



Universidade do Algarve
Centro de Ciências do Mar



**The Experimental Culture
of the Cuttlefish, *Sepia officinalis*,
in the Algarve, South Portugal**

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Objectives

➔ **Study and gather a profound knowledge of ecology and biology aspects of the species:**

first phase – maintenance

second phase – culture

third phase – production and mass production

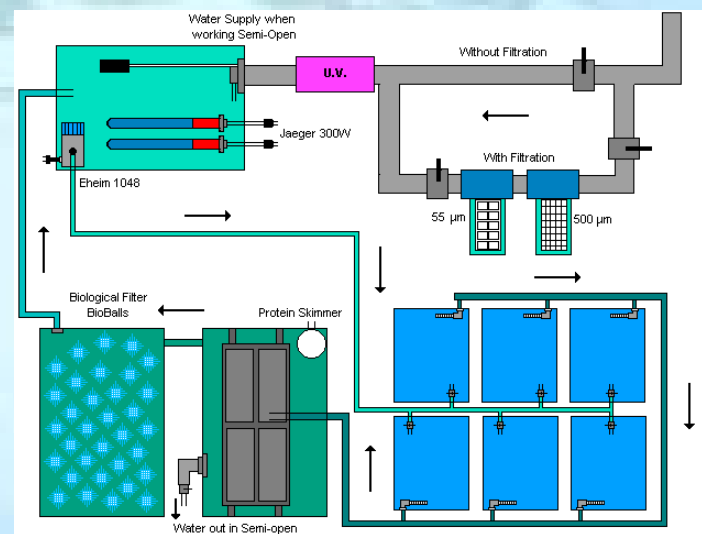
➔ **Development of intensive aquaculture techniques and seawater systems in order to start cuttlefish culture commercially**

Maintenance and Culture Technology

Culture Systems

12x 10 L tanks for Cuttlefish and Grass Shrimp Culture

Can fully work in open, closed and semi-closed

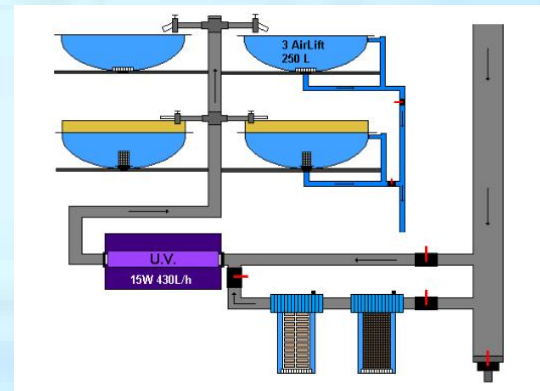


Maintenance and Culture Technology

Culture Systems

10x 250 L tanks for Cuttlefish Culture, from egg to adult

Can only work in open system



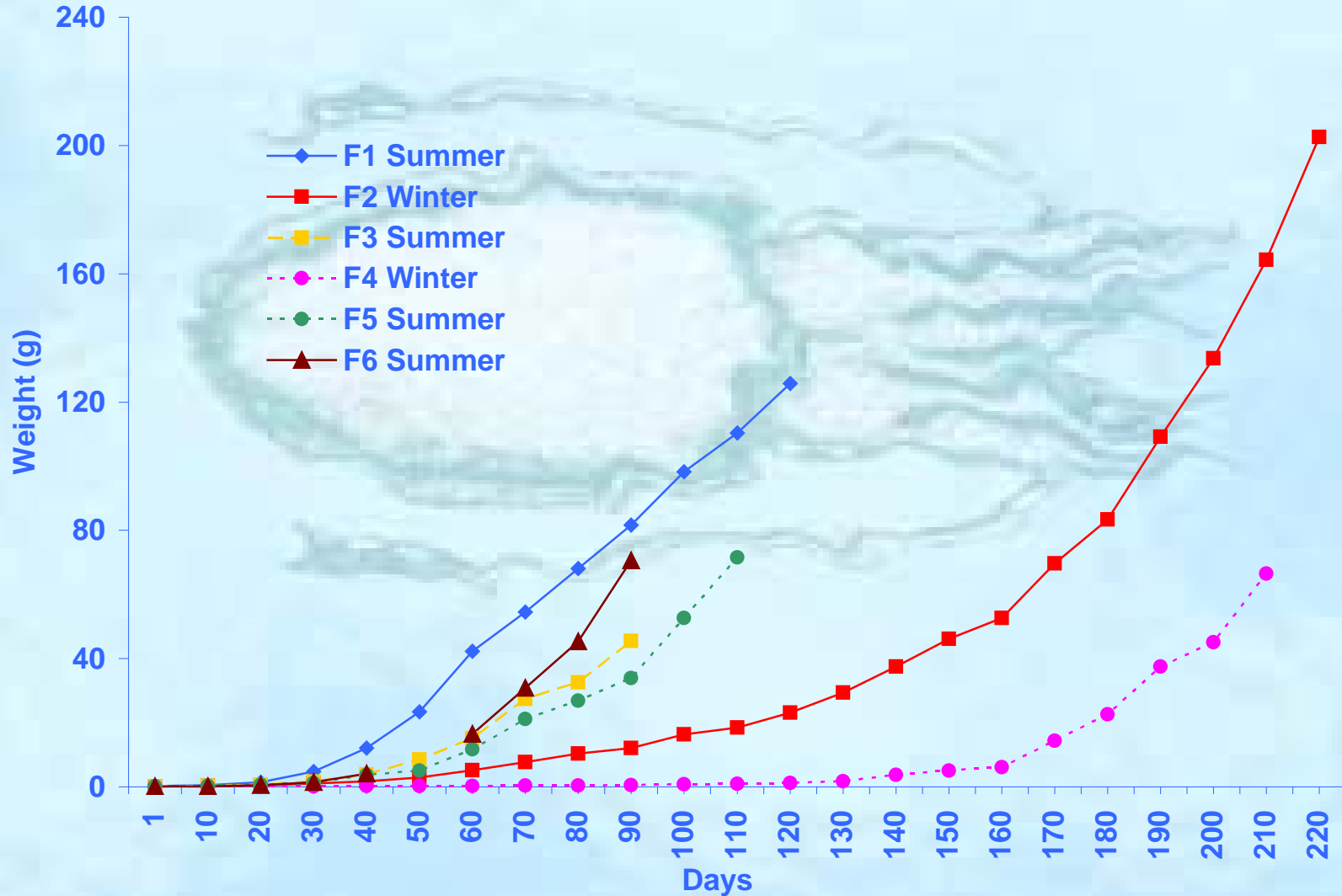
Maintenance and Culture Technology

Culture Technology - Cuttlefish Life Cycle



Maintenance and Culture Technology

Culture Technology - Cuttlefish Life Cycle



Maintenance and Culture Technology

Culture Technology - Cuttlefish Life Cycle

Growth always exponential

Summer Generation → 3-4 months

Winter Generation → 7-9 months

Prey

→ live mysids – *Paramysis novelli* - first 15 DAH

→ live or frozen grass shrimp – *Palaemonetes varians* - onwards

Ecology and Biology Research

First and second phases completed with success.

Main achievements are:

- two or more generations each year;
- high values of survival;
- only one species used as prey (*Palaemonetes varians*)

Main problems are:

- low fecundity and fertility;
- broodstocks and techniques (inbreeding after 6 generations)
- need a live prey (grass shrimp) at least until 15 DAH and onwards, which production techniques are not fully developed yet

Production and Mass Production

Current Objectives:

Optimization of culture techniques:

➔ hatchery

➔ densities

➔ prey

First Semi-Intensive production in salt ponds

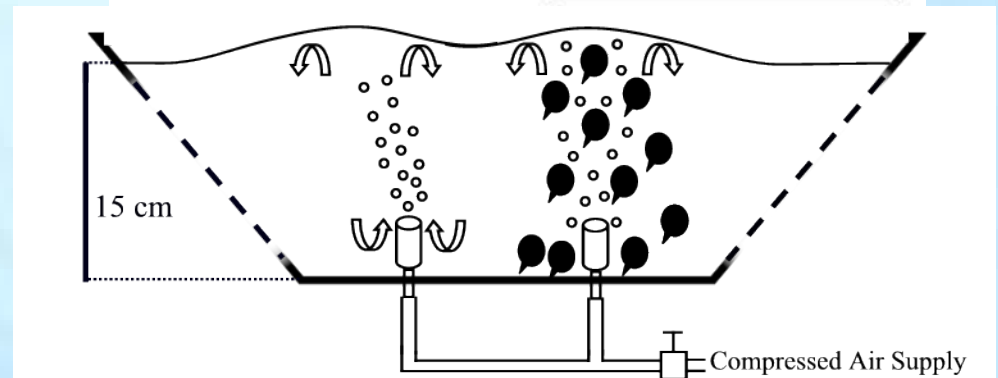
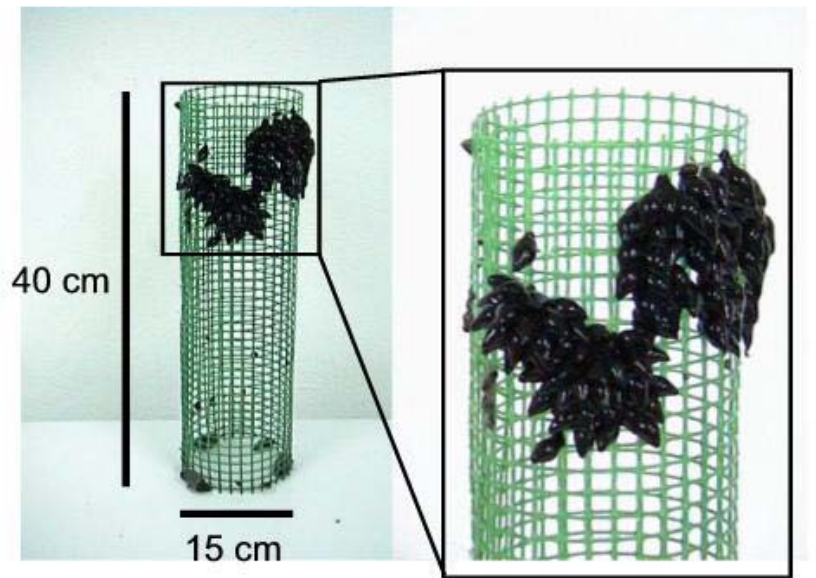
➔ life cycle and growth



Production and Mass Production

Hatchery

➔ Optimization of egg collection and incubation



Production and Mass Production

Hatchery / Density

➔ Optimization of culture densities

▶ hatchling

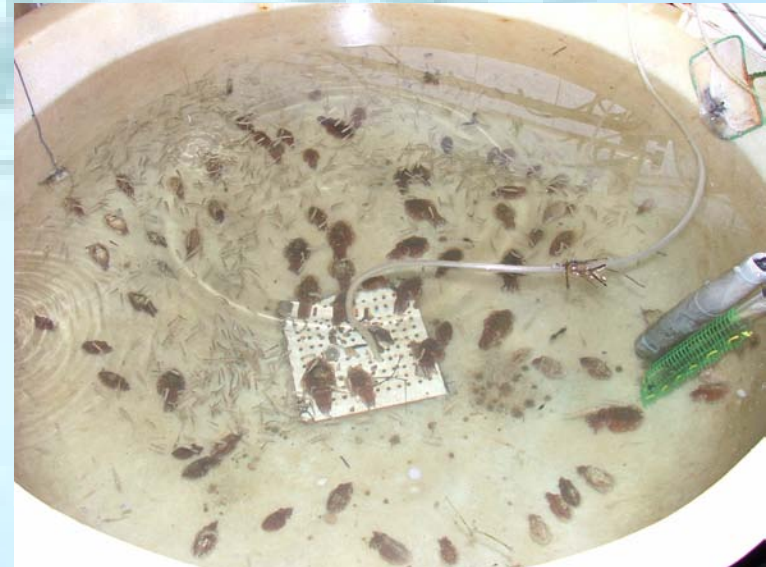
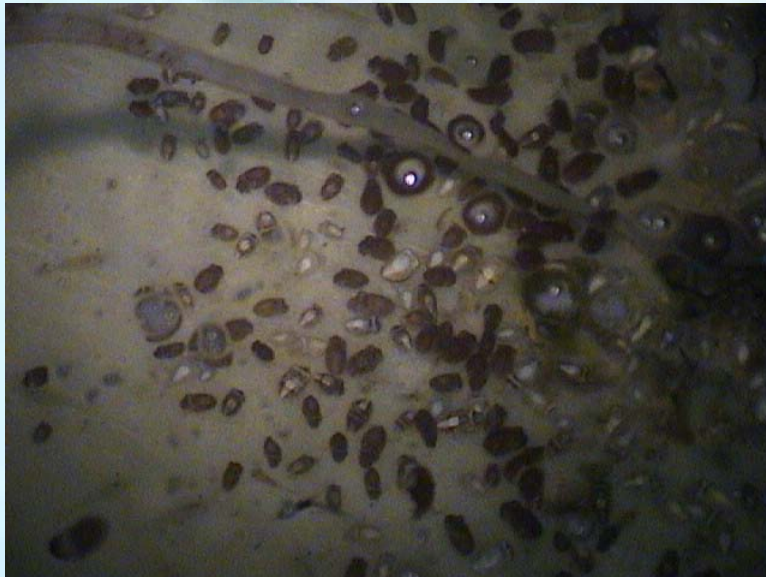
500 hatchlings/m²

Min. Area – 600 cm²

▶ juveniles

120 juveniles/m²

Min. Area – 1100 cm²



Production and Mass Production

Hatchery / Prey

- ➔ Development of grass shrimp production
 - ▶ development of feeds
 - ▶ development of reproduction technology



Production and Mass Production

Future Objectives:

Broodstock Management Strategies

- ➔ Density
- ➔ Enhancement of fecundity and fertility
- ➔ General Methodologies

Nutritional study of embryony development

- ➔ Optimization of live diets and *Artemia* sp.
- ➔ Reformulation of manufactured feeds

Fundings

FCT Fundação para a Ciência e a Tecnologia

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