

# Exploitation and farming of seaweeds

## Guide of good practices

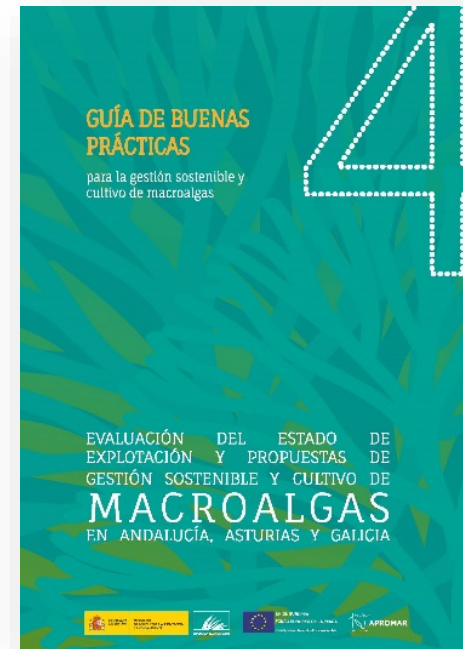
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# Evaluación del estado de explotación y propuestas de gestión sostenible y cultivo de macroalgas en Andalucía, Asturias y Galicia



# The aim

Provide public authorities with the maximum number of scientific criteria to be able to regulate the emerging sector of the exploitation and farming of seaweeds

## Guide content

Good practices on the seaweeds exploitation

- General criteria (6)
- Specific criteria (14)
- Main categories of resources (4)

Good practices on the seaweeds farming

- General criteria (4)
- Specific criteria (2)

Final remarks



# Good practices on seaweeds exploitation

## General criteria:

- Farming potentiality
  - Viability, profitability...
- Uses of the biomass
  - Phycocolloids, agricultural uses, food and feed, human health...
- Clarify species identification
  - Inherent difficulties, cryptic species, several common names...
- Role of seaweeds as a biofilter
  - Natural *vs.* anthropic origin of beached seaweeds, exploitation of alien species...
- Side effects
  - Influence on other species, collateral damages...
- External factors
  - Habitat disturbance, global change...

# Good practices on the seaweeds exploitation

## Specific criteria:

### BIOLOGY

- SIMPLE *vs.* COMPLEX biotype
- MONOPODIAL *vs.* SIMPODIAL growth
- ISOMORPHIC *vs.* HETEROMORPHIC life cycle
- Heteromorphic life cycle in TIME *vs.* in SPACE

### HABITAT

- Species from EXPOSED *vs.* PROTECTED coasts
- Species from ROCKY *vs.* SANDY substrates
- INTERTIDAL *vs.* SUBLITTORAL species
- ESTENOIC *vs.* EURIOIC species

### ECOLOGICAL NICHE

- STRUCTURAL *vs.* OPPORTUNISTIC species

### PHENOLOGY

- LONG *vs.* SHORT harvest period
- CONSTANT *vs.* FLUCTUATING stock of the species

### COROLOGY

- Species of CONSTANT *vs.* FLUTUATING distribution area
- COMMON *vs.* FINICOLA species
- INDIGENOUS *vs.* ALIEN species

# Good practices on the seaweeds exploitation

To assist in the application of these criteria, the following four categories are proposed:

*“Non-exploitable” / “Regulated exploitation” / “Supervised exploitation”*

and *“Raw material for the phycocolloids industry”*



# Non-exploitable seaweeds

## *Saccharina latissima* (“sugar kelp”)

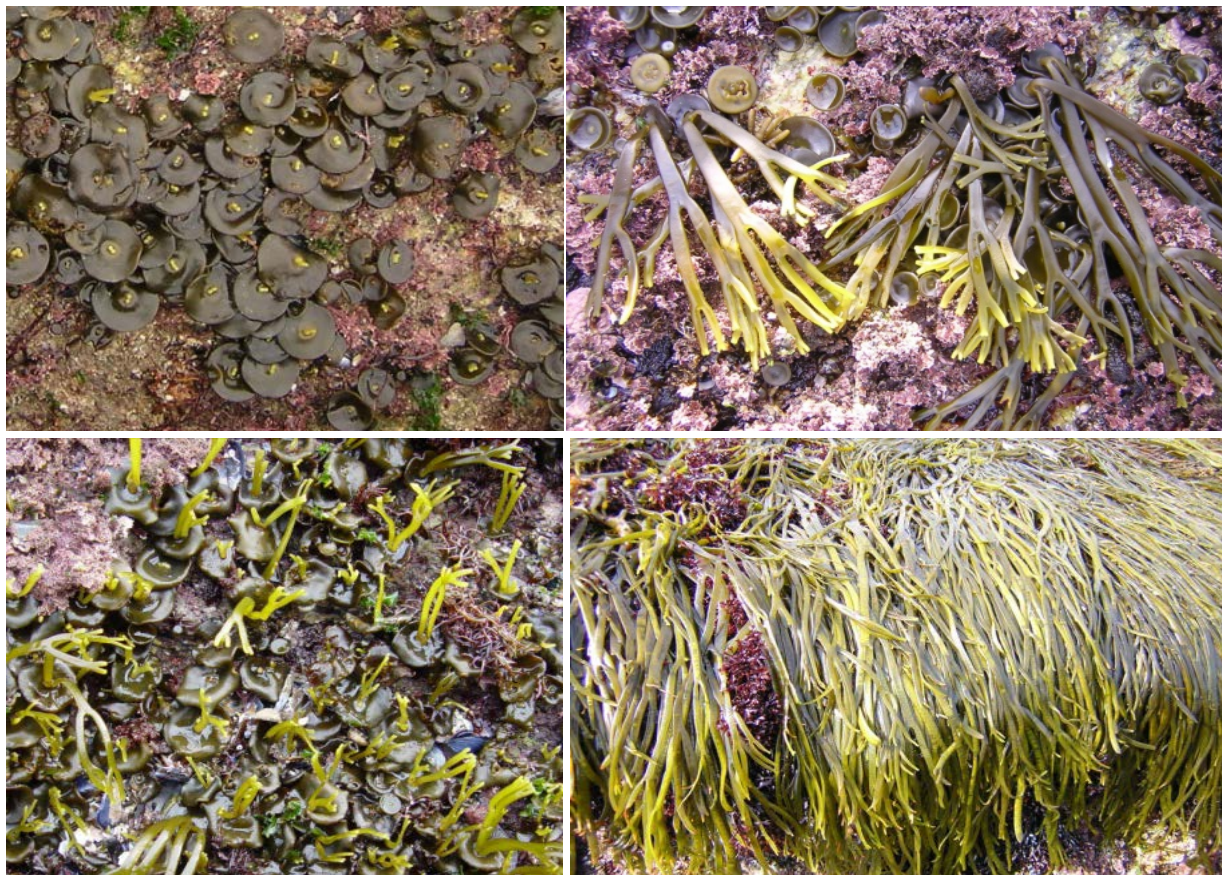
“Species whose exploitation should not be authorized for at least two of the following reasons: ecological importance, rarity, biogeographic interest or viability and profitability of its cultivation”



# Regulated exploitation seaweeds

*Himantalia elongata* (“sea thong”)

“Species that by their nature require the development of *ad hoc* exploitation practices, with minimum sizes, specific quotas and recollection methods”



## Good practices of exploitation:

- Total removal of the thallus
- Preferably by thinning in the populations on the lower intertidal level
- Establishment of minimum extraction size
- Rotation of extraction sites
- Establishment of extraction quotas by sites and years



# Supervised exploitation seaweeds

*Ulva* spp. (“sea lettuce”)

“Species or phases of development of mainly edible seaweeds that, because they are ephemeral, non-structural or alien species, can be collected in any quantity using techniques that have no impact on the environment or on its future development”



# Raw materials for obtaining phycocolloids

*Chondrus crispus* (“Irish moss”)

“Mainly carrageenophytes that, due to their very specific and traditional methods of exploitation and destination of production, only is raised (in the Guide) some general suggestions and considerations about the future of the exploitation of these specific resources”



# Good practices on seaweed farming

General criteria:

- Farming system and location
  - Oceanographic features, water quality
- Integrated Multi-trophic Aquaculture (IMTA)
  - Outdoor / indoor
- Wise coastal management practice
- Environmental impact
  - Reuse, reduction and waste management

# Good practices on seaweed farming

Specific criteria:

- Choice of species
  - Origin
  - Viable and productive crop, farming versatility
  - Added value and diversity of uses
- Conservation of native genetic diversity
  - Choice of local breeds
  - Maintenance a high level of genetic diversity
  - Control of leakages

# Final remarks

- Seaweeds are resources with their own idiosyncrasy

*and as such they must be treated ...*

- Biological and in uses versatility
  - High renewal rate
  - They live of the water, not only in the water
- 
- It should tend to its cultivation
  - Primary producers
  - Structural role in ecosystems

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