

SPATIAL AND TEMPORAL VARIABILITY OF THE REPRODUCTIVE ACTIVITY OF THE MUSSEL *Mytilus galloprovincialis* PRODUCED IN LONGLINES IN TWO AREAS OF SOUTH OF PORTUGAL

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INTRODUCTION

Mussel commercial production depends on wild populations to obtain the seed. Therefore, any new farming initiative needs deep knowledge of the reproductive cycle of native mussel populations.

The knowledge of the reproductive performance of *Mytilus galloprovincialis* is essential to increase the production of offshore companies since it allows the adjustment of ropes placement to maximize larval recruitment.

The study focused on the reproductive cycle and nutrient storage, which is necessary to assess both sustainable exploitation rates for this species and the potential capacity for aquaculture production in the south of Portugal coast.



METHODOLOGY

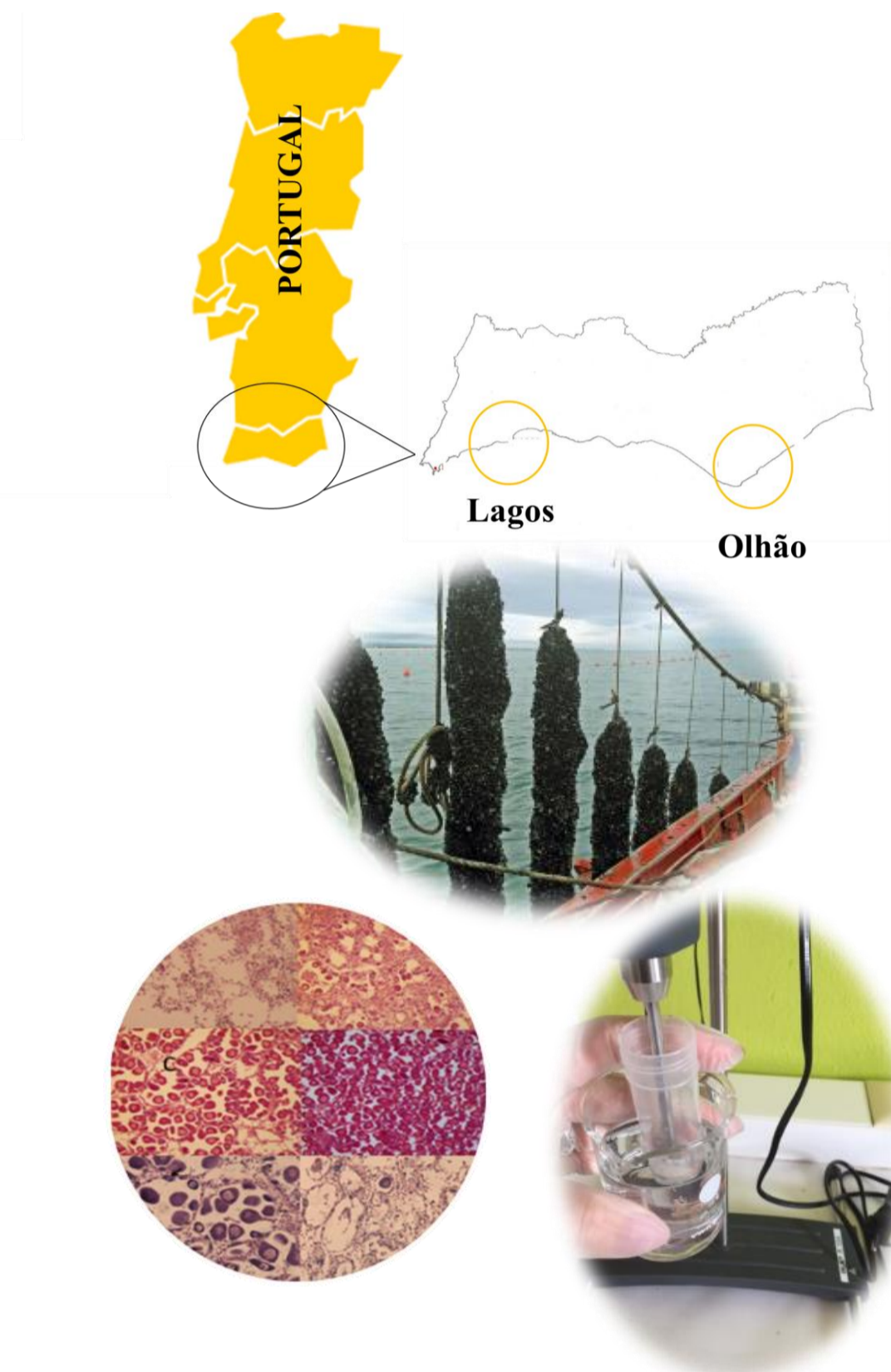
The reproductive cycle of *M. galloprovincialis* from two sites (Olhão - 37°01,007'N; 07°44,499'W and Lagos - 37°04,200'N; 8°42,800'W) along the coast of the south of Portugal, with contrasting oceanic influences, was assessed using:

Biological parameters

- Histological analysis of gonad development (Lubet, 1959)
- Gonadal (Seed, 1976) and condition index (Walne e Mann, 1975)
- Gross biochemical composition (Proteins (Shakir et al., 1994), total lipids (Folch et al., 1957) and glycogen (Viles and Silverman, 1949))

Environmental parameters

- Surface sea water temperature (SST)
- Chlorophyll a (Chl a)



RESULTS

No specific spawning period was observed, with mussels under successively and continuous gonadal recovery and spawning (Stage III B) (Figure 1).

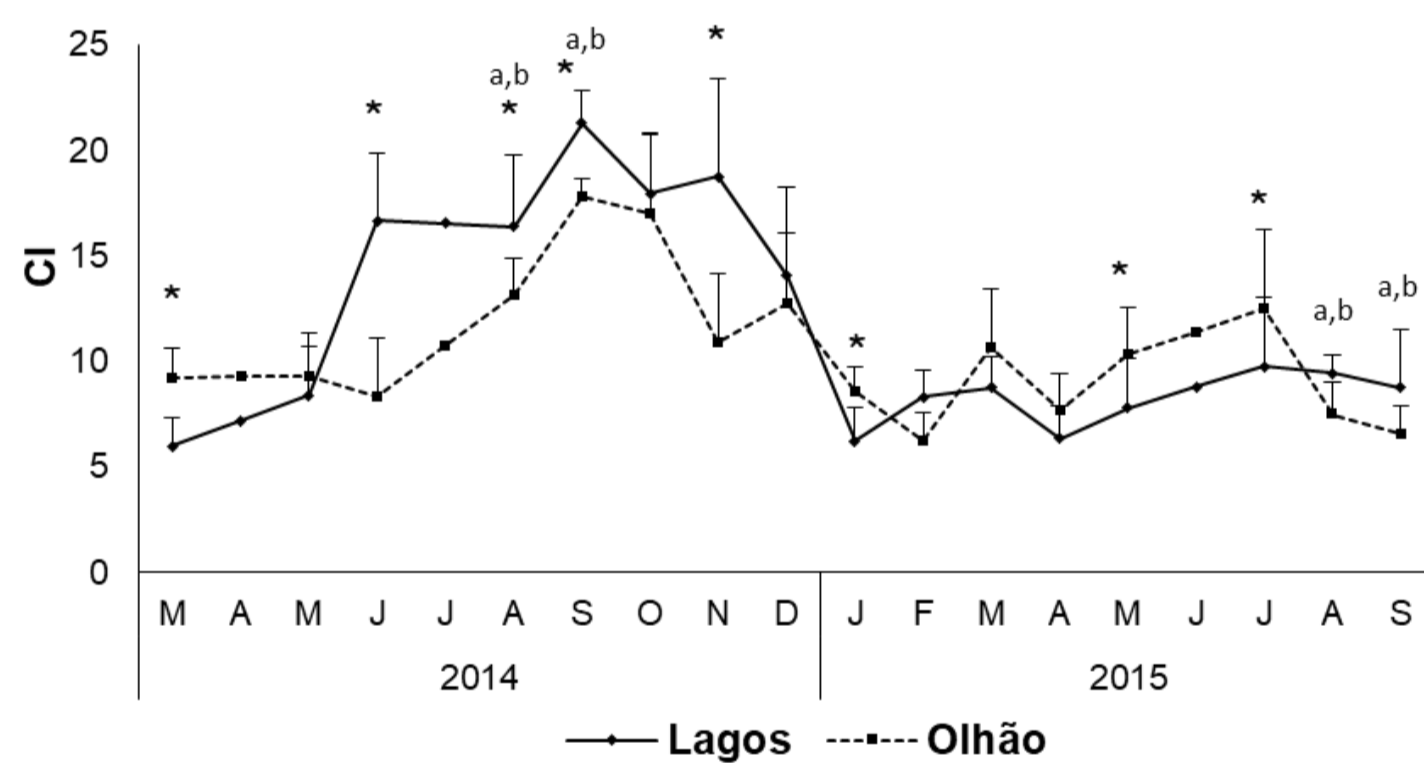


Figure 2. Monthly variation in condition index (CI) (mean±SD, n= 10) of *Mytilus galloprovincialis* from Olhão and Lagos during the sampling period. (*statistically significant differences, P < 0.05 found between population); a b between 2014 and 2015 in Olhão and Lagos, P < 0.001).

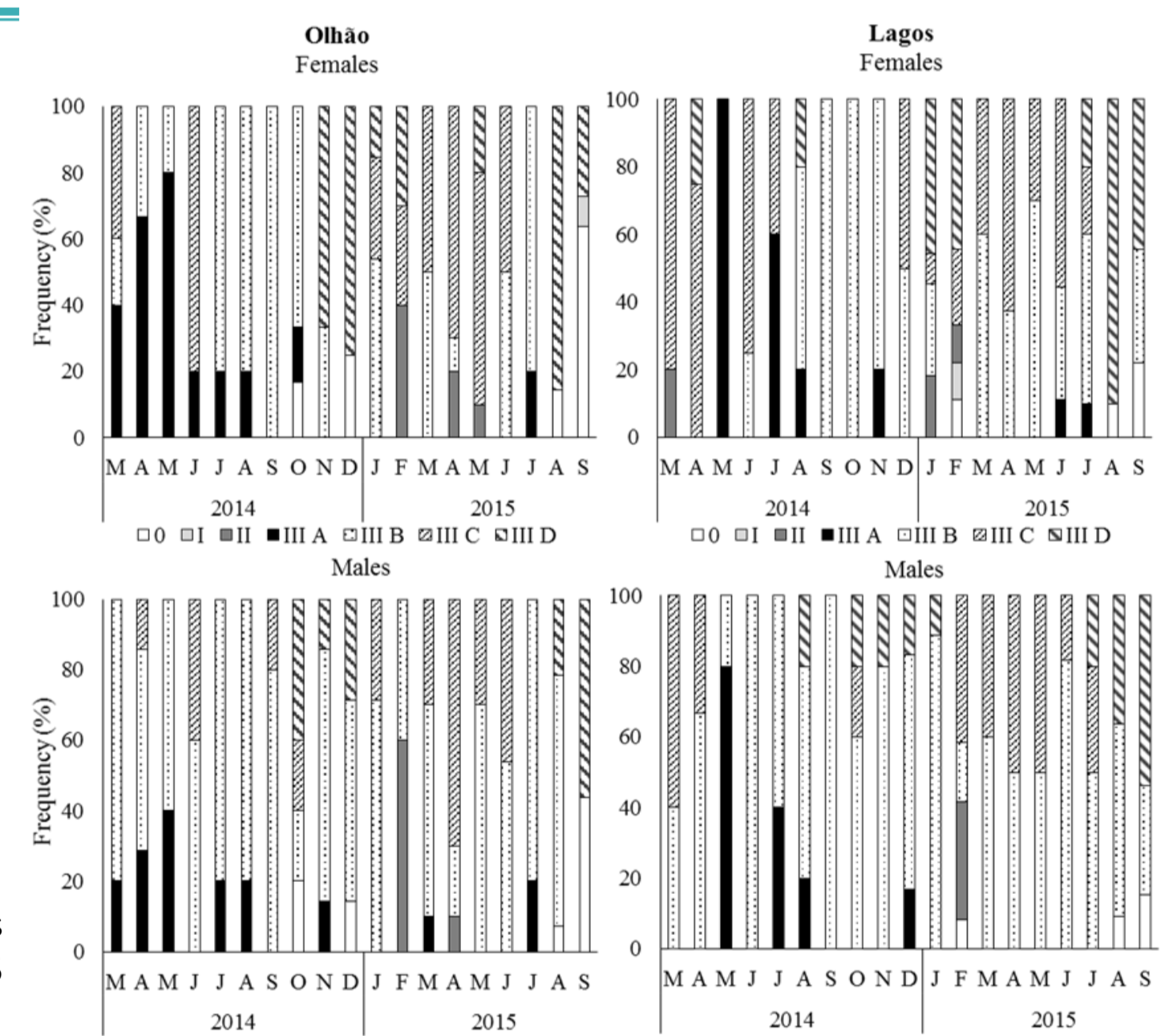


Figure 1. Monthly variation in gonadal development of *Mytilus galloprovincialis* from Olhão and Lagos, from March 2014 to September 2015.

The reproductive cycle of *M. galloprovincialis*, exhibited a year-to-year variability in both sites, revealing a significantly better condition in 2014 than in 2015 (Figure 2). Although it is widely accepted that these differences can be correlated with changes in environmental conditions, our study did not correlate them with SST and Chl a.

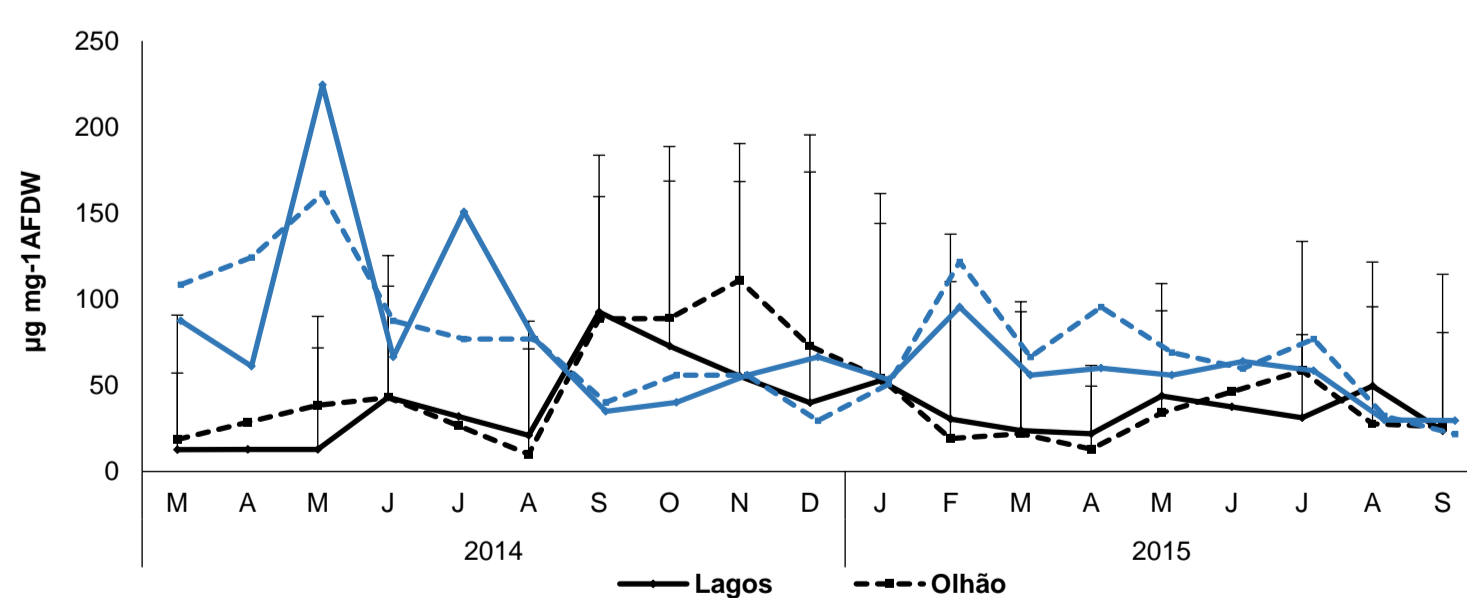


Figure 3. Monthly variation in gonadal index (blue) and glycogen (black) of *Mytilus galloprovincialis* from Olhão and Lagos, from March 2014 to September 2015.

Storage and nutrient cycles showed that in both sampling sites, glycogen content and gonadal index revealed opposite patterns, which allowed a rapid gonadal recovery after spawning, probably due to the constant food availability.

CONCLUSIONS

- Mussels from both locations have an extensive spawning period
- Mussels presented a conservative strategy, they rely on constant food availability, successively allowing spawning and regeneration of the gonads.
- The current study represents an important contribution to farms' profitability since it will allow better production management practices

References

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Acknowledgements

