

WP3

Reproduction and Genetics greater amberjack



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P23. ARGO, P24. ITTICAL, P27. FORKYS,
GALAXIDI (collaborator)

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WP3 Reproduction & Genetics – greater amberjack

- Task 3.2 Develop spawning induction methods for captive-reared broodstocks of the Mediterranean stock,
- Task 3.5 Apply the developed spawning induction methods for broodstocks maintained in cages, and examine the efficiency of an egg collector to obtain fertilized eggs.



Task 3.2 Development of an optimized spawning induction protocol – available stocks

Stock	Location	Number of Individuals	Size at sampling (range in kg)	Feeding
HCMR	tanks	27	6.5-23.8	raw fish, squid
HCMR	cages	12	7.4-14.8	moist pellet
ARGO	tanks	9	8.1-11.1	live, raw fish
ARGO	cages	49	7.1-16.0	live, raw fish
FORKYS	tanks	22	7.7-10.3	raw fish, squid
GALAXIDI	cages	28	6.3-15-6	live fish
ITTICAL	tanks	20	20-30	raw fish, squid

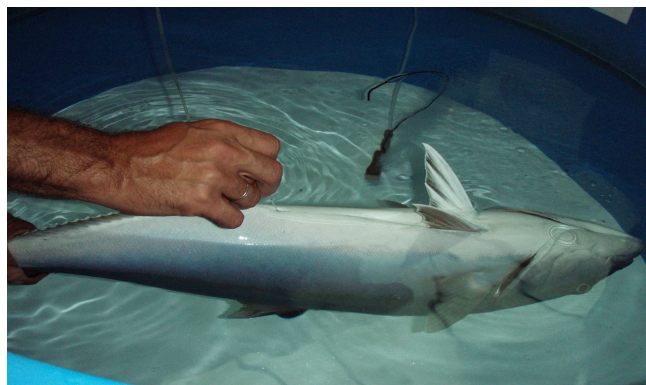
- **Most fish:**
 - **First reproductive season**
 - **Transferred to HCMR late in the season**

Task 3.2 Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean – establishment of broodstocks



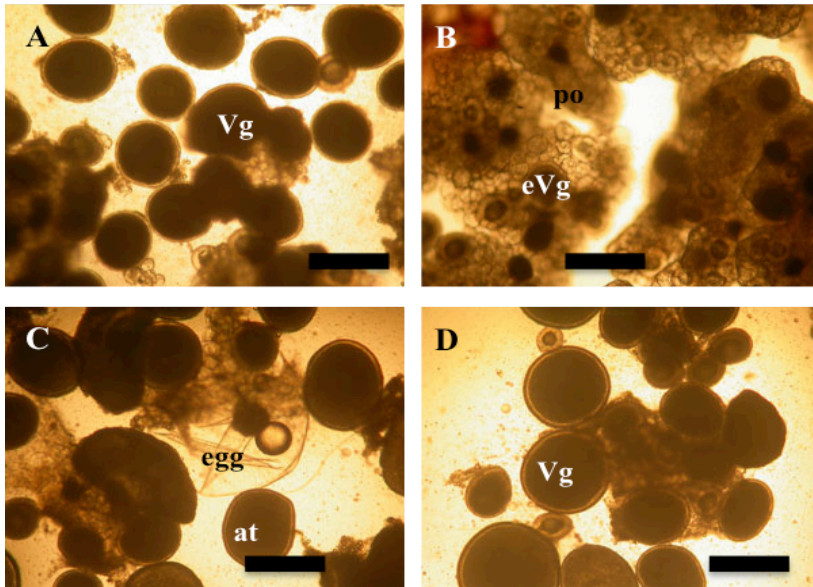
Task 3.2 Development of an optimized spawning induction protocol – HCMR tank stock

June 2014



Task 3.2 Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean - tanks

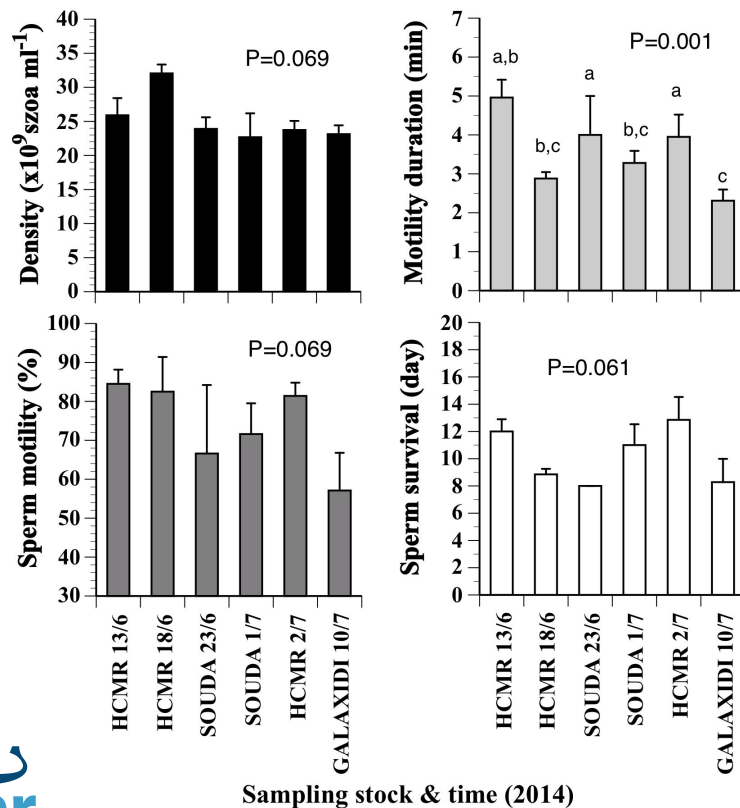
2014 Results 1/2



- Reproductive maturation at ~6 kg bw
- Vitellogenesis in many females, some also ovulated
- Few females with large, fully vitellogenic oocytes (700-800 μm)
- Poor spawning response to GnRHa treatment (low fecundity, 0% fertilization)

Task 3.2 Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean – tanks & cages

2014 Results



- All males in spermiation
- Small volumes, no stripping was possible
- Good sperm quality, no variation among stocks
- Long motility duration
- Very long sperm survival under 4°C storage
- Some enhancement of sperm volume (no quantification)

Task 3.5 Spawning induction of greater amberjack and egg collection in cages – three stocks



HCMR, Souda Bay



ARGO, Salamina Island



Galaxidi Marine Farms, Korinthian Bay



Task 3.5 Spawning induction of greater amberjack and egg collection in cages – GnRHa treatment



Task 3.5 Spawning induction of greater amberjack and egg collection in cages – egg collecting device

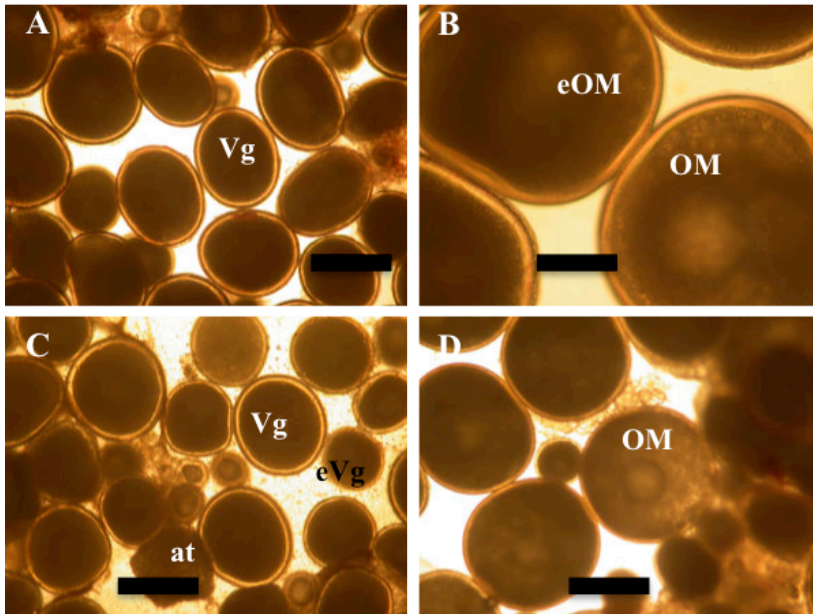


Task 3.5 Spawning induction of greater amberjack and egg collection in cages – egg collecting device



Task 3.5 Spawning induction of greater amberjack and egg collection in cages

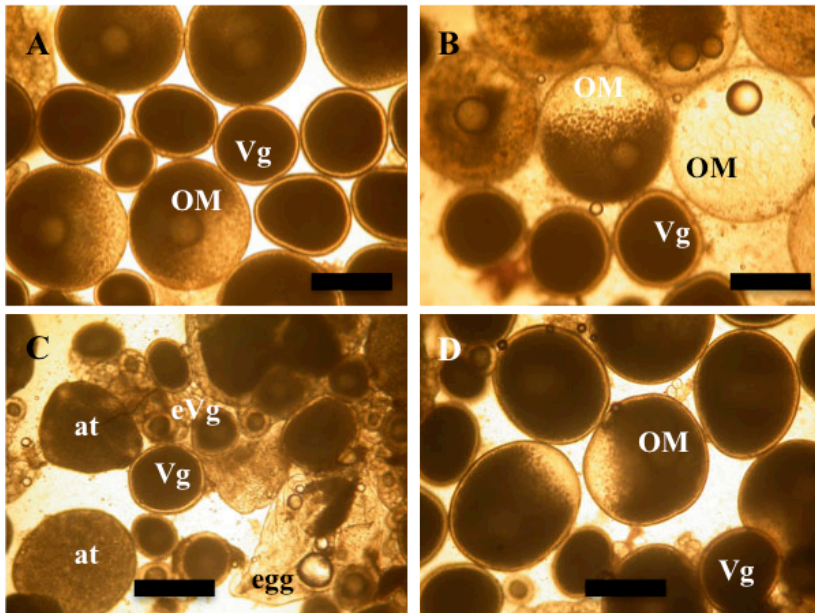
2014 Results (1st treatment)



- Better vitellogenesis than in tanks
- Many females in oocyte maturation or ovulation, prior to GnRHa treatment!
- Production of fertilized eggs

Task 3.5 Spawning induction of greater amberjack and egg collection in cages

2014 Results (2nd treatment)

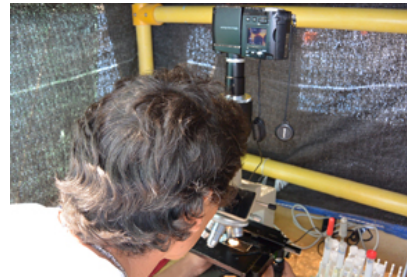
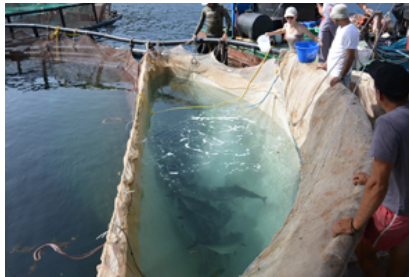


- Many females in oocyte maturation or ovulation
- Production of fertilized eggs, but much lower fecundity and fertilization success

Task 3.5 Spawning induction of greater amberjack and egg collection in cages – egg collection



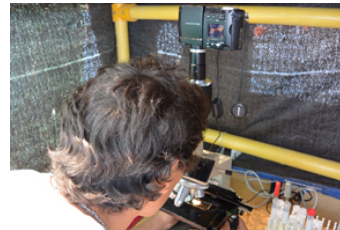
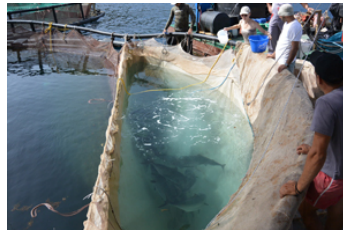
Task 3.5 Spawning induction of greater amberjack and egg collection in cages – HCMR (Souda Bay)



Stock	Days after treatment	Number of females	Fecundity (eggs)	Fertilization (%)
HCMR cage	2 (1 st)	3	450,000	67.5
HCMR cage	3	“	48,000	90.0
HCMR cage	6	“	88,000	73.0
HCMR cage	2 (2 nd)*	4	284,000	41.5

* A second hormone therapy was given once spawning ceased after the first treatment.

Task 3.5 Spawning induction of greater amberjack and egg collection in cages – Galaxidi Marine Farms

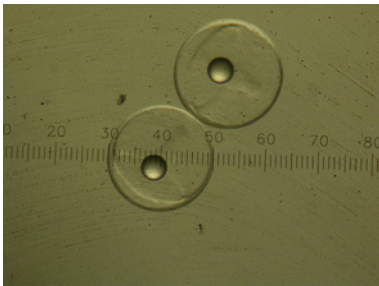


Stock	Days after treatment	Number of females	Fecundity (eggs)	Fertilization (%)
GALAXIDI cage	3	11	10,000	100
GALAXIDI cage	4	“	30,000	100
GALAXIDI cage	5	“	30,000	100
GALAXIDI cage	6	“	60,000	66.7
GALAXIDI cage	8	“	25,000	100
GALAXIDI cage	9	“	10,000	100
GALAXIDI cage	10	“	5,000	100
GALAXIDI cage	11	“	30,000	66.7
GALAXIDI cage	2 (2 nd)*	6	no eggs were obtained from the cage	
GALAXIDI tank 1	2**	3	350,000	85.7
GALAXIDI tank 1	3	“	660,000	38.1
GALAXIDI tank 1	4	“	185,000	43.7
GALAXIDI tank 1	5	“	150,000	33.3
GALAXIDI tank 1	6	“	265,000	15.1

Task 3.5 Spawning induction of greater amberjack and egg collection in cages

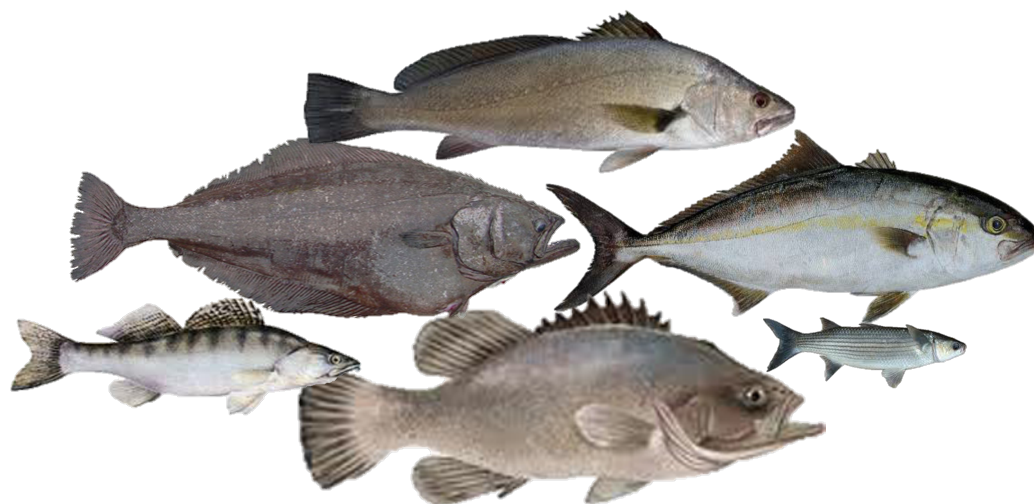


- High loss of eggs from the cages, due to currents!
 - Reduce cage depth to 6 m
 - Increase depth of egg collector from 3.5 to 5 m
 - Transfer fish to tanks for spawning



THE END

Thank for your attention



WP3 Reproduction & Genetics – greater amberjack - objectives

- Describe the endocrine control of reproduction in captive broodstocks,
- Assess reproductive potential of wild vs. captive greater amberjack broodstocks and identify reproductive dysfunctions,
- **Develop spawning induction methods for captive-reared and F1 broodstocks of both the Mediterranean and Atlantic stocks,**
- **Apply the developed spawning induction methods for broodstocks maintained in cages, and examine the efficiency of an egg collector to obtain fertilized eggs,**
- Develop a Computer Assisted Sperm Analysis method (CASA) for the evaluation of greater amberjack sperm.

Task 3.2 Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean - tanks

2014 Results 2/2

- After the first GnRHa treatment, high atresia
- Poor spawning response to 2nd GnRHa treatment (low fecundity, 0% fertilization)

