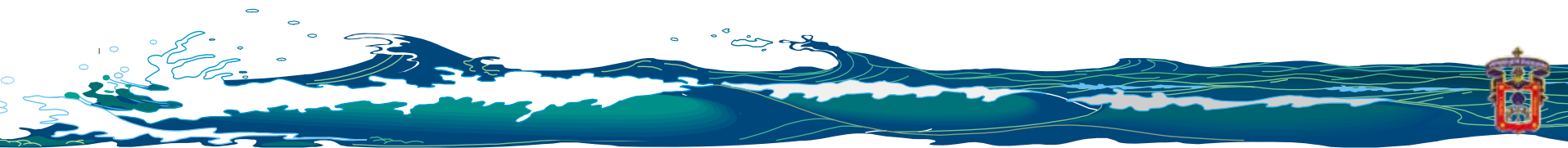
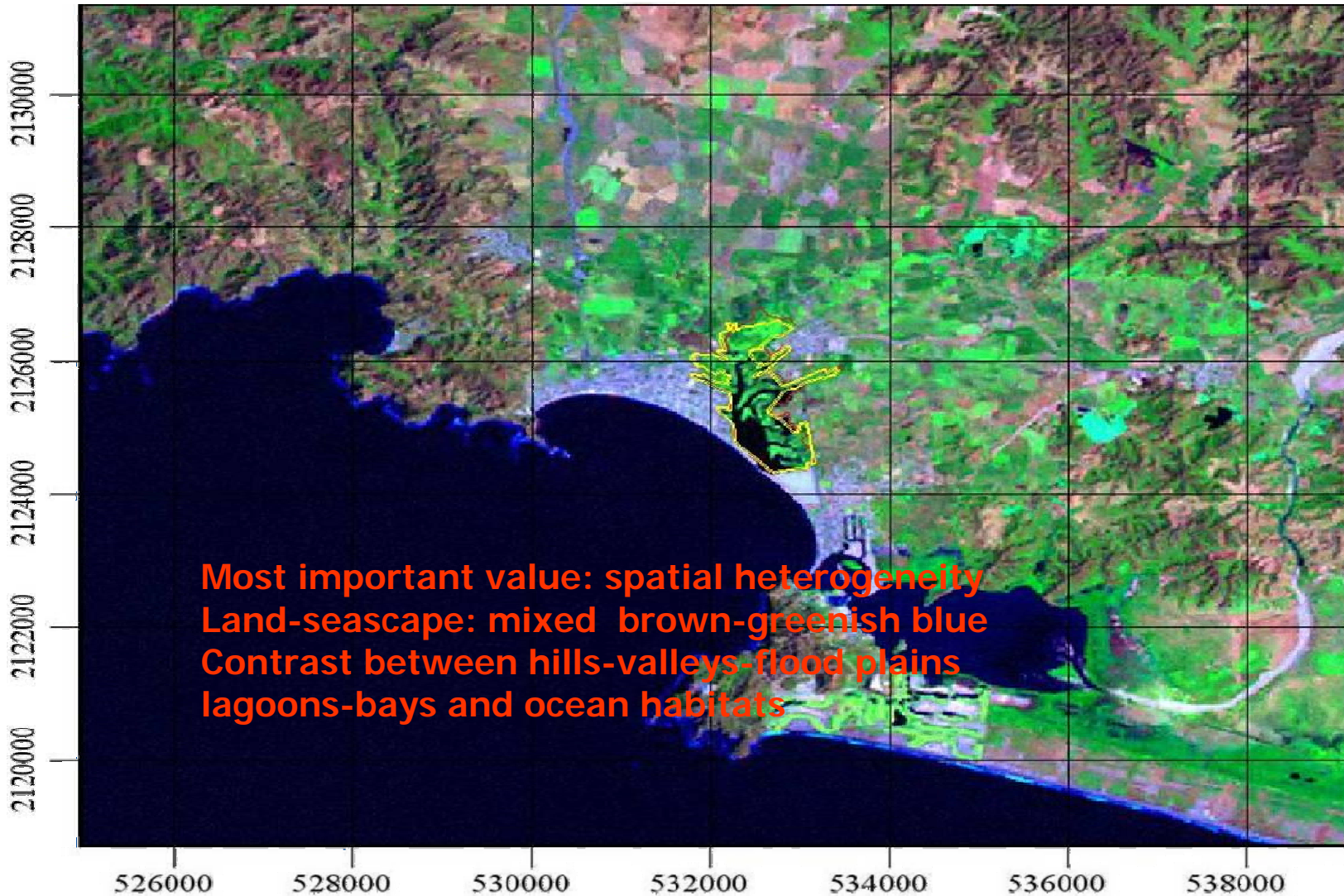


ENVIRONMENTAL PROBLEMATICAS IN BAHIA DE NAVIDAD LAGOONS: REFLEXIONS TO IMPLEMENTATION OF A CZIM PLAN

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**Departamento de Estudios p/
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BAHIA DE NAVIDAD (CHRISTMAS BAY): COASTAL-WATERSHED SYSTEM



BAHIA DE NAVIDAD: SURFACE HYDROLOGIC SYSTEM:

→
Downstreams & Rivers

- 1.- El Pedregal
- 2.- Jaluco
- 3.- El Almolón
- 4.- A Seco
- 5.- R Marábasco



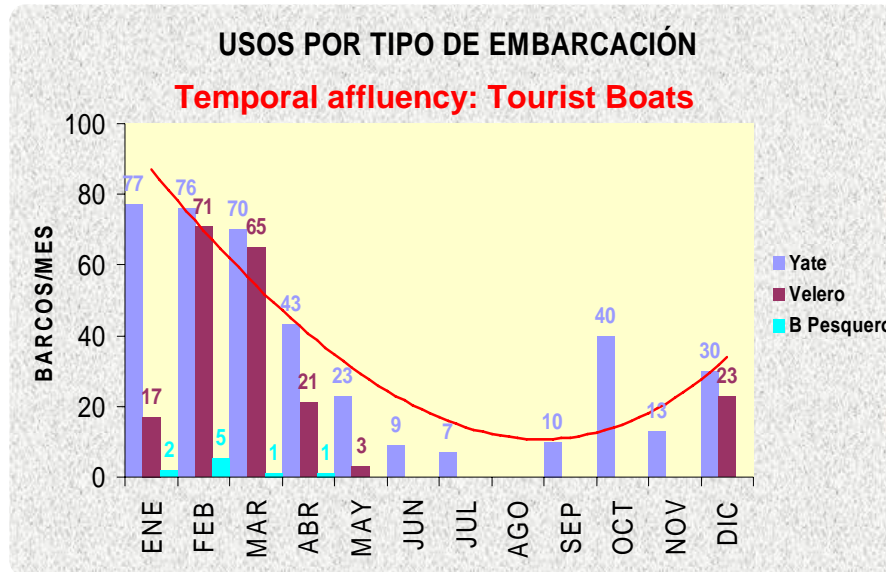
BAHIA DE NAVIDAD LAGOONS: SOME GOODS, RESOURCES & USES

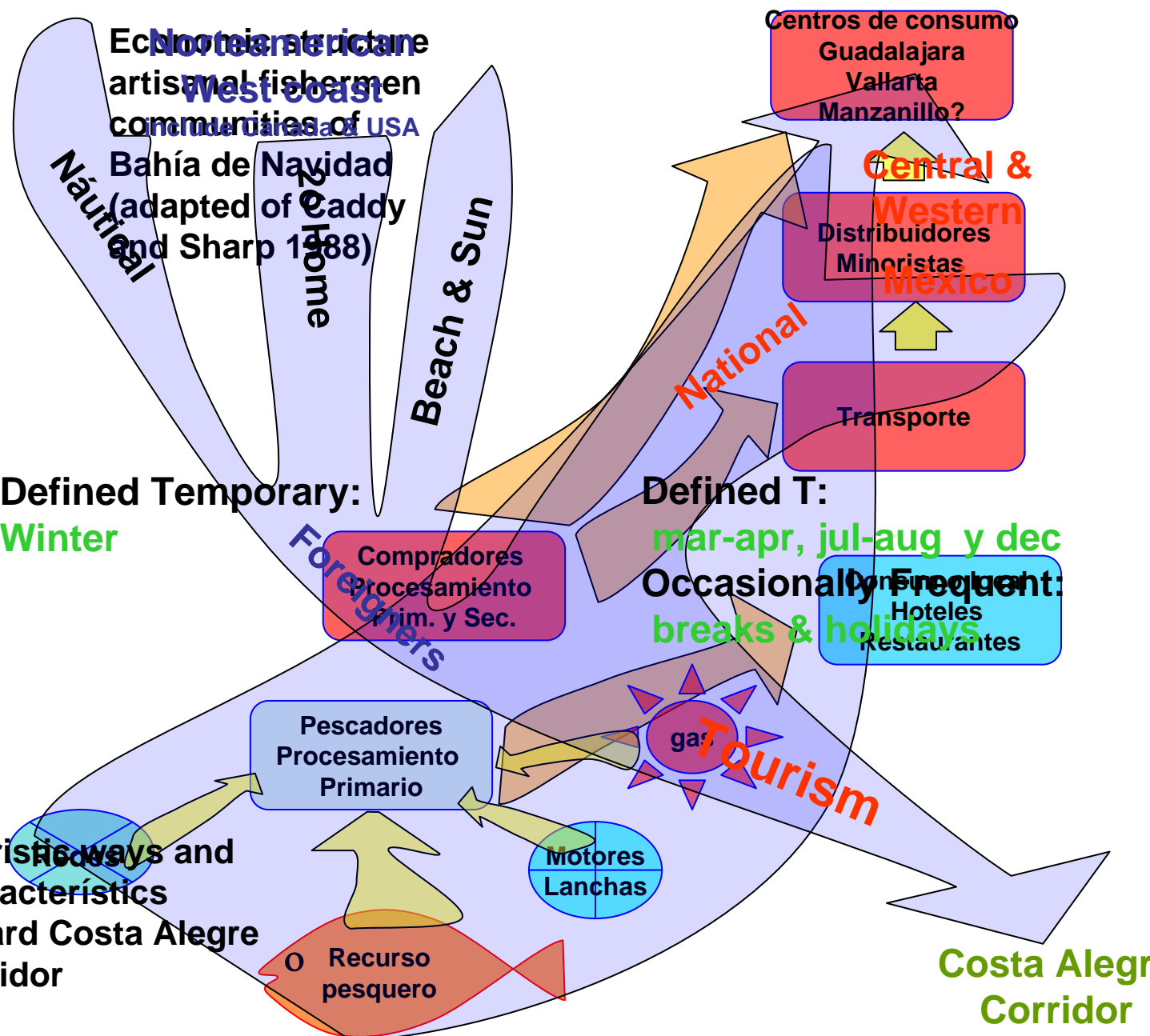
Bienes (Goods)	Recursos (Resources)	Usos (Uses)
Manglar, Playas terrenos aledaños (mangroove habitat beaches & federal	Grassland, coconut	Primary agriculture
	Potreros y pastoreo	Pecuary
	Primary residency	Habitation
	Second home	Tourist
	Services Mecanichal (dragas)	Industrial
	Hotels, Restaurants, recreation activities	Tourist & Commercial
	Gas station	Tourist & industrial
	Golf course	Tourist
Barra Arena (Sand`s Bar)	Vivero	Commercial
	beach	Recreation & sparmiment
Laguna Estuarine habitat	Sup/volume	Filled & mat deposits
	Navigation	TransportationT& C
	atracadero	Comm & tour serv
	Recreación	Tourist
	nursery clams, oysters	Comm Aquaculture
	critical habitat	fishes & birds
	volume	flood protection
	high autodepuration	pollution
	ethnic & historic importance	anthropolog & cultural
	Flora (vegetation) Fauna Silvestre	Woods,mampostery
small mammals, reptils, birds		Hunted
Wild life Aquatic life	small mammals, reptils, birds	Food subsistence
	mollusc, crustáceans, fish	Food subsistence
	mollusc, crustáceans, fish	commercial fishery

BARRA DE NAVIDAD LAGOON: NAUTIC TOURISM INFRASTRUCTURE



Marinas: Cabo Blanco & Pto La Navidad





Touristic ways and characteristics toward Costa Alegre Corridor

Costa Alegre Corridor

BAHIA DE NAVIDAD - BAHIA DE NAVIDAD : IN THE CORRIDOR CONTEXTS

Categories	C Sur		Oferta	Bahía	C Alegre	Bahía	Pesos
	C Alegre		Total	Total	Total	C Alegre	
	Total VISITS		Number	POUR Total			
	National	foreigners	Total	National	Foreigners	Total	
Guad	7'188,400	1'299,756	8'488,156	5 413'035,184	2 251'604,221	7 664'639,405	
P Vallarta	1'682,985	1'349,458	3'032,443	2 411'668,495	4 295'140,693	6 706'809,188	
C Alegre	372,492	54,140	426,632	329'911,720	127'097,258	457'008,978	
Chapala	628,551	131,725	760,276	214'606,292	326'244,259	540'850,551	
Los Altos	4'133,680	81,394	4'215,074	1 199'947,968	113'129,546	1 313'077,514	
Total							
2002	15'506,472	2'939,692	18'446,164	9 780'994,137	7 124'375,930	16 905'370,067	
2001	8'318,072	1'639,936	9'958,008	4'367'958,953	4 872'771,709	9 240'730,662	
Sub Total		122	1090	00	11,11	65,37	
Campings		2	2	1	100,00	50,00	
Trailer Park		3	10	2	30,00	66,67	
Total		127	1110	83	11,44	65,35	

Modified of: Dirección de informática y estadística, Sector-Jalisco y Delegaciones

BARRA DE NAVIDAD LAGOON: PRESSURES FOR INTENSIVE LAND USES

Estuarine habitat:

Mangrove habitat:

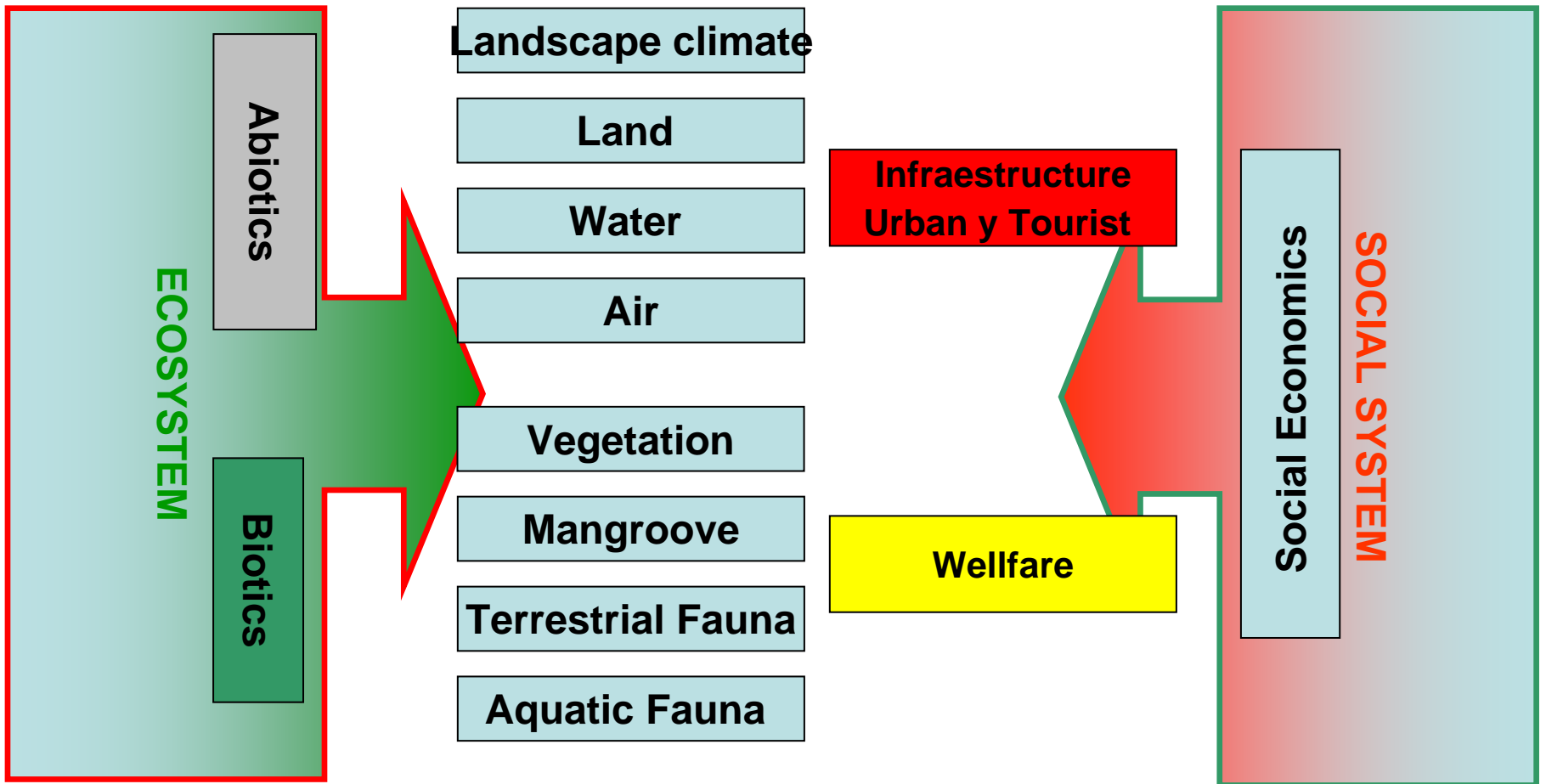
Aquaculture & fisheries area:

Agricultural area:

Urban & tourist area inc. marinas & golf:



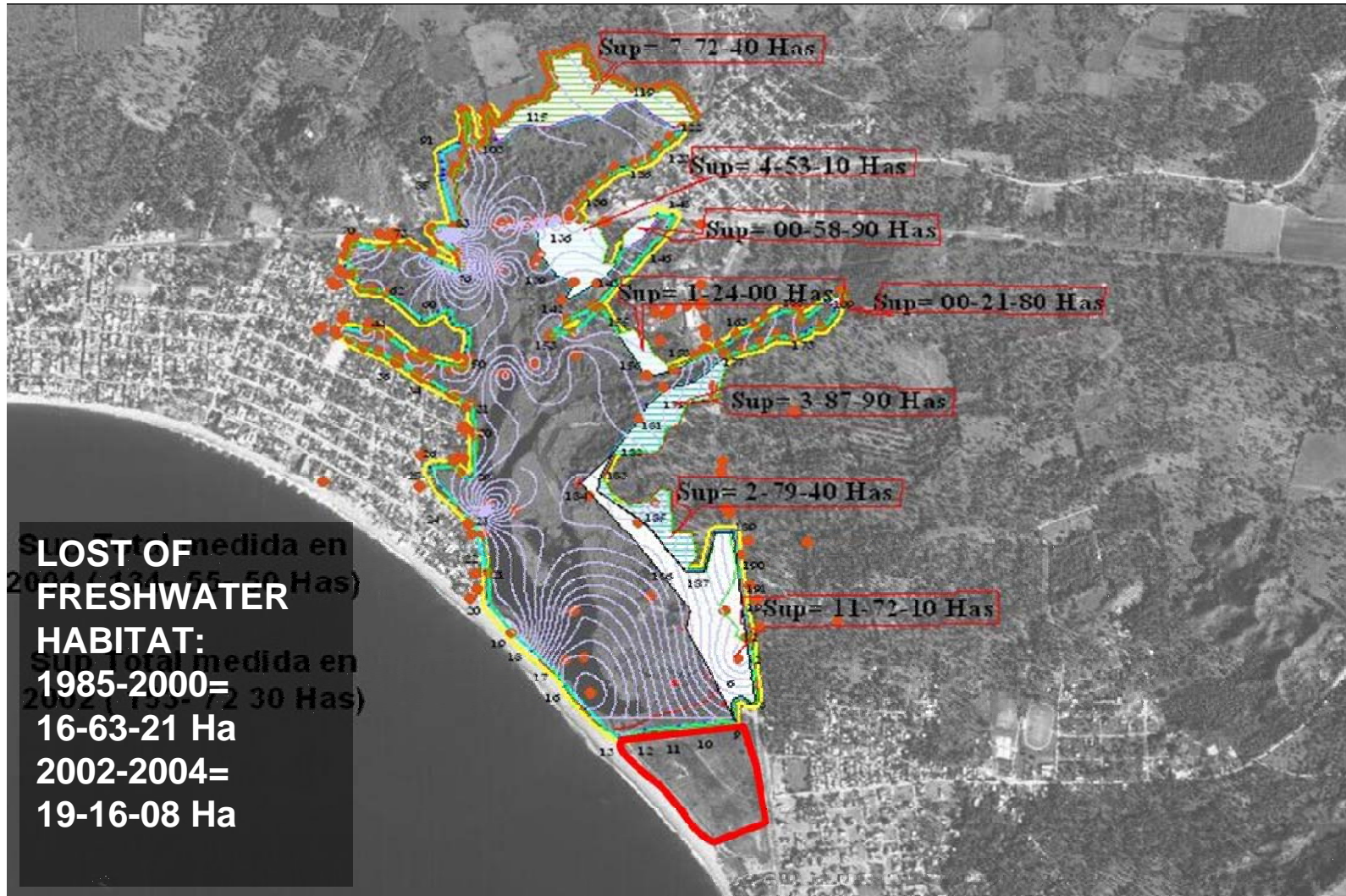
ELEMENTS TO ANALYSIS OF BAHIA DE NAVIDAD SYSTEM:



BAHIA DE NAVIDAD WATERSHEEDS ASSESSMENT: Regional Escale ??

1. **Priorities:** watershed identification, differences between levels analysis
2. **Strategic affaires assesment:** Identification and distribution into watersheds (**habitat fragmentation, pollution, filled and Invasions of waterbodys**)
3. **Dominant Process:** Physical process and patterns descriptions interactions between components of sytem **tourist and urbanistic pressures to use land (in lowlands) erosion, deforestation Intensive agriculture and grassing (in hills)**

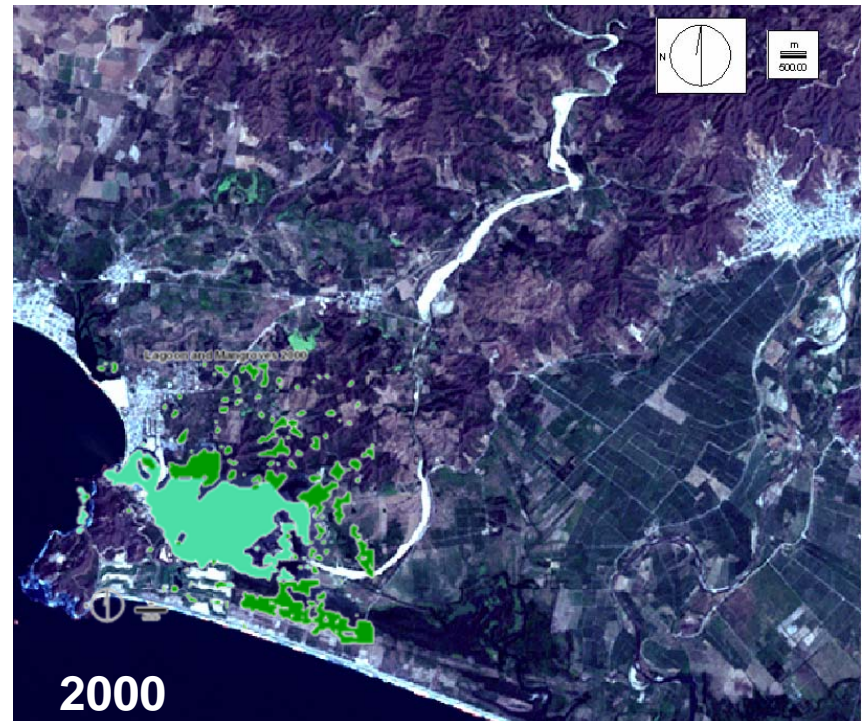
EL TULE FRESH WATER LAGOON: FILLED AND INVADIDS AREAS



EL TULE FRESH WATER LAGOON: POLLUTION AND AQUATIC WEEDS



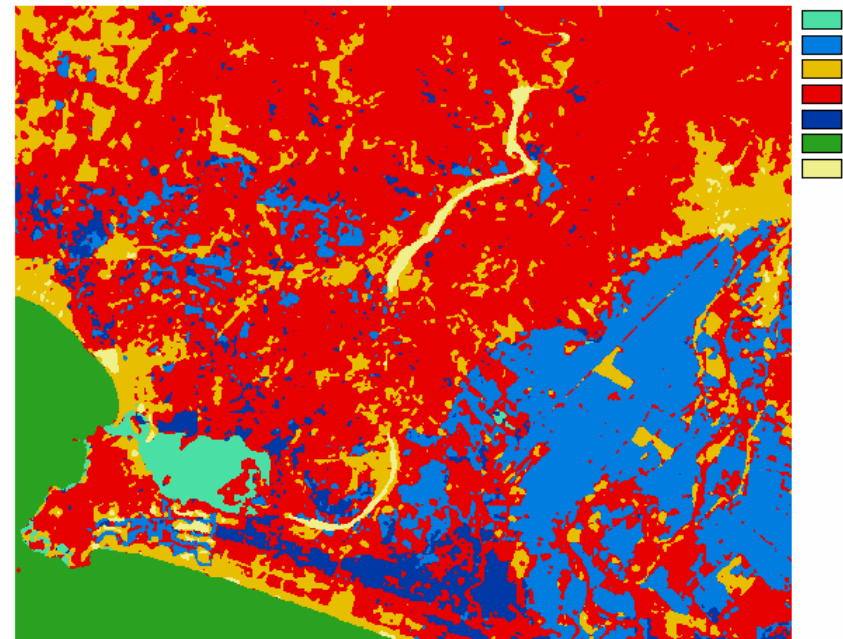
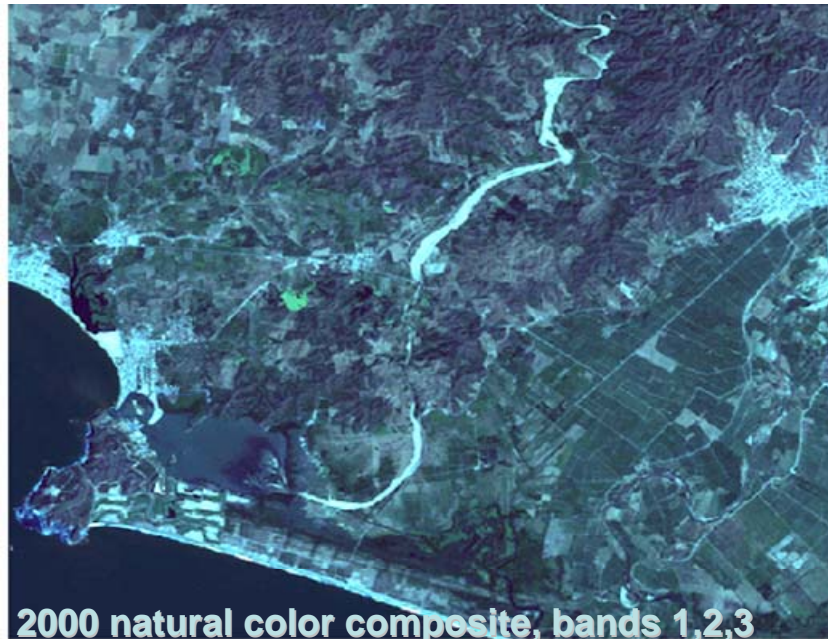
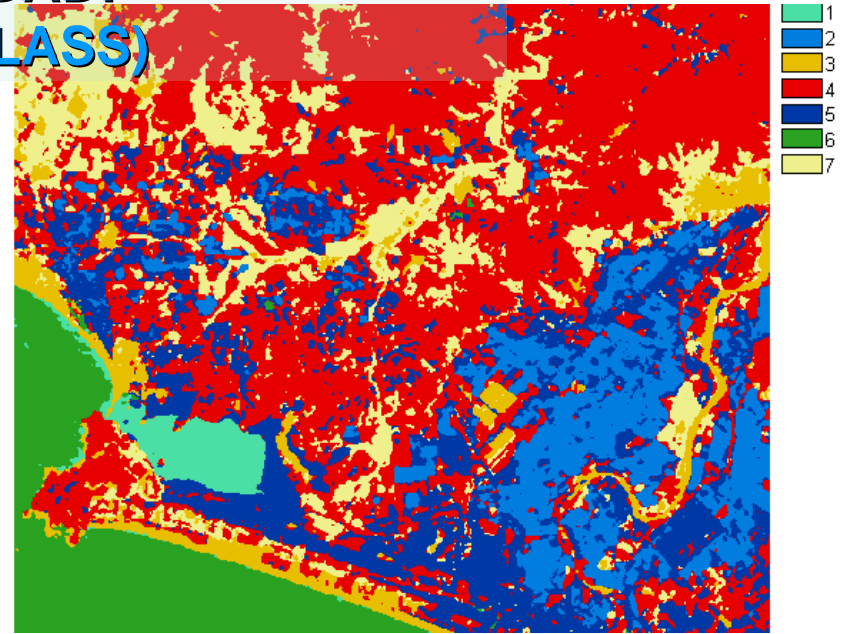
BARRA DE NAVIDAD LAGOON: LOST ESTUARINE AND MANGROOVE HABITAT



BARRA DE NAVIDAD LAGOON, LOST ESTUARINE HABITAT: SILTATION AREAS

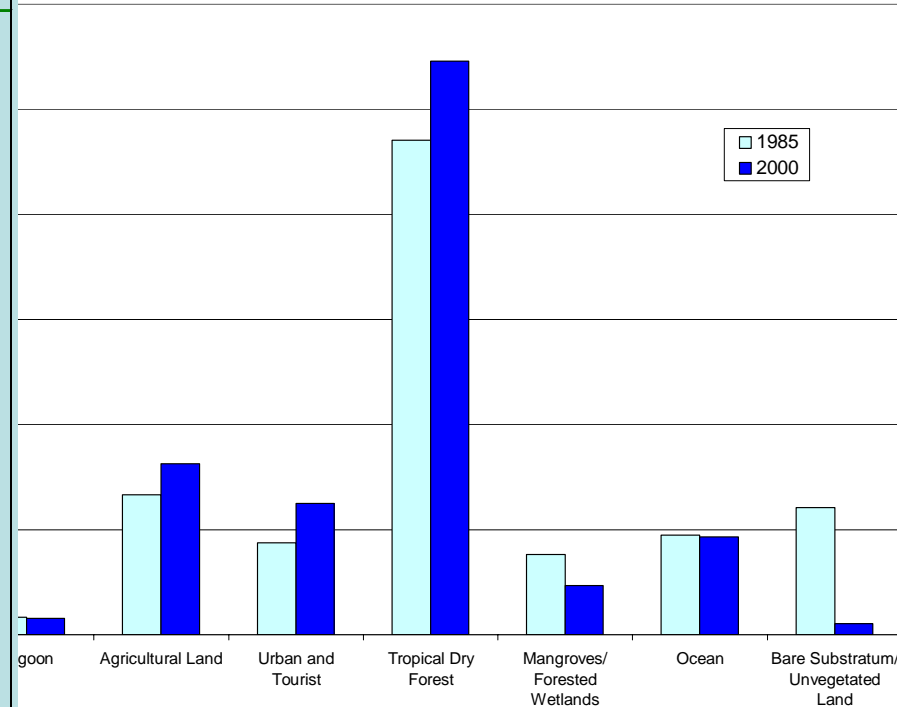


BAHIA DE NAVIDAD: LAND USES (7 CLASS)

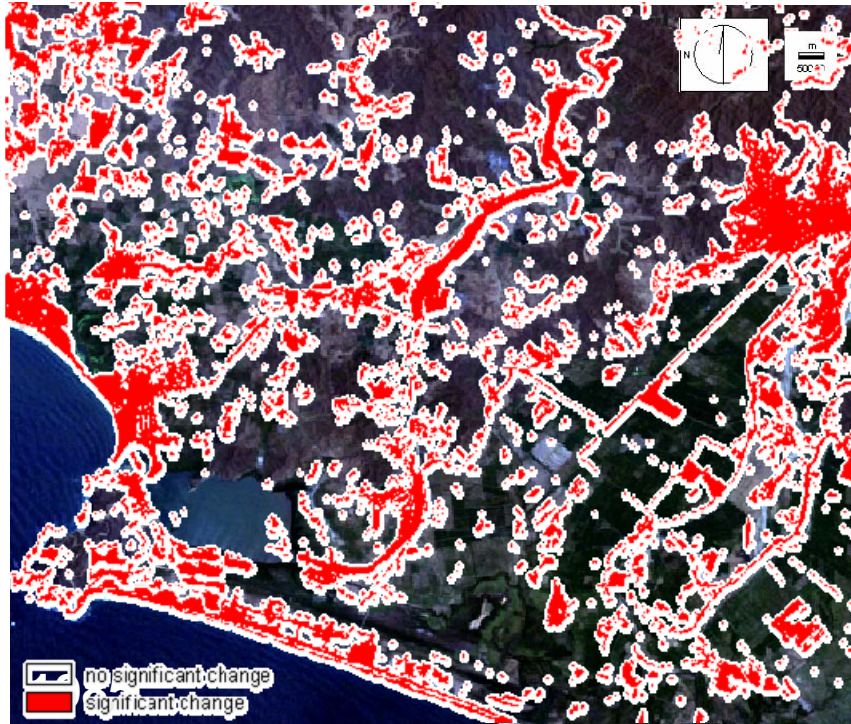


BAHIA DE NAVIDAD: CLASIFICACION LAND USES

LULC Class	1985 Area (km ²)	2000 Area (km ²)	1985 % Total Landscape Area	2000 % Total Landscape Area
Lagoon	3.41	3.14	1.7	1.54
Agriculture	27.27	33.31	13.33	16.28
Urban & Tourist	17.9	25.57	8.75	12.5
Tropical Dry Forest **	96.2	111.7	47.04	54.61
Mangroves/ Forested Wetlands	15.62	9.6	7.64	4.69
Ocean	19.38	19	9.48	9.29
Bare Substratum/ Unvegetated Land	24.74	2.2	12.1	1.08
Total	204.52	204.52	100.04	99.99



BAHIA DE NAVIDAD WATERSHED SYSTEM: FRAGMENTATED AREAS



BARRA DE NAVIDAD LAGOON: IMPACTS DIRECT



BAHIA DE NAVIDAD INTEGRATED MANAGEMENT PROGRAM GESAMP, 1996

Toward a successful sustainability of coastal development



1st Generation project
El Tule lagoon

2nd Barra de Navidad
lagoon

3rd all Bahía
de Navidad

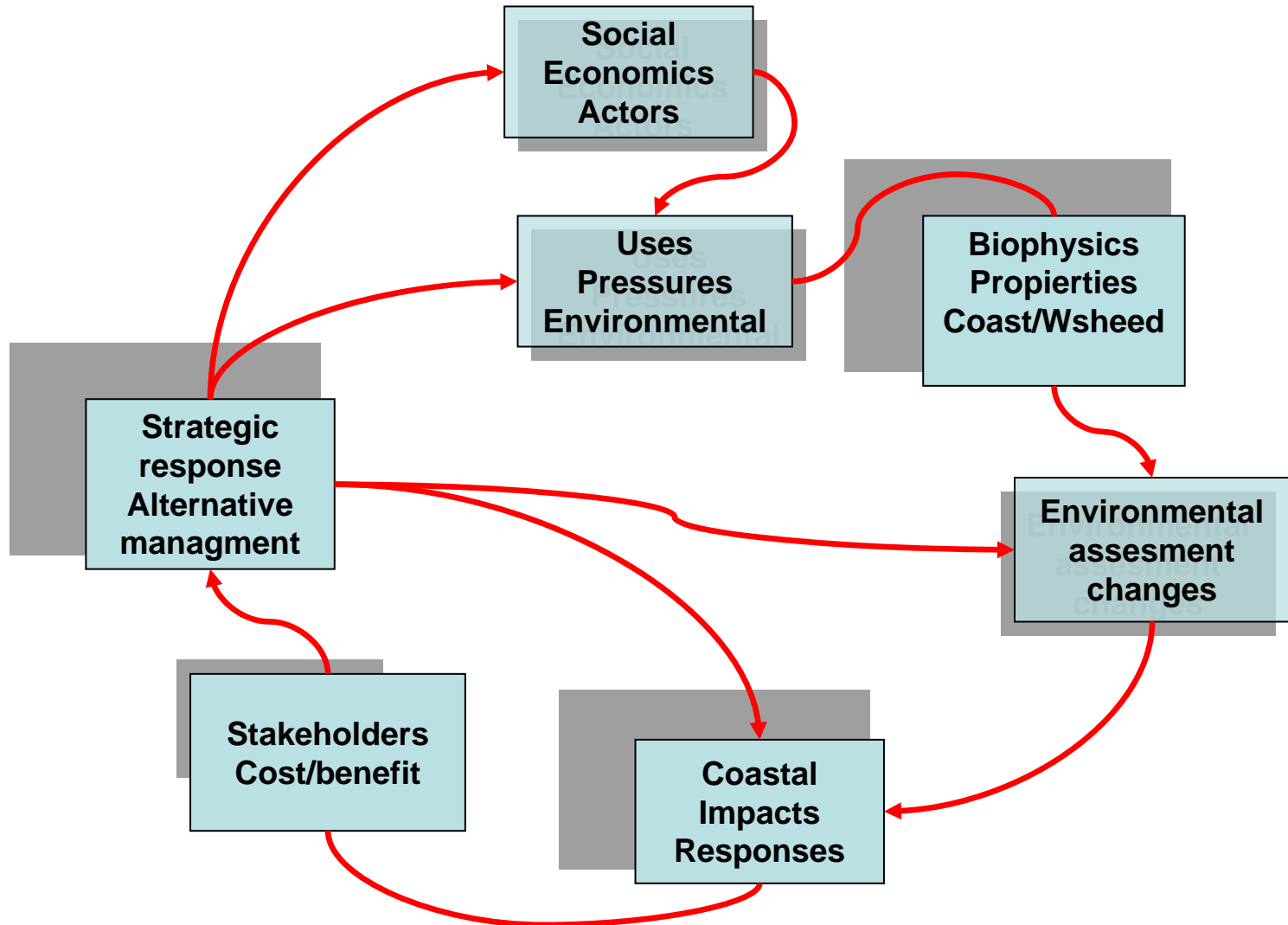


1 stop deteriorate

2 Restablishment of functions
& services

3 strategic plans wise management

INTEGRATED MANAGEMENT PARTICIPATIVE SCHEDULE : BAHIA DE NAVIDAD CO-MANAGEMENT PLAN



PHASES PILOT PROJECT INTEGRATED MANAGEMENT OF BAHÍA DE NAVIDAD

SYSTEM	PHASE I	PHASE II	PHASE III
ECOLOGICAL	Municipal Ecological park Laguna del Tule decre proposal	Integrated Management Plan for Laguna Barra de Navidad	Ordenamiento territorial de Bahía de Navidad
SOCIAL ECONOMIC	Communities sanitation of Bahía de Navidad	<ol style="list-style-type: none"> 1. Ordenation of uses 2. Reforestation in microwatersheds 3. Agricultural and pecuary ordanation of Cihuatlán Valley 	<ol style="list-style-type: none"> 1. Ordenamiento Ecológico y Territorial de la Costa de Jalisco 2. Corredor Turístico Manzanillo-Puerto Vallarta



UNIVERSIDAD DE GUADALAJARA

Centro Universitario de la Costa Sur

**DEPARTAMENTO DE ESTUDIOS PARA EL DESARROLLO
SUSTENTABLE DE ZONAS COSTERAS**

