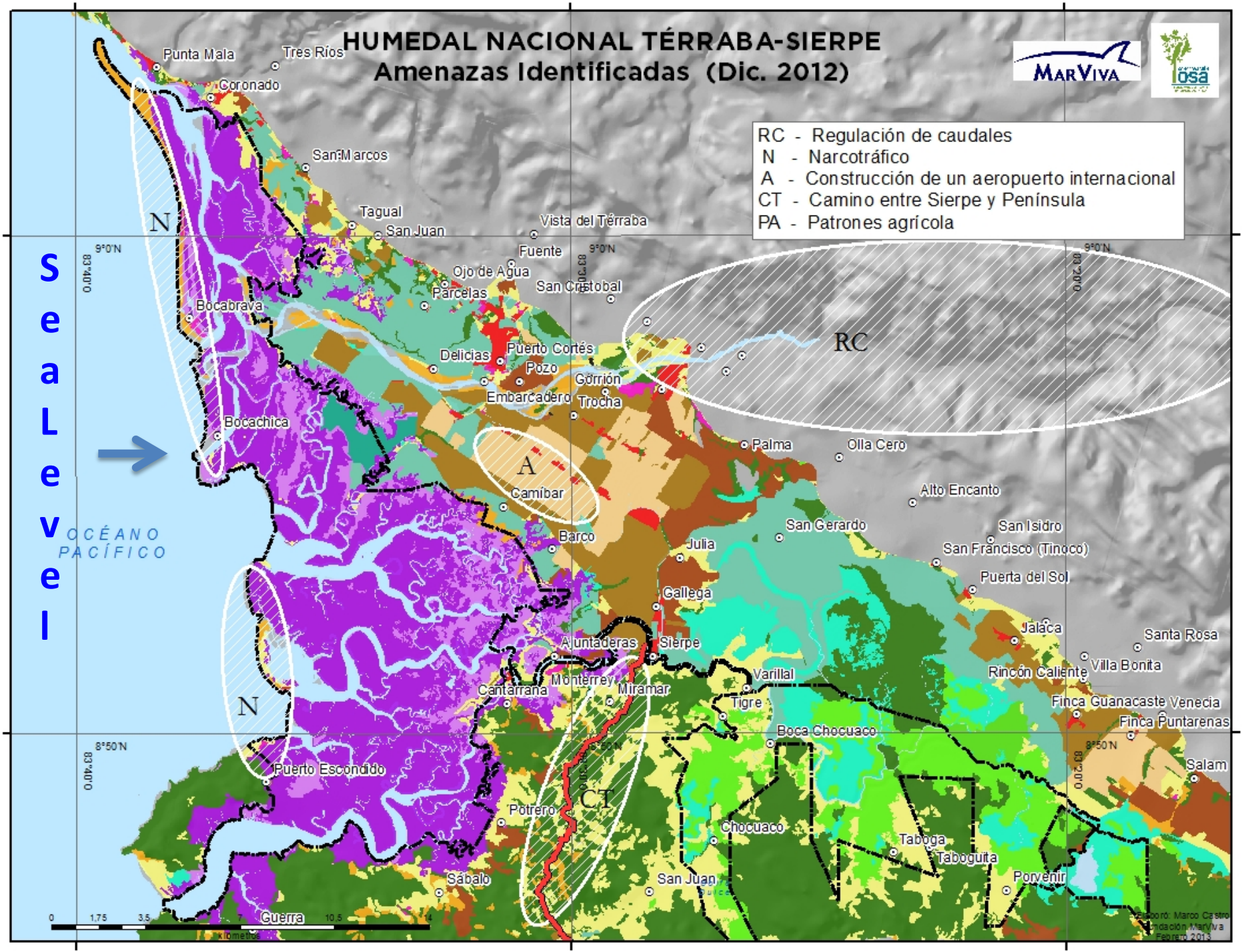
Progradation and Erosion



Threats and Changes in the System




HUMEDAL NACIONAL TÉRRABA-SIERPE
Presiones Identificadas (Dic. 2012)
MarViva
Ac - Acuicultura
Ag - Ávance de la Frontera Agrícola
Af - Actividades agro-forestales
Cz - Cacería
Fo - Forestales
Mi - Minería
Pe - Pesca ilegal
U - Urbanización
OCÉANO PACÍFICO
Golfo Dulce
Punta Mala
Tres Ríos
Coronado
San Marcos
Tagual
San Juan
Vista del Térraba
Fuente
Ojo de Agua
Parcelas
San Cristóbal
Cañablancal (Oste)
Palmar Norte
Cansot
Silencio
Bocabrava
Delicias
Pozo
Puerto Cortés
Gorrión
Victoria
Embarcadero
Trocha
Bocachica
Palma
Olla Cero
Camíbar
Alto Encanto
San Gerardo
San Isidro
Barco
Julia
San Francisco (Tinoco)
Puerta del Sol
Ollegla
Jalaca
Santa Rosa
Ajuntaderas
Sierpe
Villa Bonita
Monterrey
Miramar
Varillal
Rincón Caliente
Cantarrana
Tigre
Finca Guanacaste Venecia
Finca Puntarenas
Boca Chocuaco
Puerto Escondido
Salam
Cerro Oscuro
Potrero
Chacarita
Chocuaco
Taboga
Finca Alajuela
Taboguita
Calera
Sábalo
San Juan
Porvenir
Navidad
Guerra
Alto Los Mogos
Quebrada Ganado
Santa Cecilia
Mogos
Boca Ganado
Bejuco
Playitas
Guabos
9°0'N
8°50'N
83°40'O
83°30'O
83°20'O
Proyección CRTM05
0 2 4 8 12 16
kilómetros
Elaboró: Marco Castro
Fundación MarViva
Febrero 2013


HUMEDAL NACIONAL TÉRRABA-SIERPE
Amenazas Identificadas (Dic. 2012)
MarViva
RC - Regulación de caudales
N - Narcotráfico
A - Construcción de un aeropuerto internacional
CT - Camino entre Sierpe y Península
PA - Patrones agrícola
Sea Level
OCÉANO PACÍFICO
Punta Mala
Tres Ríos
Coronado
San Marcos
Tagual
San Juan
Vista del Térraba
Fuente
Ojo de Agua
Parcelas
San Cristobal
Bocabrava
Delicias
Puerto Cortés
Pozo
Gorrión
Embarcadero
Trocha
Bocachica
Palma
Olla Cero
Camíbar
Alto Encanto
Barco
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San Isidro
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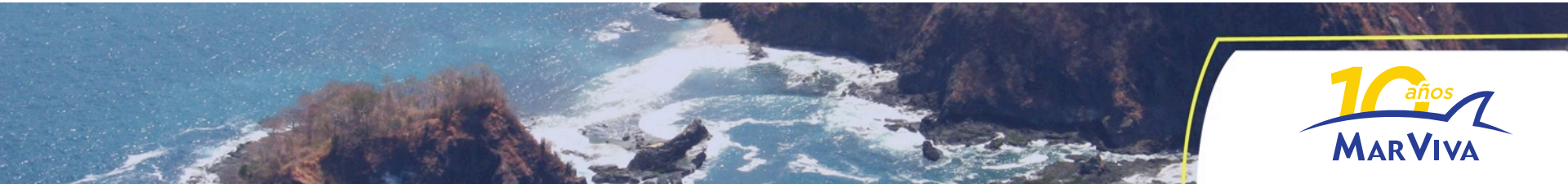
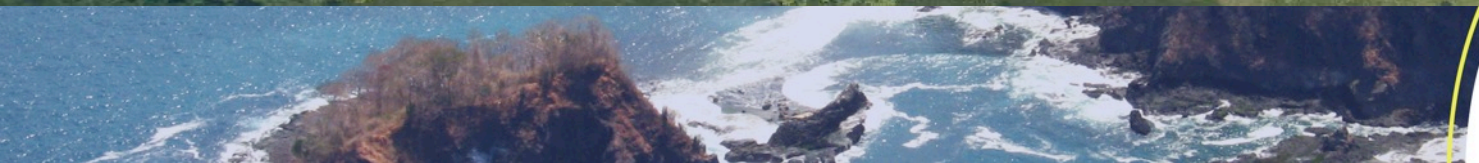
San Francisco (Tinoco)
Puerta del Sol
Gallega
Jalaca
Santa Rosa
Ajuntaderas
Sierpe
Villa Bonita
Varillal
Rincón Caliente
Monterrey
Miramar
Cantarrana
Tigre
Finca Guanacaste Venecia
Finca Puntarenas
Boca Chocuaco
Salam
Puerto Escondido
Potrero
Chocuaco
Taboga
Taboguita
Porvenir
Sábalo
San Juan
Guerra
RC
A
CT
N
9°0'N
8°50'N
83°40'0
83°30'0
83°20'0
0 1,75 3,5 7 10,5 14
kilometros
Fuente: Marco Castro
Fundación MarViva
Febrero 2013

Reclamation




2012/11/08


2012/11/08



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10 años
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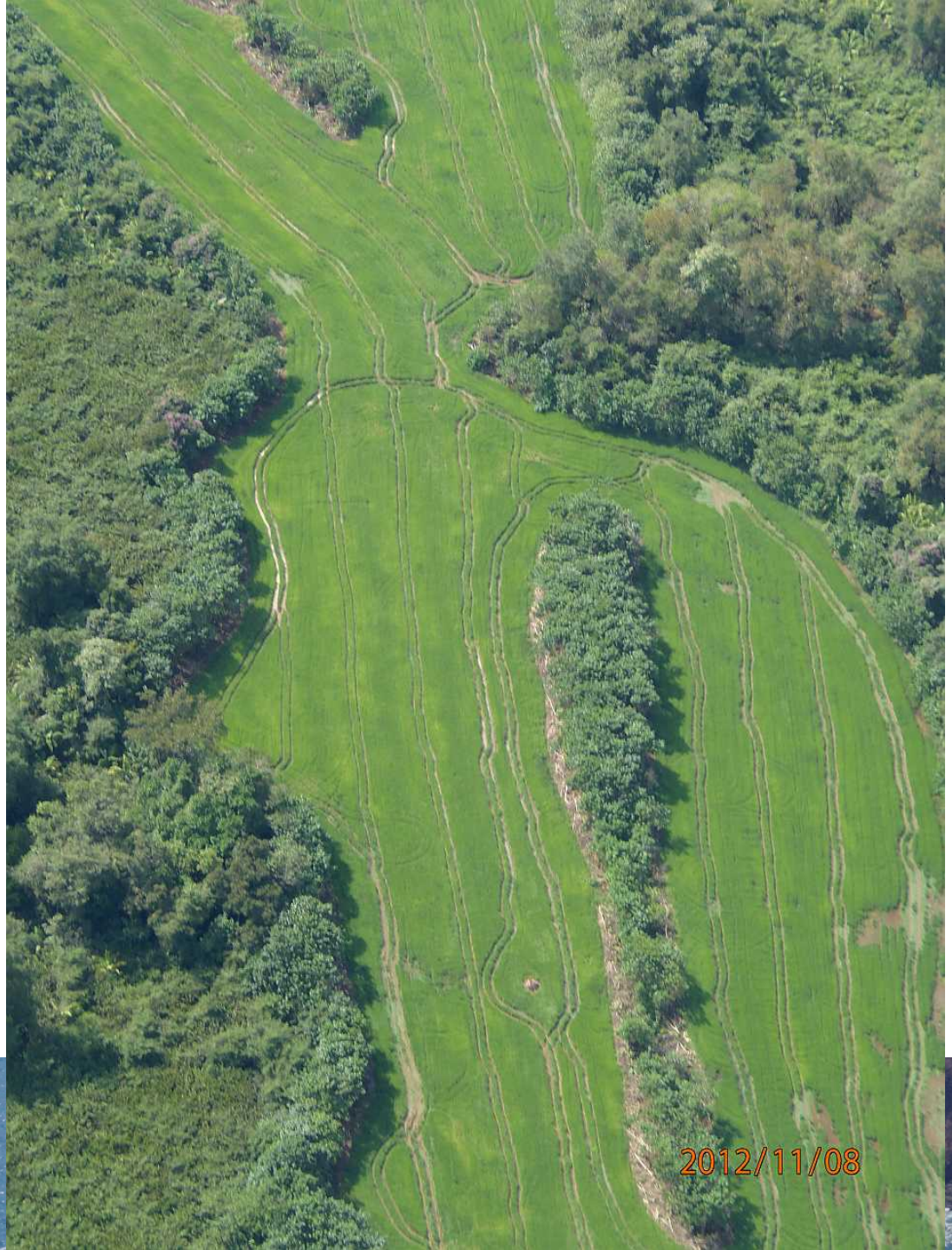
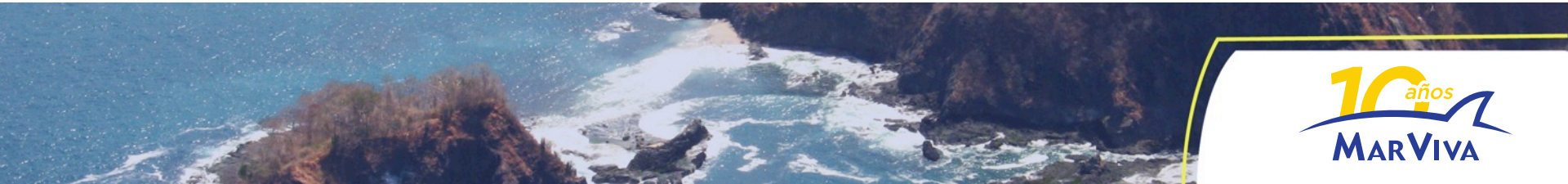
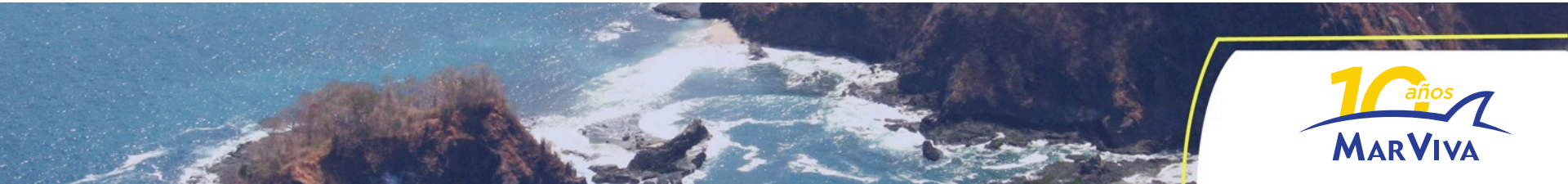


Disruption of Sediment and Freshwater Inputs



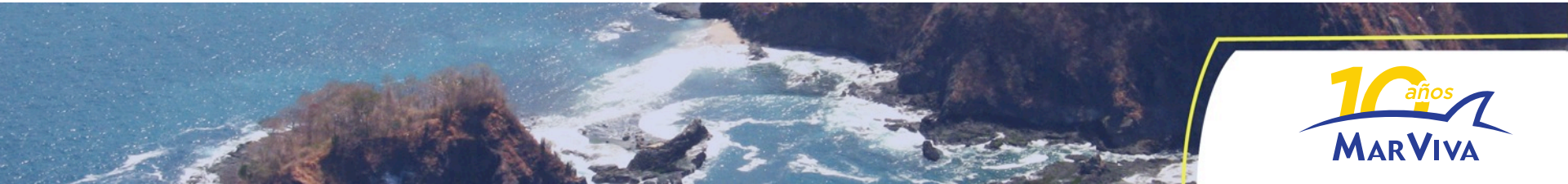

An area highly dependent on both
2012/11/08

An environmental flow is a flow in a river or into a wetland or coastal zone that maintains the ecosystem in a desired ecological condition, which maintain goods and services for people and supports biodiversity. This condition is decided by society and is a compromise between economic, social and ecological values of water for various uses.

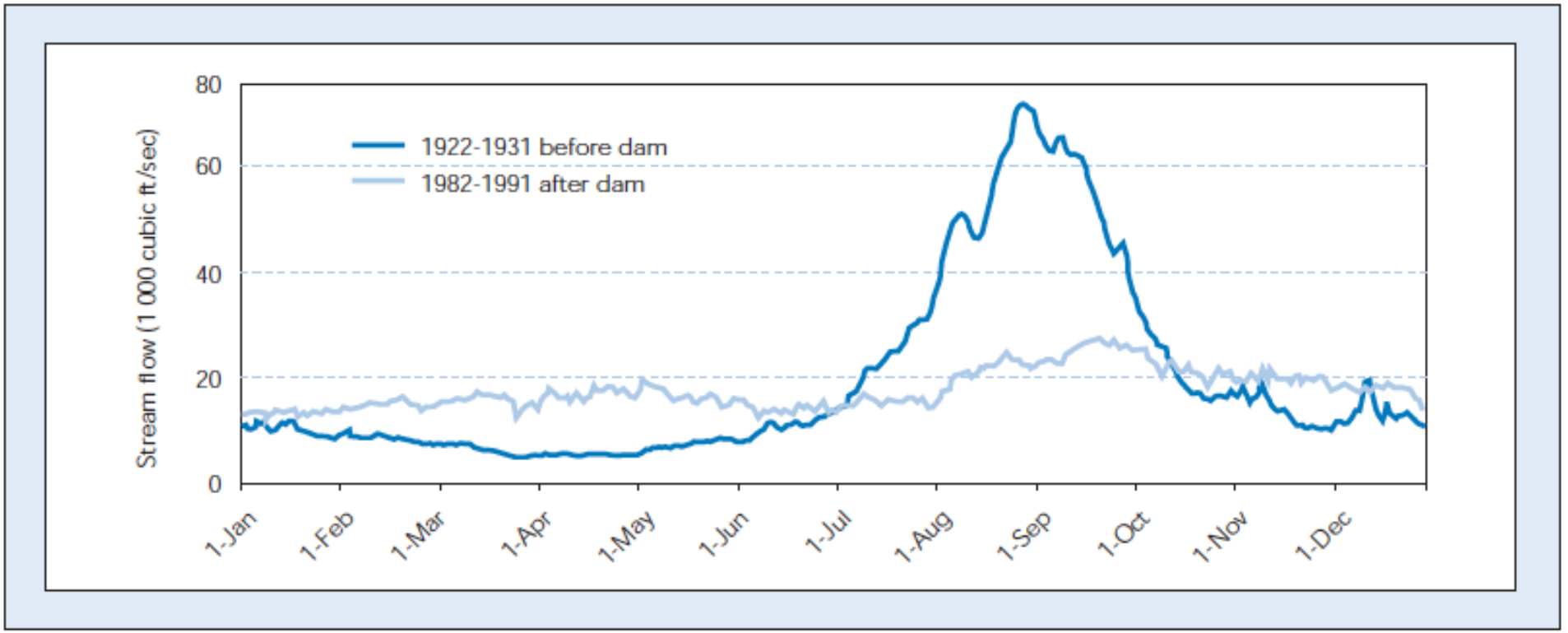


-Have we decided
the desired ecological condition?

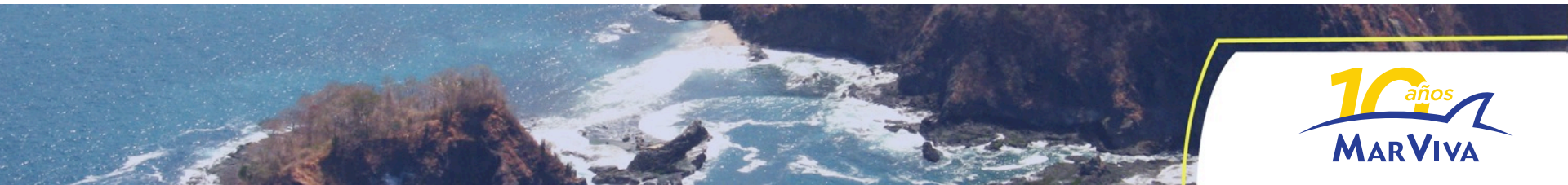
-Do we know what is the future
ecological condition?



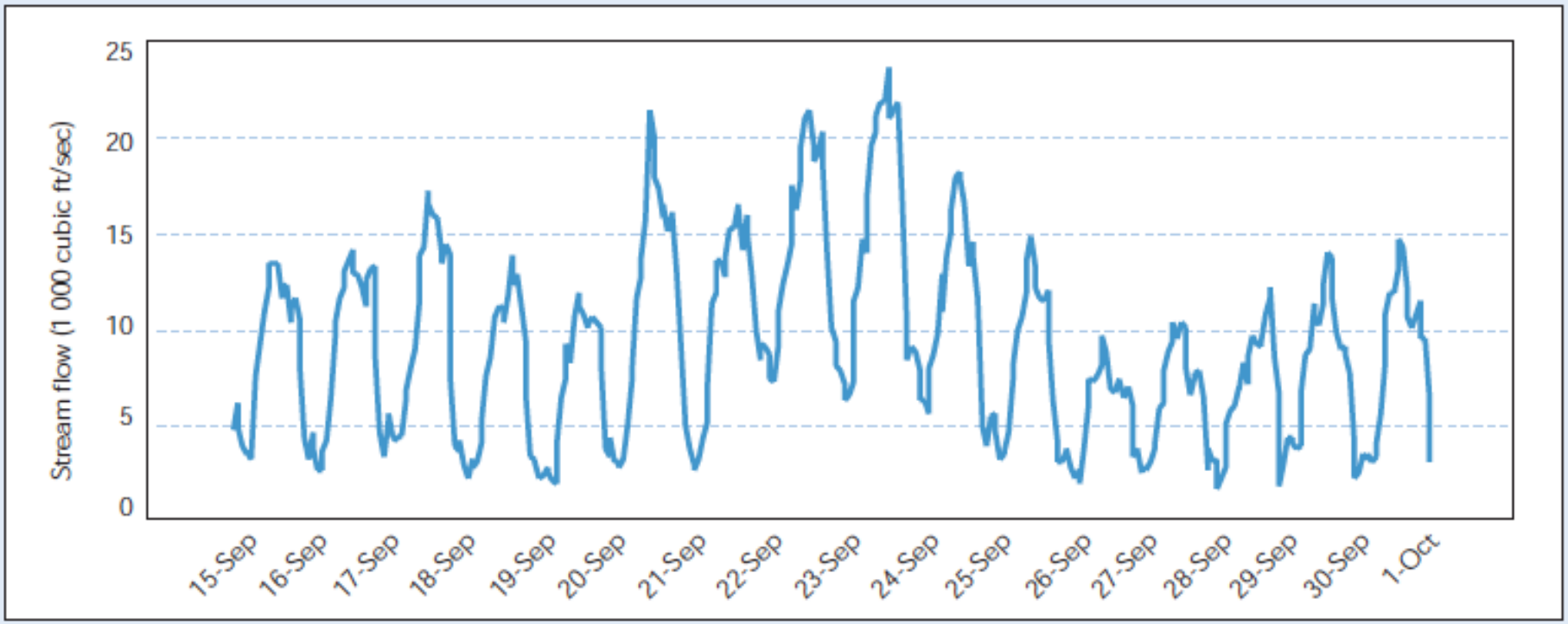
Modification of Annual Flow Regime

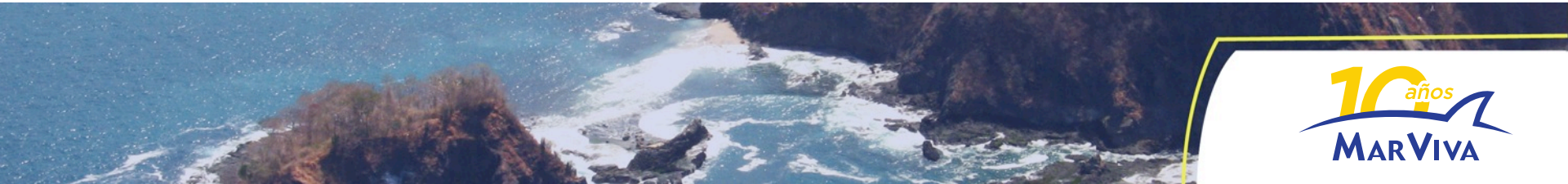


Source: Data from United States Geological Survey, 2000.



Peak Daily Flows Associated with Energy Demand



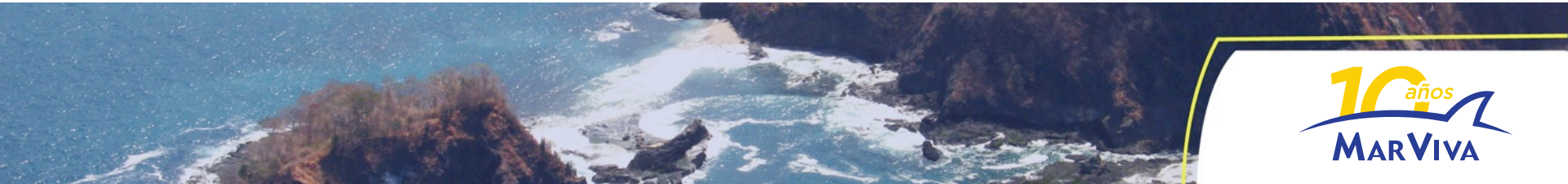


Anticipate and avoid impacts

Poor quality and uncertainty of predictions

Unknown mitigation measures

Determination of the Environmental Flow



MarViva

THANKS!!

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