

WORKSHOP ON DESIGNATED AQUACULTURE ZONES AND LEGAL PROCEDURES

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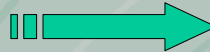


Aquaculture is an economic activity and must therefore be **regulated and authorised** administratively in order to ensure rational planning of the sector

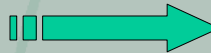


DIFFERENT TYPES OF AQUACULTURE IN ANDALUSIA

Continental aquaculture

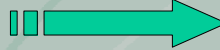


Marine aquaculture



WHO HAS JURISDICTION OVER AQUACULTURE IN ANDALUSIA?

Continental aquaculture



REGIONAL MINISTRY OF ENVIRONMENT

(Autonomous Community of Andalusia Law 8/2003, of 28 October, on Wild Flora and Fauna)

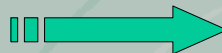


• Authorisation of activity for freshwater species in inland areas such as rivers, lakes and reservoirs

- ✓ Common trout
- ✓ Rainbow trout
- ✓ Sturgeon, etc.

WHO HAS JURISDICTION OVER AQUACULTURE IN ANDALUSIA?

Marine aquaculture



REGIONAL MINISTRY OF AGRICULTURE AND FISHERIES

(LAW 1/2002, of 4 April, on the regulation, promotion and control of sea fishing, shellfishing and marine aquaculture.)

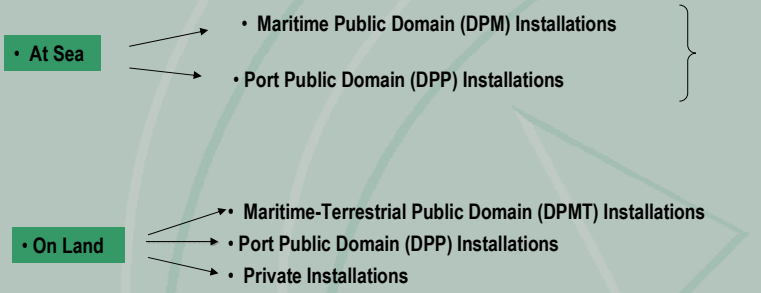


- Granting of Maritime-Terrestrial Public Domain Concessions (when applicable)
- Authorisation of aquaculture activities for marine species in former salt marsh, estuary, intertidal and open sea areas

- ✓ Seabream, seabass, sole, etc...
- ✓ Carpet shell clam, little necked clam, Portuguese oyster, etc.
- ✓ Shrimp, Edible shrimp, etc.

WHERE ARE MARINE AQUACULTURE INSTALLATIONS LOCATED IN ANDALUSIA?

DEPENDING ON THE OWNERSHIP OF THE LAND



List of aquaculture companies in the Protected Natural Areas (PNA) Network or Natura 2000 Network

Provincias	Authorised Installations	
	In PNAs	Outside PNAs
Almería	1	5
Cádiz	105	10
Huelva	42	3
Granada	0	4
Málaga	0	6
Seville	1	0
Total	149	28
	177	
Percentage (%)	84	16



Aquaculture farm: facility where marine aquaculture activities are performed.

Various types of site, farming system and phase may be distinguished:

Marine aquaculture farm: Land-based farm for pre-fattening and fattening of marine species.



UNMODIFIED SALT MARSH



MODIFIED SALT MARSH



MODIFIED SALT MARSH



MODIFIED SALT MARSH



Bivalve mollusc farm (inshore) : enclosed plot in the maritime-terrestrial area for farming activities (bivalve mollusc production).



Bivalve mollusc farm (offshore) : Floating or submerged marine installation, fixed to the sea bottom, for bivalve mollusc farming.



TRADITIONAL RAFT



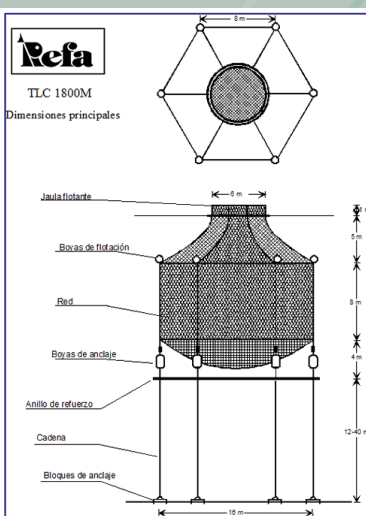
TRADITIONAL RAFT



Cages: Floating or submerged structure fixed to the sea bottom in a maritime area for fish or crustacean farming.



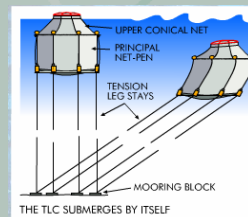
OTHER ALTERNATIVES



Estructura de la jaula TLC de Refa
Fuente: www.refamed.com



OCEAN SPAR



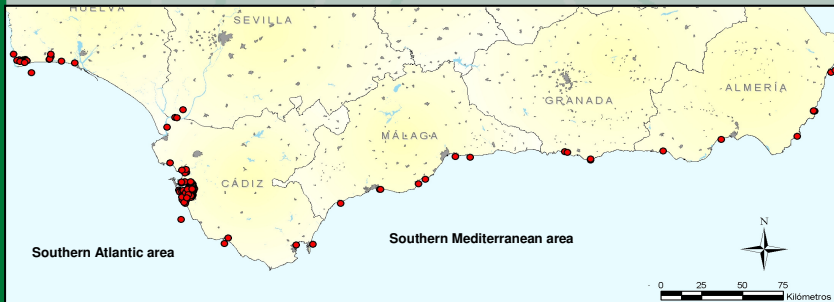
Hatchery: Installation for the controlled reproduction of marine species to enhance the early phases of their life cycle.



Data on the current situation of
marine aquaculture in
Andalusia (2009)

DISTRIBUTION OF MARINE AQUACULTURE COMPANIES

Companies 2009			
Province	Companies with installations at sea	Companies with installations on land	Total
Almeria	4	2	6
Cadiz	8	44	52
Granada	3	2	4
Huelva	2	45	47
Malaga	4	0	4
Seville	0	1	1
Total	21	94	114



CHARACTERISTICS OF THE AQUACULTURE SECTOR IN ANDALUSIA

2009:

HARVESTED AREA:
7.479 ha on land
7,84 km² at sea

NUMBER OF COMPANIES:

- 114 companies
+ 21 at sea
+ 94 on land

FATTENING PRODUCTION:

- 7,461.96 mT

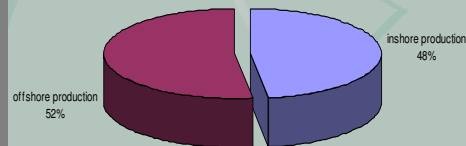
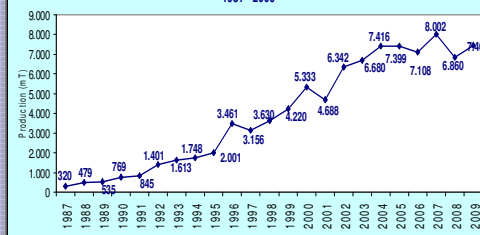
INCOME:

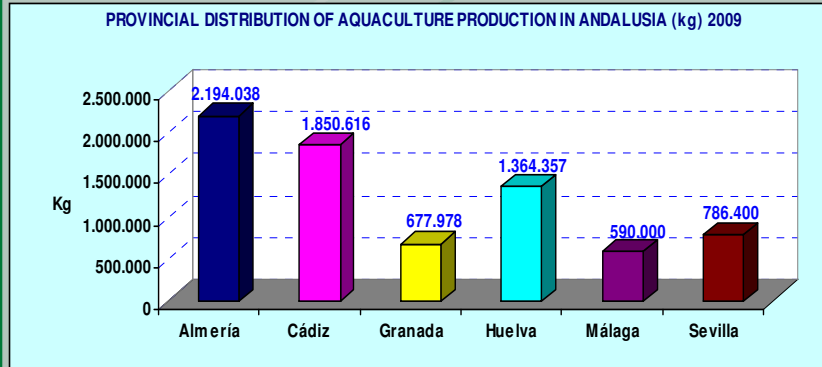
- 45.8 million euros

JOBES CREATED:

- 619 direct jobs:
552 men
67 women

EVOLUTION OF MARINE AQUACULTURE IN ANDALUSIA. PERIOD 1987-2009





SPECIES HARVESTED IN ANDALUSIA

Group	Species							
Fish	Sea bream	Seabass	Sole	Tuna	Liza	Eel	Amberjack	Meagre
Molluscs	Mussel	Japanese littleneck	Grooved carpet shell	Portuguese oyster				
Crustaceans	Shrimp	Prawn						
Microalgae	Nannochloropsis gaditana	Tetraselmis						

Seabream and **seabass** are the main species farmed in Andalusia, accounting for **87%** of total production.

Sole is a species of high commercial value with great future prospects. There are currently pathological problems in the fattening process.

Eel and **Liza** are produced extensively without the Rearing and Pre-fattening phases.

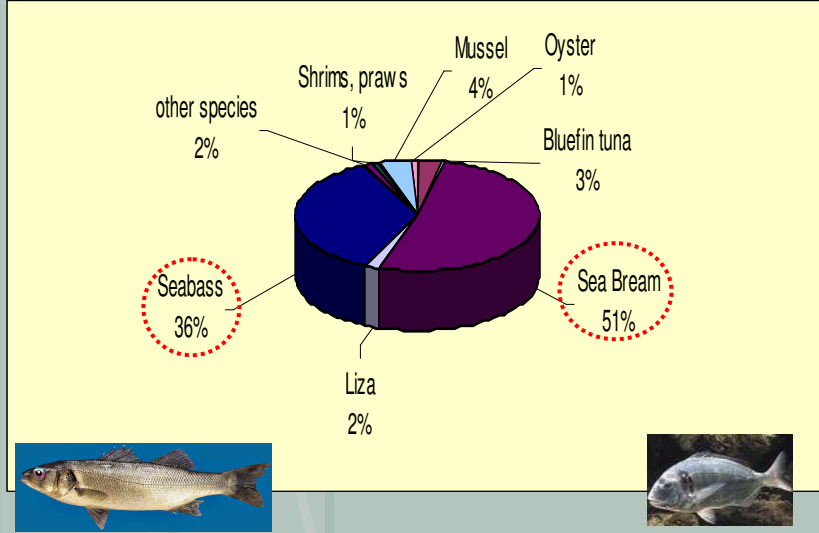
Bluefin tuna: there are only 1 farm in Andalusia that perform fattening.

Japanese littleneck, grooved carpet shell, Portuguese oyster, prawn and shrimp: great diversity of aquaculture products for consumers and produced on a complementary basis.

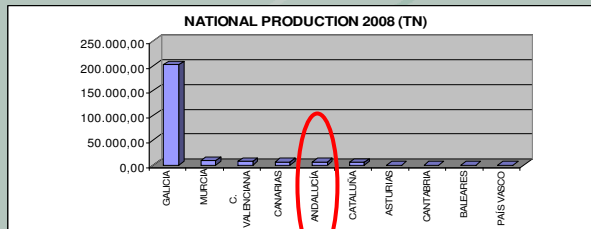
Mussel, meagre and amberjack are species recently incorporated into Andalusian aquaculture.

Microalgae require production processes with high technological content.

DISTRIBUTION OF PRODUCTION BY SPECIES IN 2009

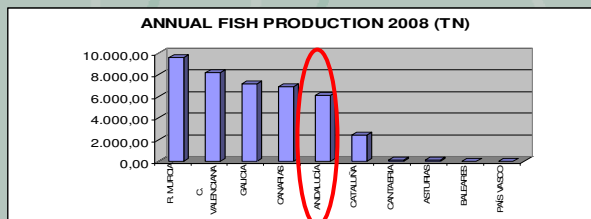


NATIONAL PRODUCTION



240.682,61 Tn

200.050,23 Tn
BIVALVE
MOLLUSCS



40.632,38 Tn

EUROPEAN PRODUCTION

Pais	Producción 2006
Alemania	34.750 Tm.
Austria	2.170 Tm.
Bélgica-Lux.	1.200 Tm.
Chipre	3.235 Tm.
Croacia	9.550 Tm.
Dinamarca	37.760 Tm.
España	66.031 Tm.
Finlandia	14.000 Tm.
Francia	50.685 Tm.
Grecia	100.000 Tm.
Hungría	17.595 Tm.
Irlanda	11.607 Tm.
Islandia	8.469 Tm.
Islas Faroe	14.846 Tm.
Italia	59.480 Tm.
Malta	931 Tm.
Noruega	690.950 Tm.
Países Bajos	9.300 Tm.
Polonia	38.375 Tm.
Portugal	5.040 Tm.
Reino Unido	135.814 Tm.
Rep. Checa	18.870 Tm.
Suecia	6.922 Tm.
Turquía	86.250 Tm.
TOTAL	1.423.830 Tm.

<5 % OF EU PRODUCTION

Module 2: Administrative Procedure

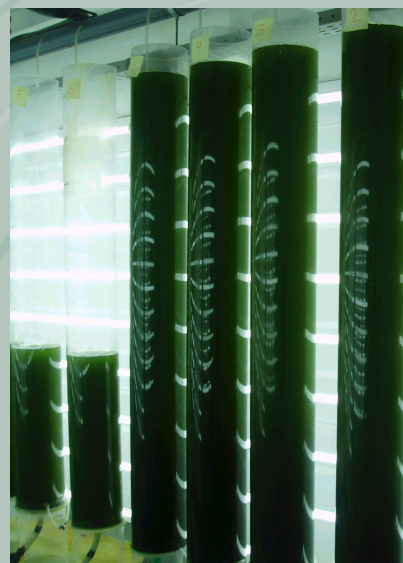
Aquaculture farm authorisation: authorisation granted to individuals or companies for the installation, start-up and operation of aquaculture farms. The authorisation currently includes:

- Aquaculture permit
- Operating permit for occupancy of Maritime-Terrestrial Public Domain (DPMT) areas



The aquaculture permit contains information on the following:

- the **holder**
- the **establishment**
- the **technical conditions** (start and end of work, farmed species, harvesting phase, method, maximum production capacity, authorised surface area)
- the **administrative conditions** (file, duration, control regime, etc.)



Aspects analysed in aquaculture projects

Relating to the company.

1. Accreditation of Technical Capacity.

Relating to projects.

2. Operating Plan.
3. Technical Works and Installations Project.
4. Economic-Financial Study.



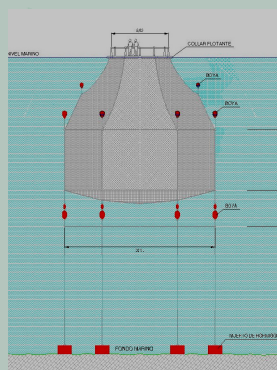
Accreditation of Technical Capacity

1. In-house Technical Management? Specifications.
2. External Technical Management?. Specifications.
3. Experience in Technical Management of Marine Aquaculture Installations.
4. Experience in Technical Management for the proposed type of aquaculture.



Operating Plan and Biological Report

1. Description of species to be farmed.
2. Description of the production process-production strategy.
3. Justification of the farming system.
4. Supply of seed or restocking fish
5. Marketing.



Technical Works and Installations Project

- | | |
|-------------------------------|-------------------------------------|
| 1. System description | 5. Maintenance Plan |
| 2. Construction and anchoring | 6. Auxiliary vessel |
| 3. Calculations | 7. Buoyage |
| 4. Polygon distribution | 8. Auxilliary installations on land |

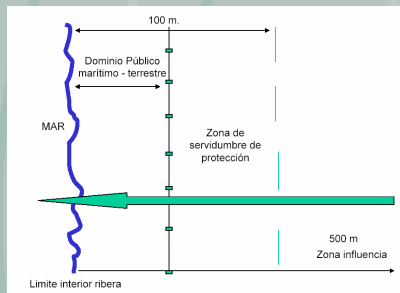


Economic-Financial Report

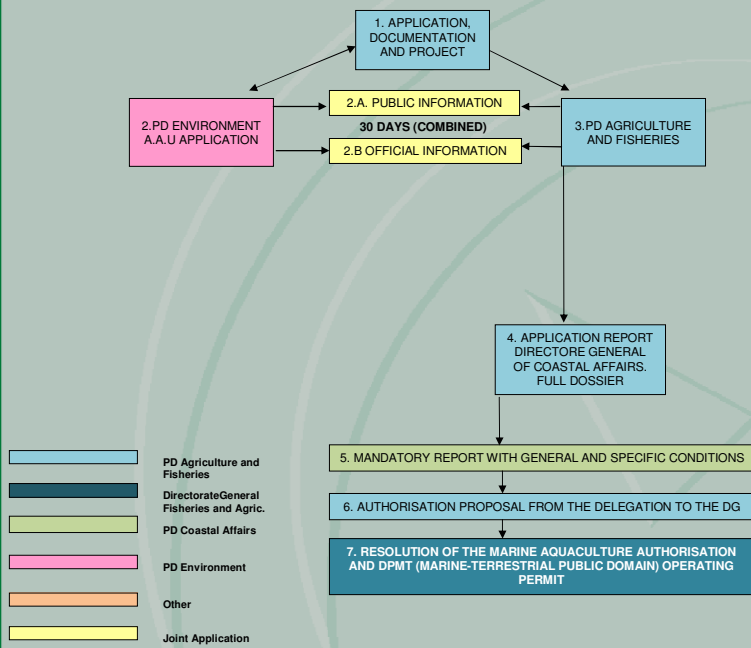
- | | |
|-----------------------------|---------------------------------|
| 1. Budget of the investment | 5. Operating expenses |
| 2. Prices/costs | 6. Operating account |
| 3. Financing | 7. Justification of feasibility |
| 4. Income | 8. Subsidy. |

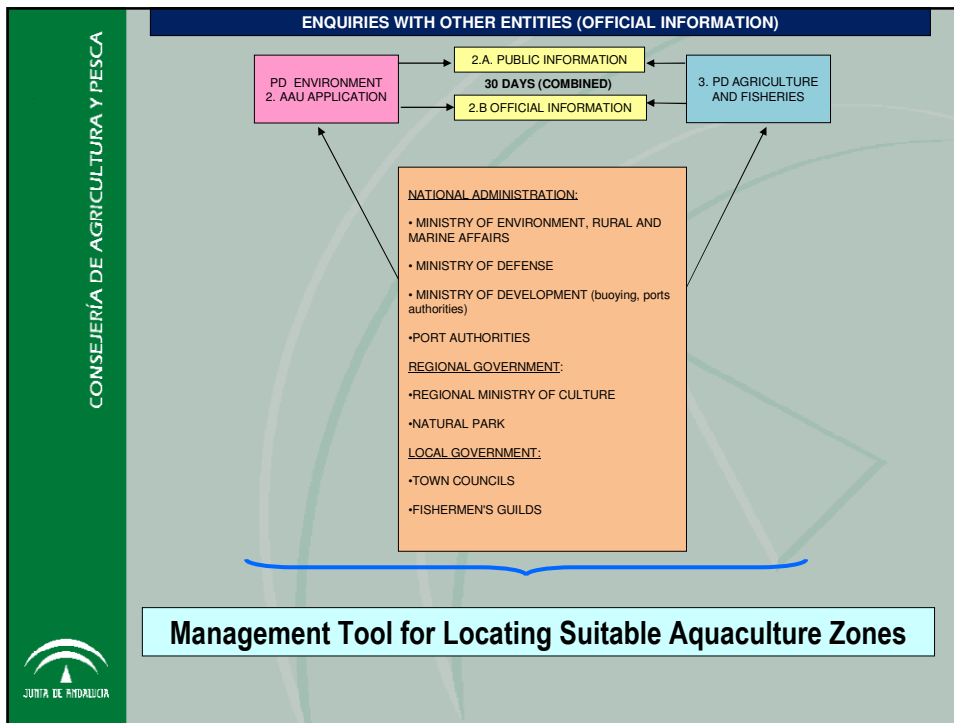
Prior to obtaining the aquaculture permit, a Unified Environmental Permit (AAU) must be obtained:

- AAU**
- Favourable environmental feasibility permit
 - Maritime-Terrestrial Public Domain dumping authorisation
 - Usage permit in protective easement area



AQUACULTURE AUTHORISATION PROCEDURE





CONSEJERÍA DE AGRICULTURA Y PESCA

Module 3: Management Tool for Locating Suitable Aquaculture Zones

JUNTA DE ANDALUCÍA

Background: Actions carried out by the Regional Ministry of Agriculture and Fisheries

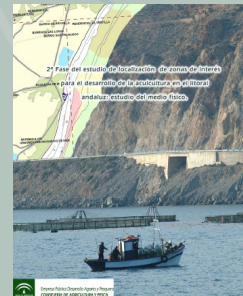
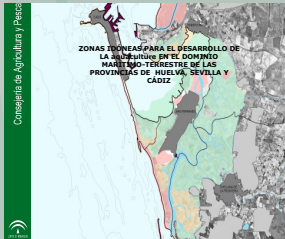
❖ Within the framework of “Studies to Locate Suitable Aquaculture Zones”

▪ Location: Andalusian Coast

PHASE 1 AT SEA

PHASE 2 ON LAND

PHASE 2 AT SEA



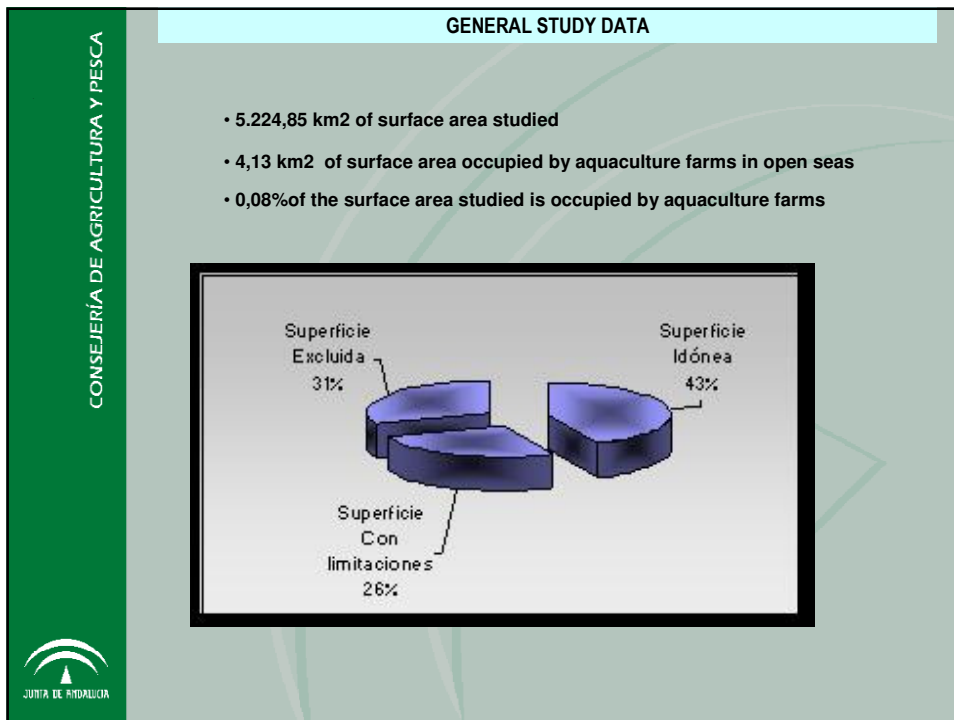
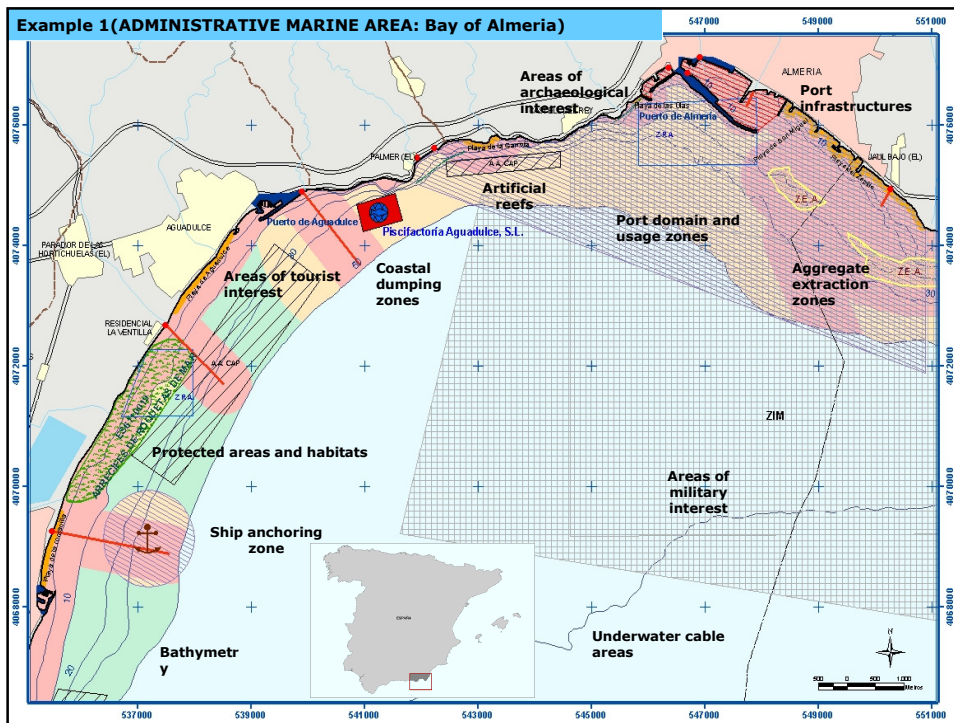
PHASE 1 AT SEA

STUDY AREA: Stretch of sea between the coast and a depth of 50m.



PARÁMETROS	ORGANISMO / ADMINISTRACIÓN
Batimetría y morfología de fondos	Instituto de Cartografía de Andalucía Consejería de Obras Públicas y Transp.
Infraestructuras portuarias	E.P. Puertos de Andalucía Consejería de Obras Públicas y Transp.
Zonas de extracción de áridos	Dirección General de Costas Ministerio de Medio Ambiente
Espacios y hábitats protegidos	D.G. Gestión del Medio Natural Consejería de Medio Ambiente
Zonas de dominio y usos portuarios	Autoridades Portuarias Ministerio de Fomento
Puntos de vertidos al litoral	D.G. Prevención y Calidad Ambiental Consejería de Medio Ambiente
Zonas de salidas de cables submarinos	Instituto de Cartografía de Andalucía Consejería de Obras Públicas y Transportes
Zonas de interés turístico	D.G. Planificación Turística Consejería de Turismo y Deportes
Zonas de interés arqueológico	Centro Arqueología Subacuática Consejería de Cultura
Zonas autorizadas para otros usos: Almadrabas, Arrecifes artificiales	D.G. Pesca y Acuicultura Consejería de Agricultura y Pesca
Instalaciones de acuicultura	
Zonas de fondeo de buques	Capitanías Marítimas Ministerio de Fomento
Zonas de interés militar	Armada Ministerio de Defensa





PHASE 1 ON LAND

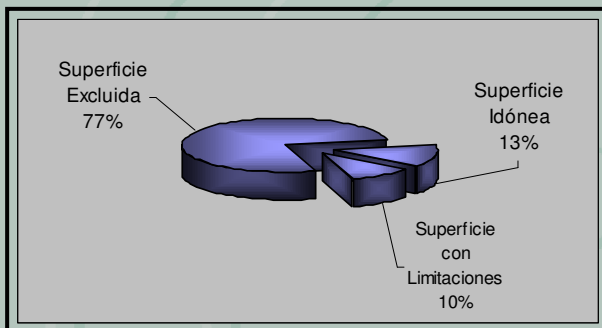


STUDY AREA: marshlands, bays and estuaries in the provinces of Huelva, Seville and Cadiz

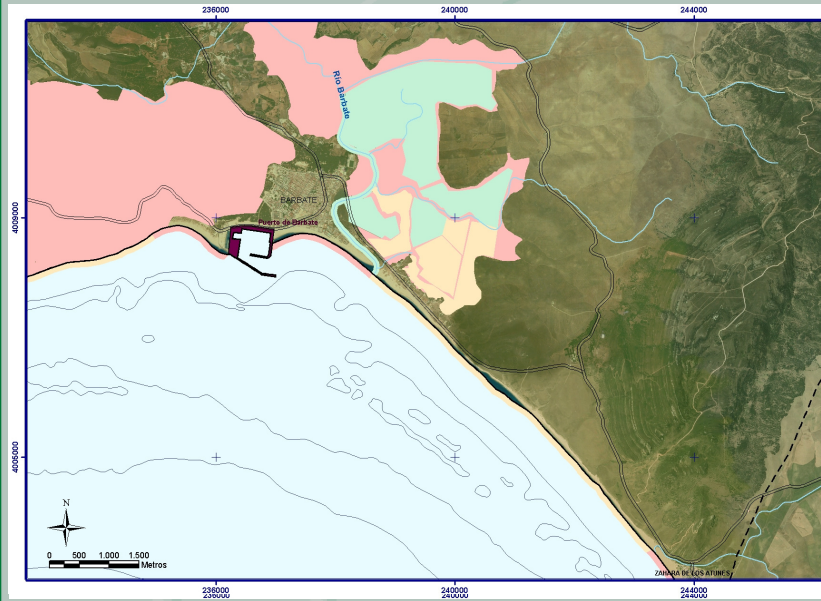
PARÁMETROS	ORGANISMO O ADMINISTRACIÓN
Espacios Naturales Protegidos	Dirección General de Planificación Consejería de Medio Ambiente
Planeamiento Municipal	Ayuntamientos
Planes de Ordenación del Territorio de Ámbito Subregional	Dirección General de Ordenación del Territorio y Urbanismo Consejería de Obras Públicas y Transportes
Zonas de Interés Militar	Armada Ministerio de Defensa
Zonas de Interés Turístico	Dirección General Planificación Turística Consejería de Turismo y Deportes
Zonas de Interés Cultural	Servicio de Protección del Patrimonio Histórico Dirección General de Bienes Culturales Consejería de Cultura Ministerio de Educación, Cultura y Deportes
Límites del dominio público marítimo - terrestre	Demarcación de Costas Andalucía-Atlántica Ministerio de Medio Ambiente
Zonas de Interés Salinero	Dirección General de Industria, Energía y Minas Consejería de Empleo y Desarrollo Tecnológico
Puntos de Vertidos al Litoral	Dirección General de Prevención y Calidad Ambiental Consejería de Medio Ambiente
Calidad de Aguas y Sedimentos	Dirección General Prevención y Calidad Ambiental Consejería de Medio Ambiente
Aguas Subterráneas	Instituto del Agua de Andalucía Secretaría General de Aguas Consejería de Obras Públicas y Transportes
Instalaciones de acuicultura	Dirección General de Pesca y Acuicultura Consejería de Agricultura y Pesca

GENERAL STUDY DATA

- 186,000 ha analysed
- 7,433 ha occupied by aquaculture farms on land
- 5% of the surface area analysed is occupied by aquaculture farms



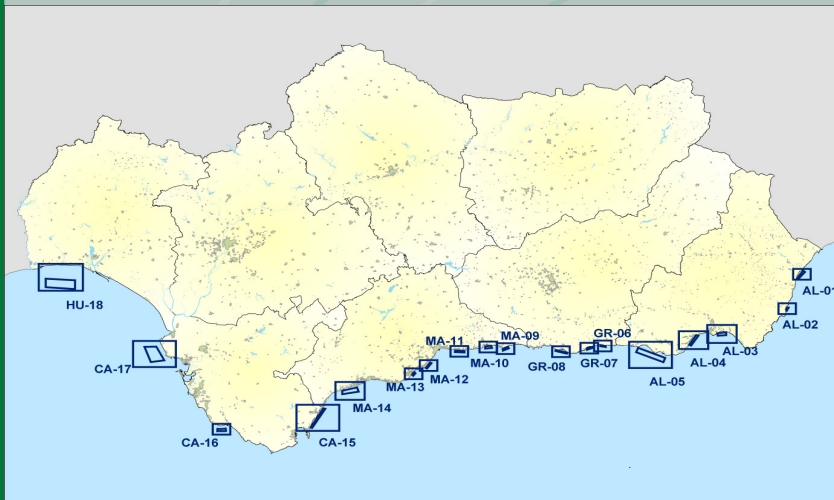
Result Phase 1: Qualitative Analysis: Different areas (Barbate, Cadiz)



PHASE 2 AT SEA



STUDY AREA: Selection of the most suitable areas from an administrative standpoint



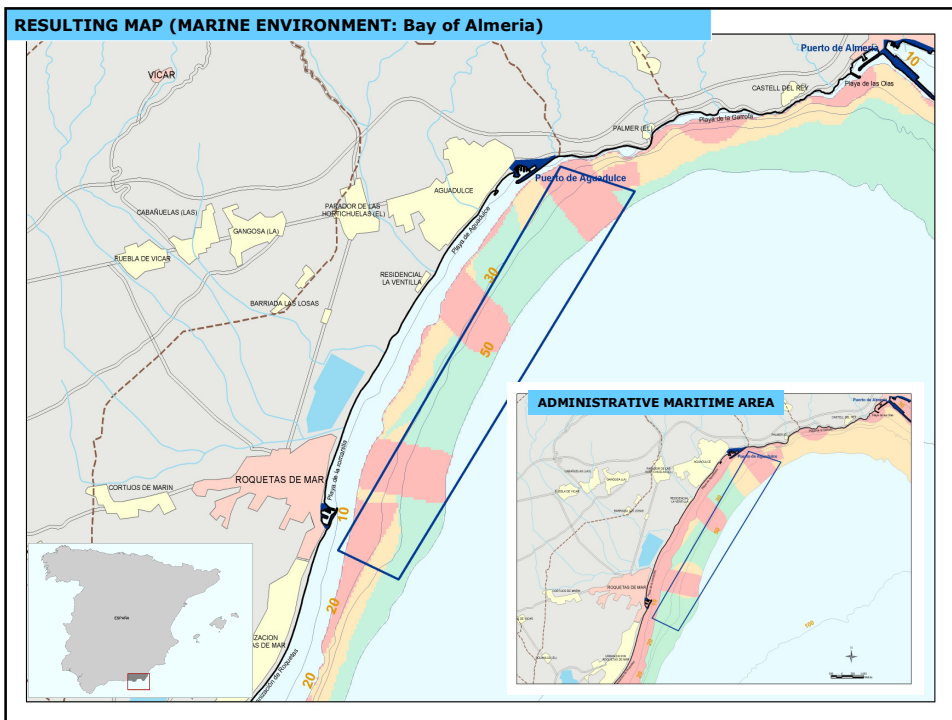
PHASE 2 AT SEA



ENTITIES INVOLVED IN THE STUDY

ENTITY	TASKS DEVELOPED
Regional Ministry of Agriculture and Fisheries Directorate General of Fisheries and Aquaculture	<ul style="list-style-type: none"> - Compilation of information on marine depths - Reception, processing and integration of both study lines: Oceanography and Water Quality - Coordination and monitoring of the publication and editing of the study.
Regional Ministry of Innovation, Science and Business IFAPA, "El Toruño" Research Centre	<ul style="list-style-type: none"> - Sediment sampling campaign - Sampling campaign to study water quality - Analysis of samples - Preparation of data and mapping
Regional Ministry of Environment Directorate General of Environmental Management	<ul style="list-style-type: none"> - Study of oceanographic conditions in the selected areas - Compilation of records on currents - Anchoring and removal of current meters - Hydrodynamic and particle dispersion modelling

Parámetro	Grado de interés		Factor de ponderación
	Rangos a considerar	Valor	
Profundidad	< 20 m	-1	7
	de 20 a 50 m	1	
	> 50 m	0	
Oleaje	> 3 m	-1	4
	< 1 m	0	
	de 1 a 3 m	1	
	> 6m	-1	
	Oleaje extremo 3 – 6 m	0	
Velocidad media de corriente a 10 m de profundidad	< 3 m	1	8
	< 5 cm/s	-1	
	de 5 a 15 cm/s	0	
	de 15 a 60 cm/s	1	10
	> 60 cm/s	-1	
	Grado de dispersión	Afección a zonas de interés ambiental. Lies y praderas de fanerógamas marinas	
Calidad del agua (ICA)	Oxígeno disuelto	10 si $(O_2)_{lim} \leq 3 \text{ mg/l}$	1
		$2,5 * (7 - (O_2)_{lim})$	
		si $7 \text{ mg/l} \geq (O_2)_{lim} > 3 \text{ mg/l}$	
	Temperatura media	0 si $(O_2)_{lim} \geq 7$	
		10 si $T_{min} \leq 10^\circ\text{C}$	
		$20 - T_{min}$	
	Salinidad	si $20^\circ\text{C} \geq T_{min} \geq 10^\circ\text{C}$	
		0 si $T_{min} \geq 20^\circ\text{C}$	
		$\sigma * 10$	
		3,3333 < ICA \leq 6,6666	
Sólidos en suspensión	$\ln(SS_{max})$		
Clorofila	10 si $(Cl)_{lim} \geq 15 \text{ } \mu\text{g/l}$	ICA > 6,6666	
	$(Cl)_{lim} \leq 1,5$ si $(Cl)_{lim} \leq 15 \text{ } \mu\text{g/l}$		
Nitritos	10 si $(NO_2)_{lim} \geq 10 \mu\text{M}$	1	
	(NO_2) si $(NO_2)_{lim} \leq 10 \mu\text{M}$		
Bionomía (valor del índice bionómico)	Muy alto	-100	6
	Alto	-1	
	Medio	0	
	Bajo	1	
	Roca	-1	
Sustrato	Sustratos mixtos	0	1
	Arena, grava o fango	1	



INTERNET CARTOGRAPHIC VIEWER

CONSEJERÍA DE AGRICULTURA Y PESCA

Junta de Andalucía

Consejería de Agricultura y Pesca, Junta de Andalucía - Microsoft Internet Explorer

Archivo Edición Ver Favoritos Herramientas Ayuda

Atrás Avanzar Detener Carga Deseo de Favoritos

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Actualizar Mapa

URL address: www.juntadeandalucia.es/agriculturaypesca

UTM X: 598570.31 - UTM Y: 4405741.56 - Ancho del mapa: 625866 m. - Alto del mapa: 317191 m.

Internet



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