

Conservation challenges posed by the invasive blue crab *Callinectes sapidus* in Sicilian coastal wetlands: insights from the Stagnone di Marsala lagoon and the Trapani and Paceco salt pans.

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Introduction

Mediterranean coastal wetlands are biodiversity hotspots providing key ecosystem services¹ such as:

- a) nursery habitats;
- b) nutrient cycling;
- c) water purification;
- d) shoreline protection.

These fragile ecosystems are increasingly threatened by climate change, pollution, habitat alteration, and biological invasions^{2,3}. The Atlantic blue crab (*Callinectes sapidus*), native to the western Atlantic, has rapidly colonized Mediterranean coastal areas⁴. In western Sicily, stable populations have been established in protected lagoons and saltmarshes, threatening local biodiversity and artisanal fisheries⁵.

Objectives:

- assess blue crab establishment and reproduction;
- analyze habitat preference;
- evaluate impacts on biodiversity and ecosystem functioning;
- explore and propose mitigation and management strategies.

Results

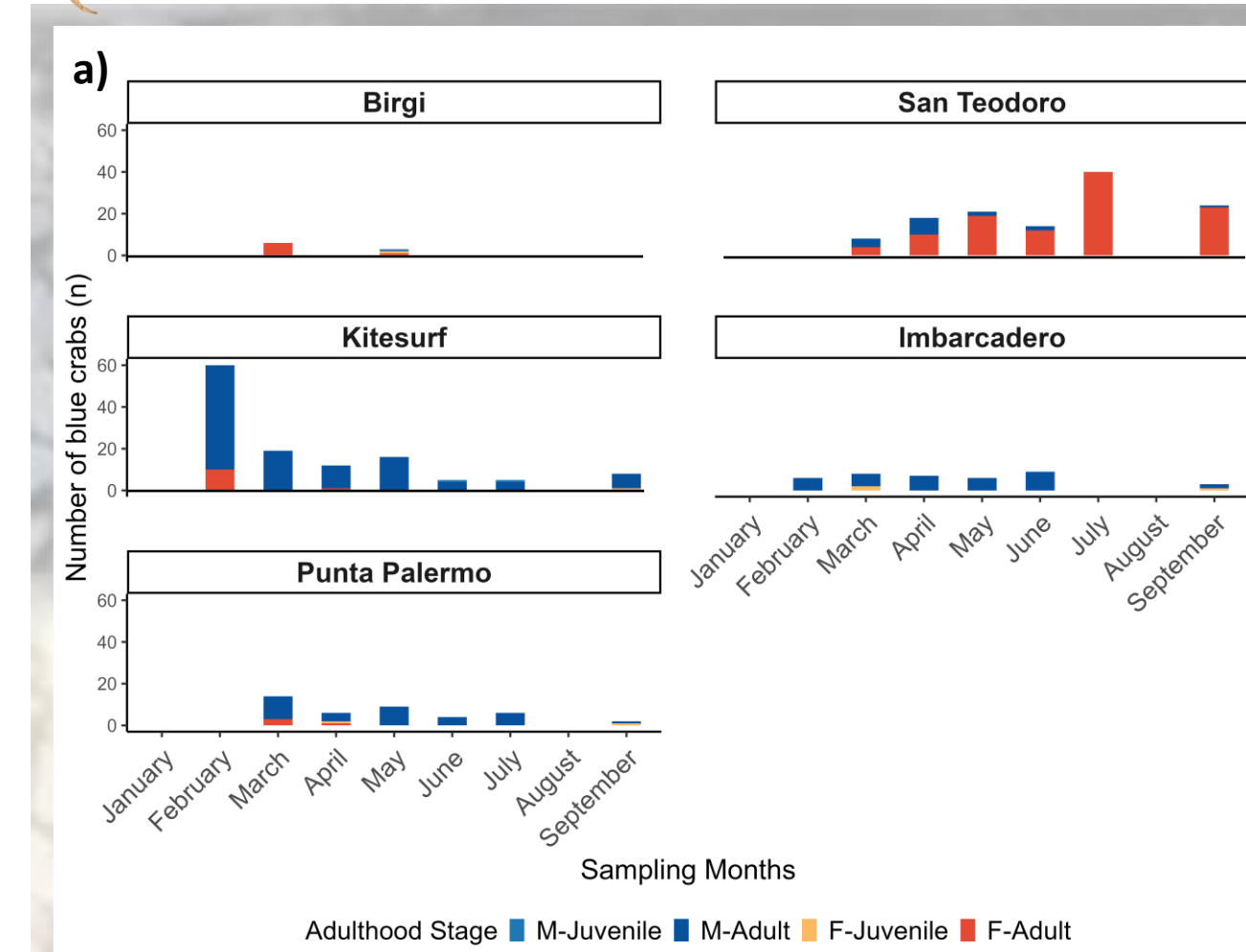
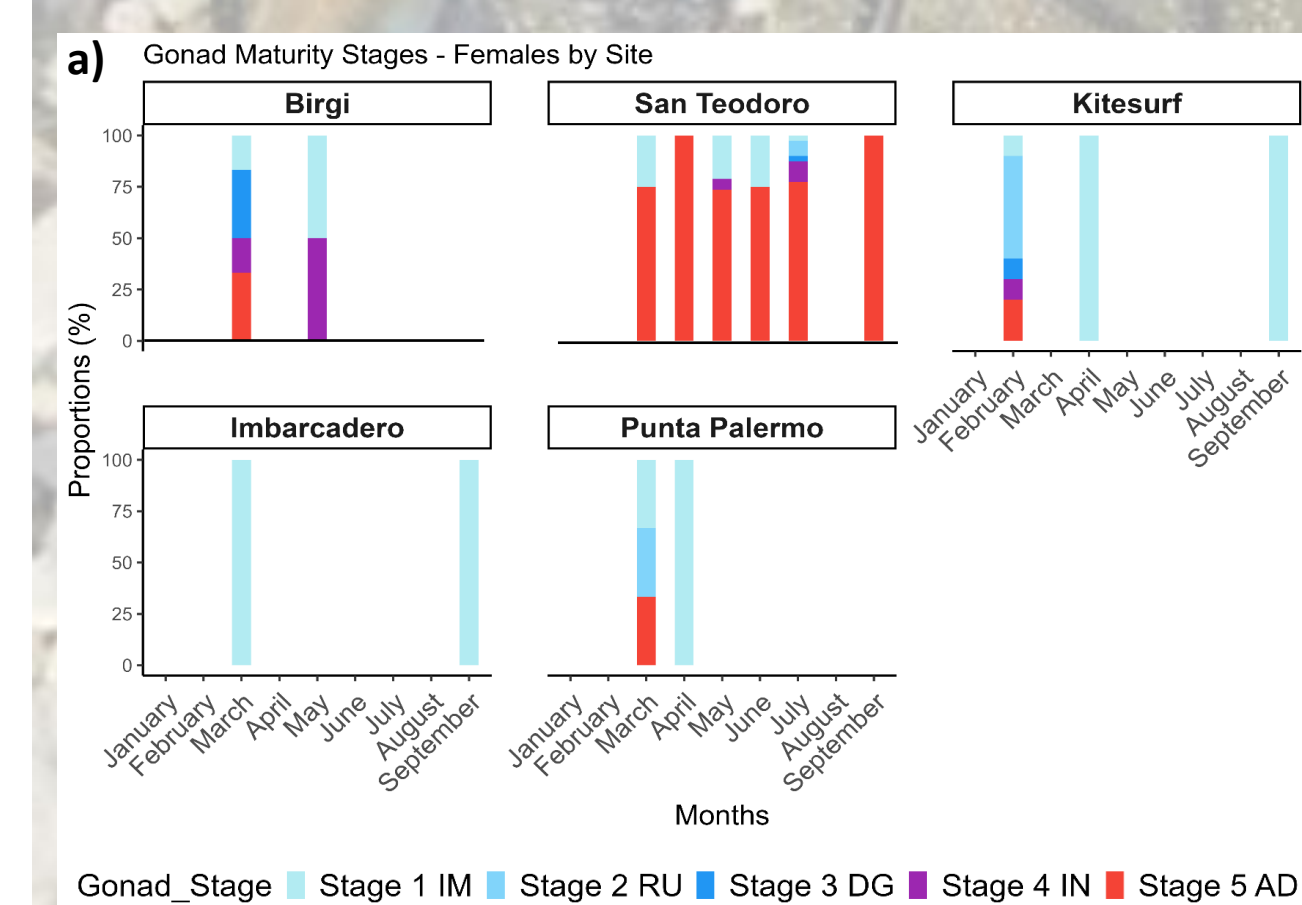
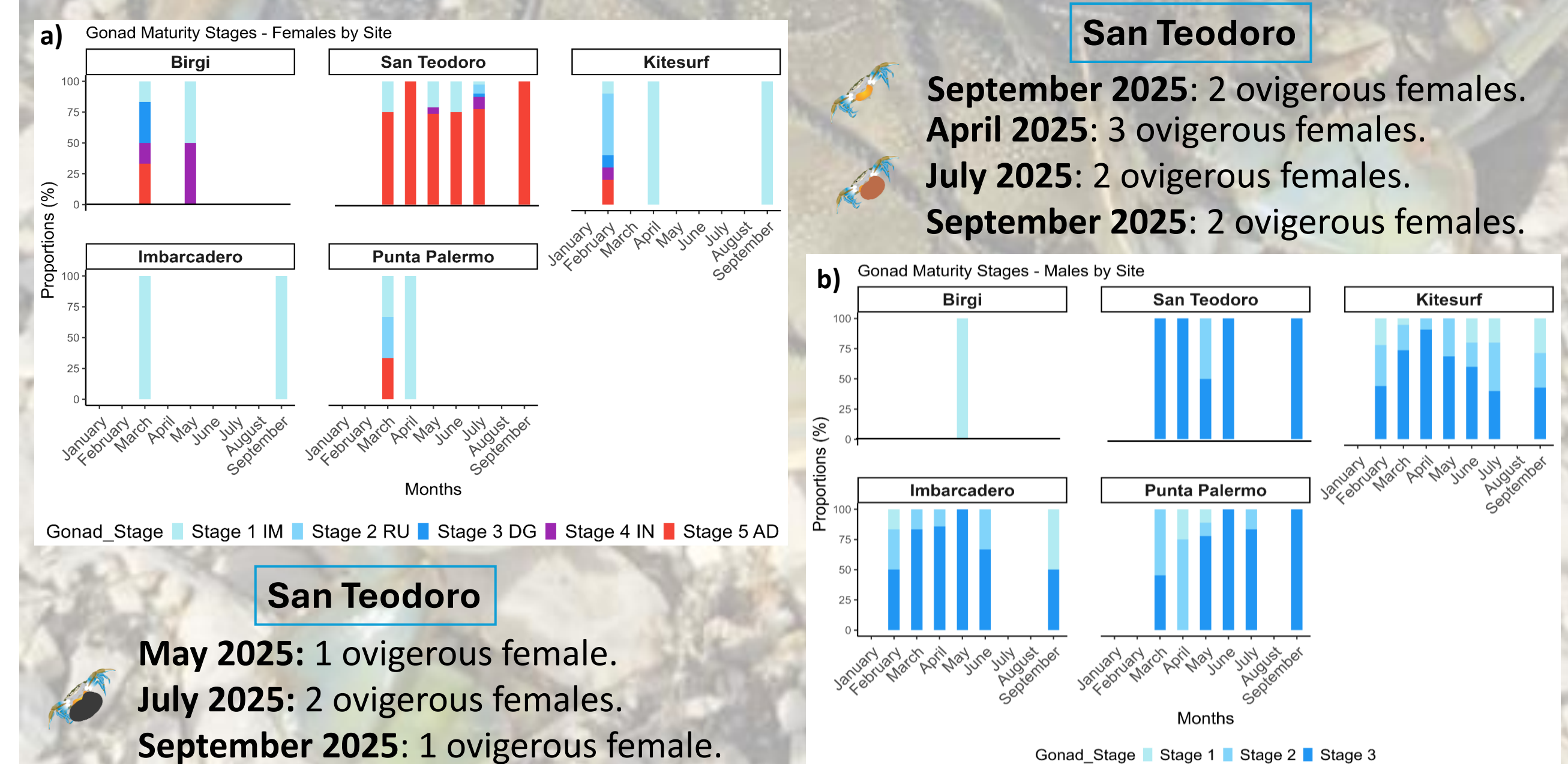


Figure 4: a) Number of blue crabs by adulthood stage and sampling month in five different sites within the Stagnone di Marsala lagoon (M = male, F = female); b) adult (top) and juvenile specimen captured in a trap.



San Teodoro
May 2025: 1 ovigerous female.
July 2025: 2 ovigerous females.
September 2025: 1 ovigerous female.

Figure 5: a) Monthly evolution of sexual maturity stages of females; b) males crabs in different sites within the Stagnone di Marsala lagoon.



Take home messages

- The blue crab *C. sapidus* is firmly established in Stagnone di Marsala lagoon and Trapani salt pans.
- Different gonad maturation stages observed in both sexes: evidence of local reproductive activity overall in San Teodoro (Stagnone di Marsala).
- Variation in maturation stages between Stagnone di Marsala lagoon and Trapani salt pans and sexes suggests environmental or behavioral influences.
- Actions: align invasive species control with conservation goals is essential to preserve the resilience of Mediterranean coastal wetlands.

References

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