Università degli Studi di Ferrara

Dinamiche di espansione del granchio blu nelle lagune dell'Adriatico nordoccidentale e ipotesi di gestione

Expansion dynamics of the blue crab in the lagoons of the northwestern Adriatic and management hypotheses

Giuseppe Castaldelli (ctg@unife.it), Edoardo Turolla, Emanuele Rossetti, Robert R. Christian, David B. Eggleston, Anna Gavioli

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DATA DESCRIPTOR

A global occurrence database of the Atlantic blue crab *Callinectes sapidus*

Giorgio Mancinelli[1,2,3✉], Roberta Bardelli[4] & Argyro Zenetos[5]

Table 2. Description of the fields used in the dataset.

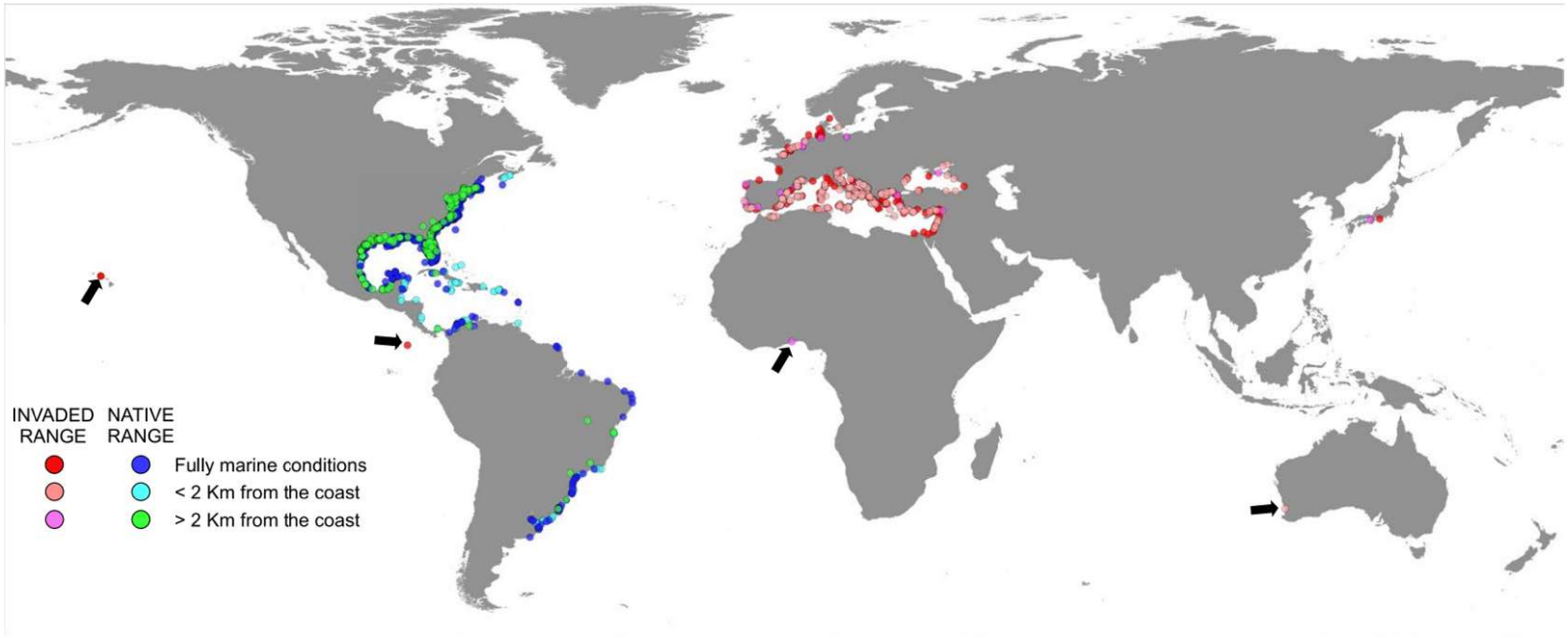

Fig. 2 Global dataset of occurrences of the Atlantic blue crab *Callinectes sapidus* in native (in blue) and non-native distribution ranges (in red). For the sake of clarity, Antarctic areas are omitted. Records located under fully marine conditions are indicated, while those located on land are reported differentiating those occurring in coastal areas (see text for details). Arrows indicate non-native records testifying unsuccessful human introductions or doubtful identifications.

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From ecological to anthropogenic factors: unraveling the drivers of blue crab *Callinectes sapidus* occurrence along the Mediterranean coasts

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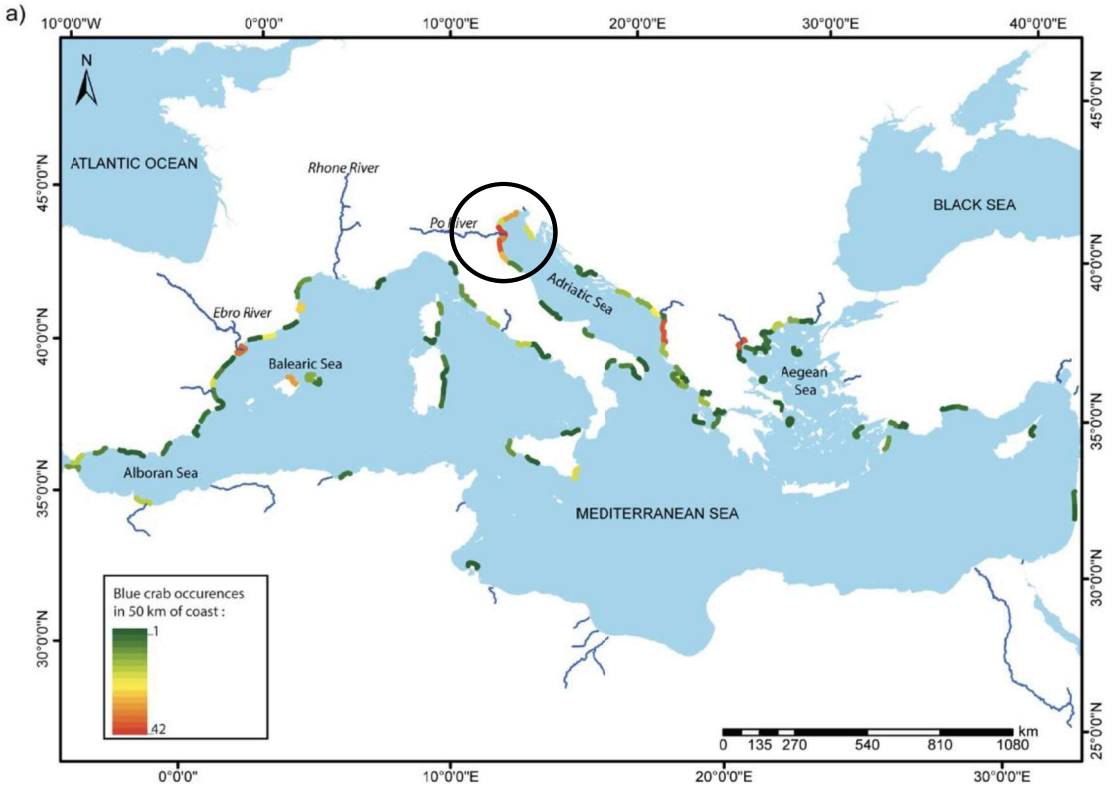


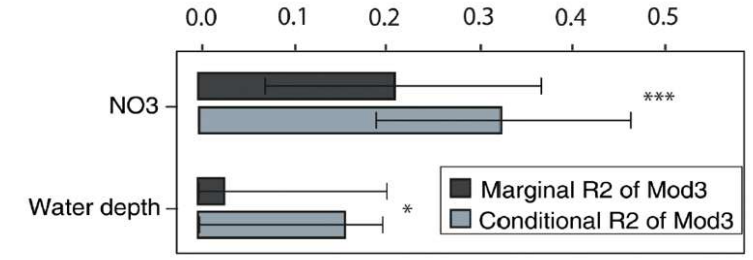
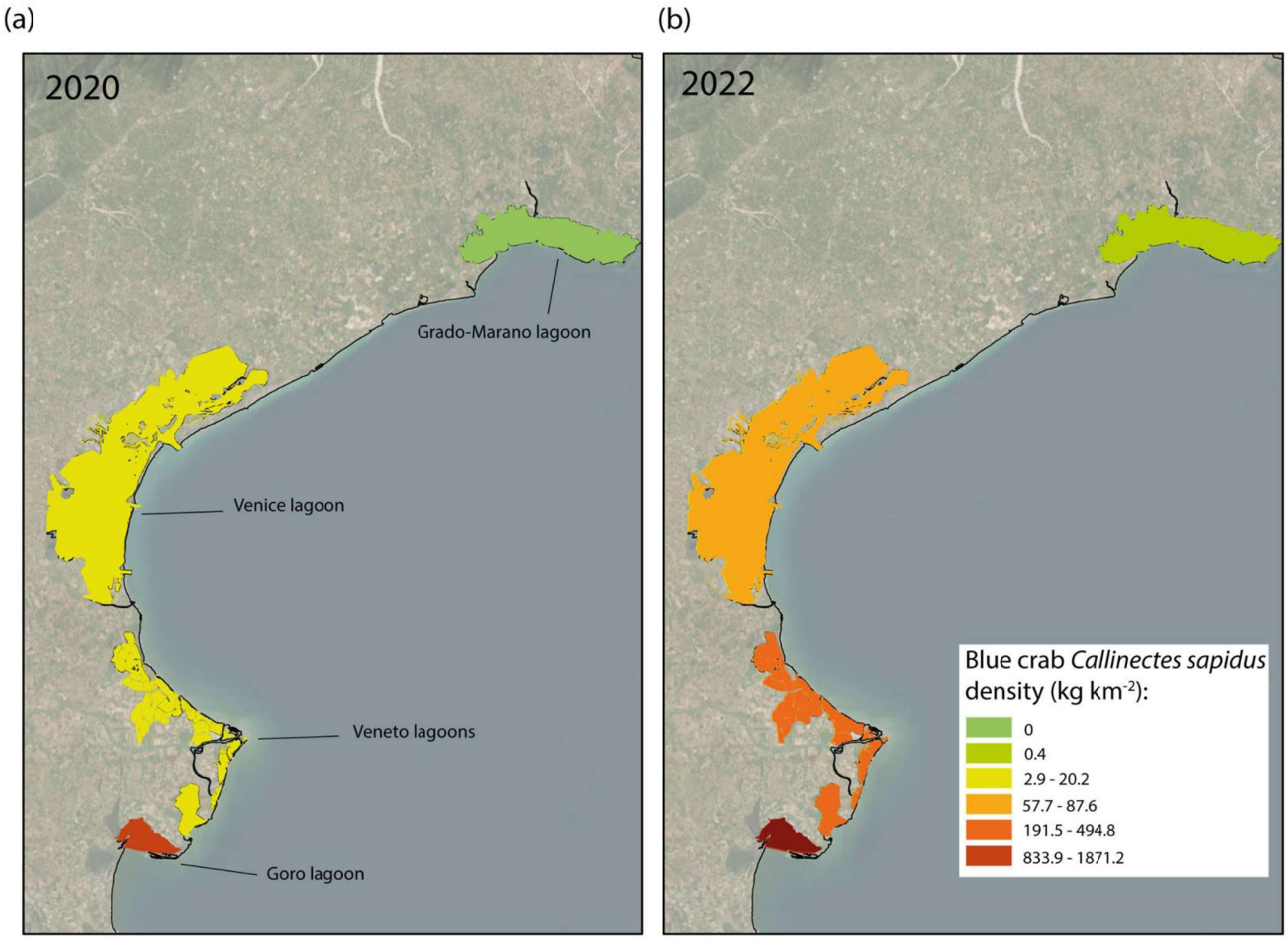
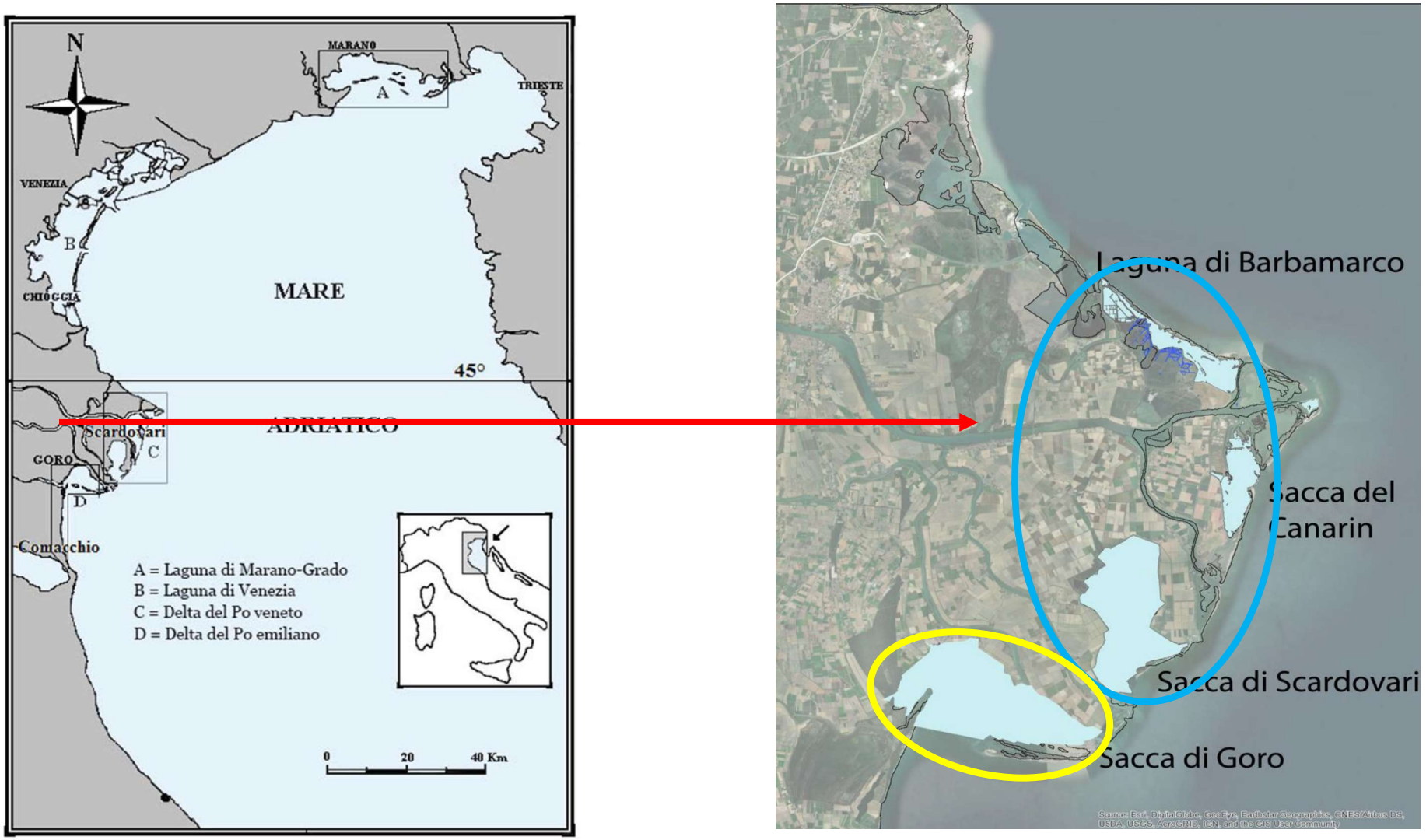


FIGURE 4
Marginal (dark grey bar) and conditional (light grey bar) R2 and the confidence intervals at 95% for predictors of the best model selected by AIC model selection for blue crab occurrence (Mod3) **(A)** and blue crab proportional occurrence (occurrence corrected by population size; ModS3) **(B)**. Significance levels (*$p < 0.05$, ***$p < 0.001$) for all the explanatory variables included in the best model are also shown.

We have studied the expansion of species from the data reported by the main fish markets, referring the catch to the surface of the lagoon(s) associated with each market. This was possible until May 2023, because from that moment on, after the demographic explosion of the species, the quantities fished are not only those delivered to markets, but also those sold directly at the landing point and those delivered to landfills (> 50% of the total).

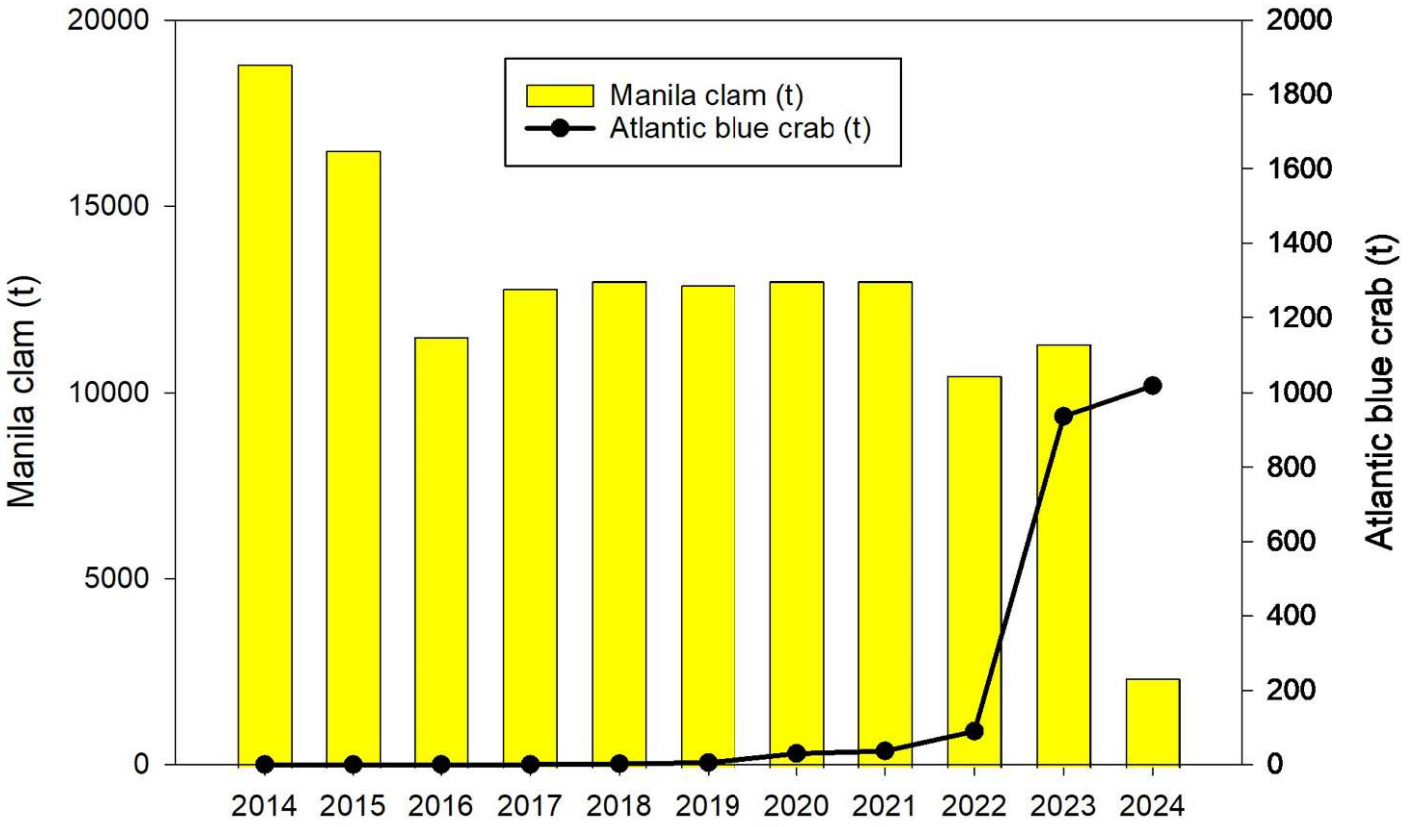


The Po Delta is the most important aquaculture area in Italy for Manila clams, with a total production that was the largest in Europe and the second in the world.

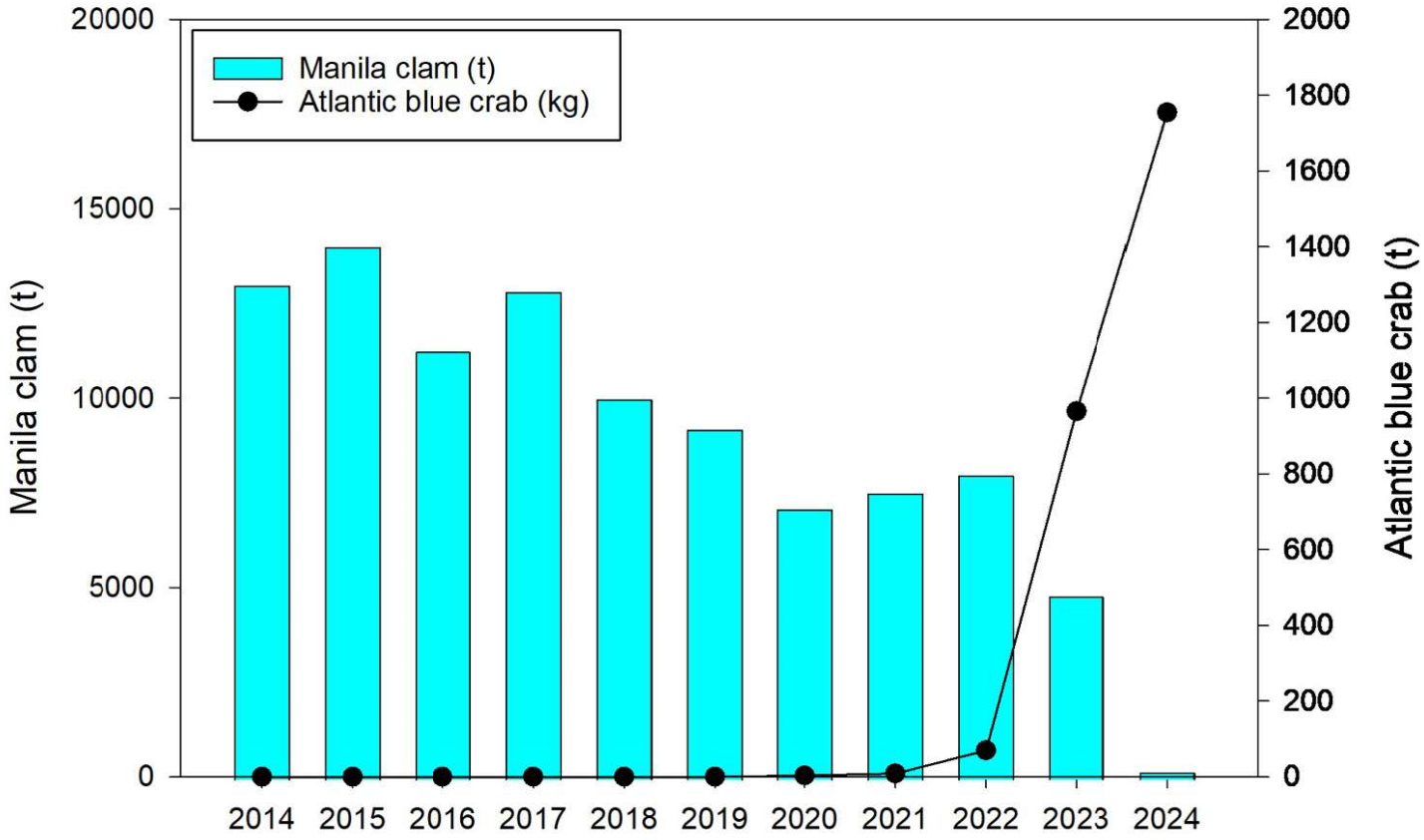


In the Po Delta, in the late spring of 2023, the Atlantic blue crab population literally "explodes". This has extremely serious consequences for the region's most important activity, the cultivation of Manila clams.

In the Goro lagoon, located in the southern part of the Po Delta (Emilia-Romagna region), since 2014 it has been possible to count the total amounts of blue crabs caught, both sold on the market and at landing points, or disposed of in landfills. The total quantities are shown in the graph in relation to the production of Manila clams.



In the lagoons of Scardovari, Canarin and Barbamarco, located in the central part of the Po Delta (Veneto region), since 2014 it has been possible to count the total quantities of blue crabs caught, both sold on the market and at landing points, or disposed of in landfills. The total quantities are shown in the graph in relation to the production of Manila clams.



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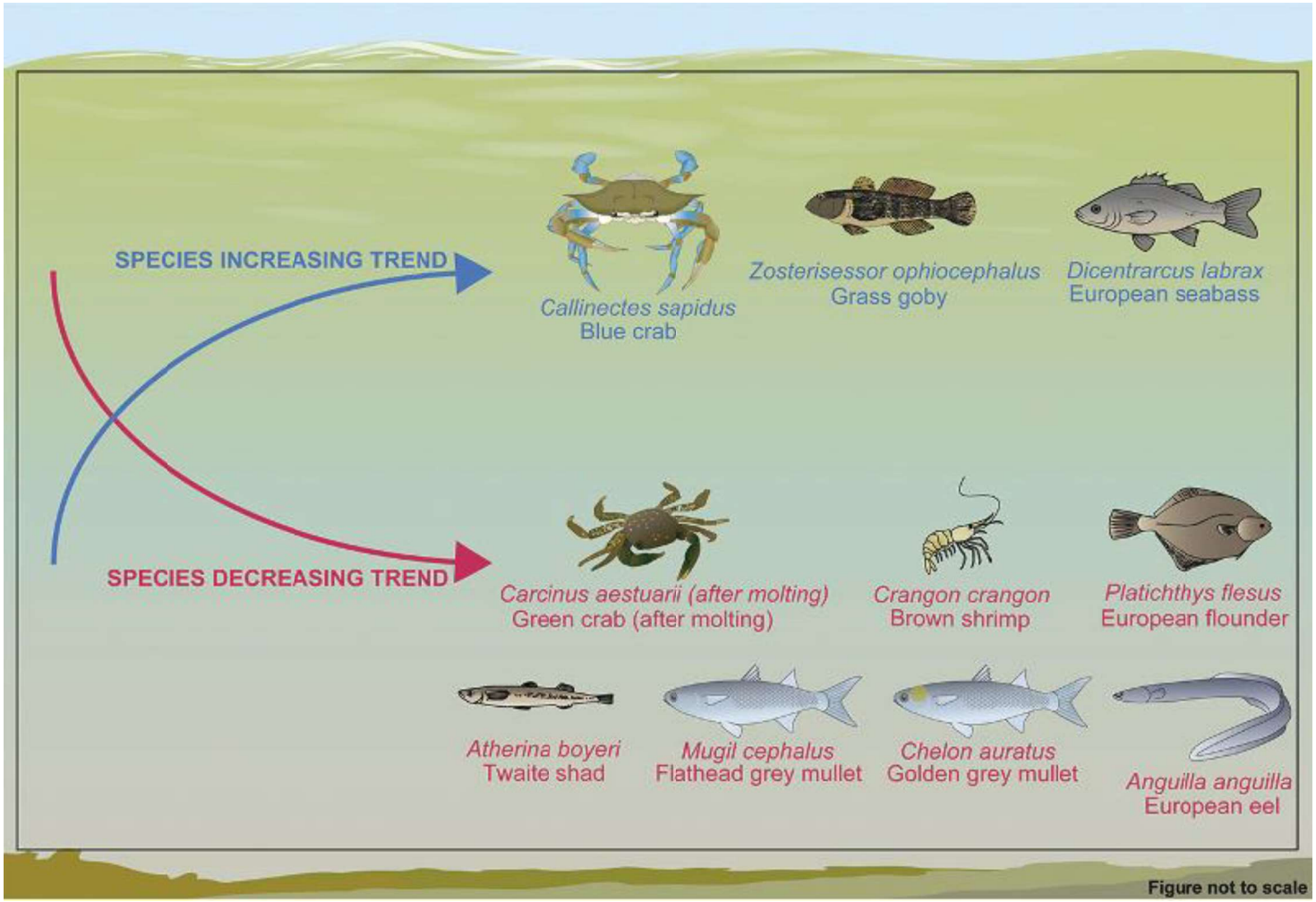

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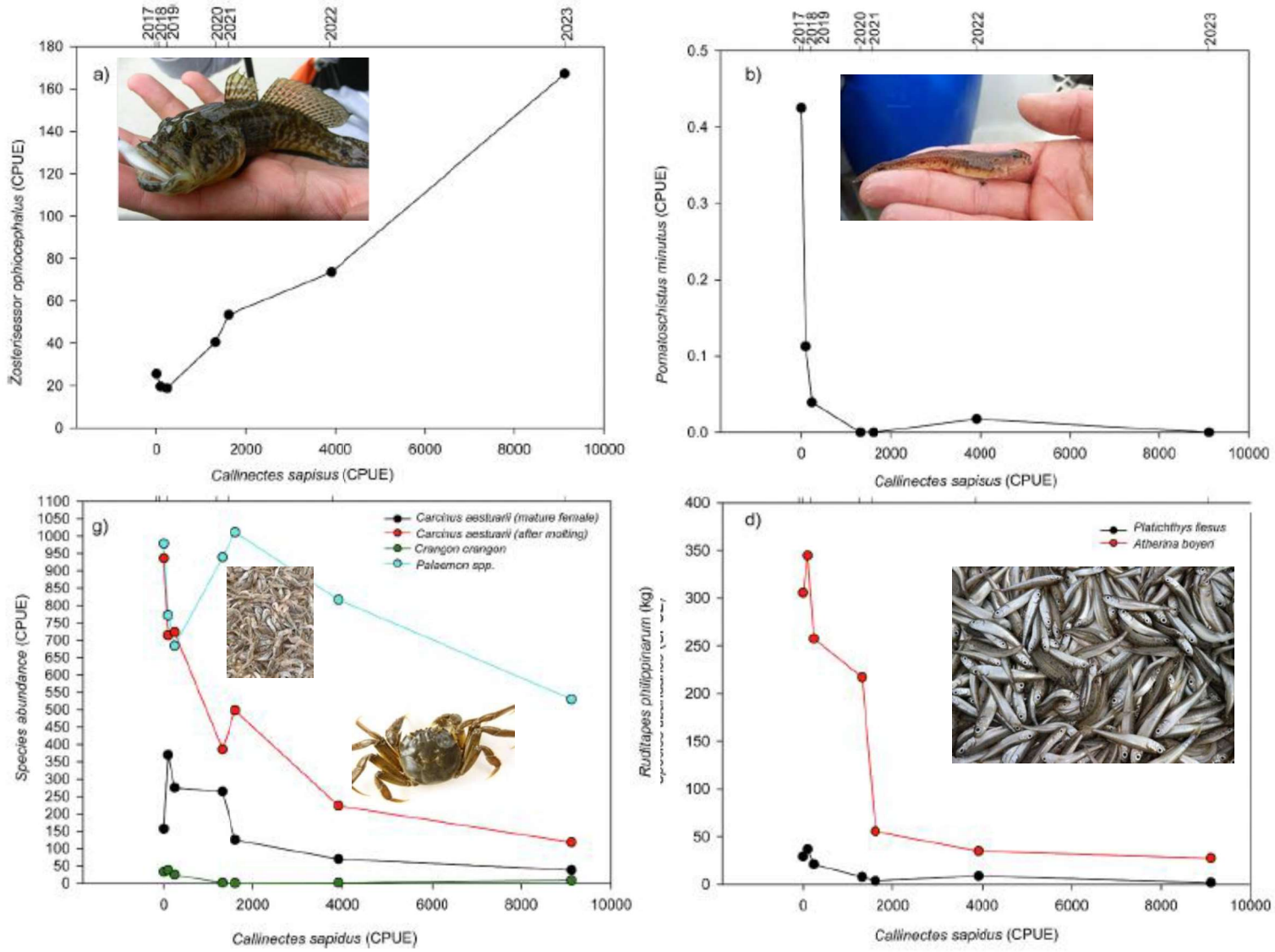

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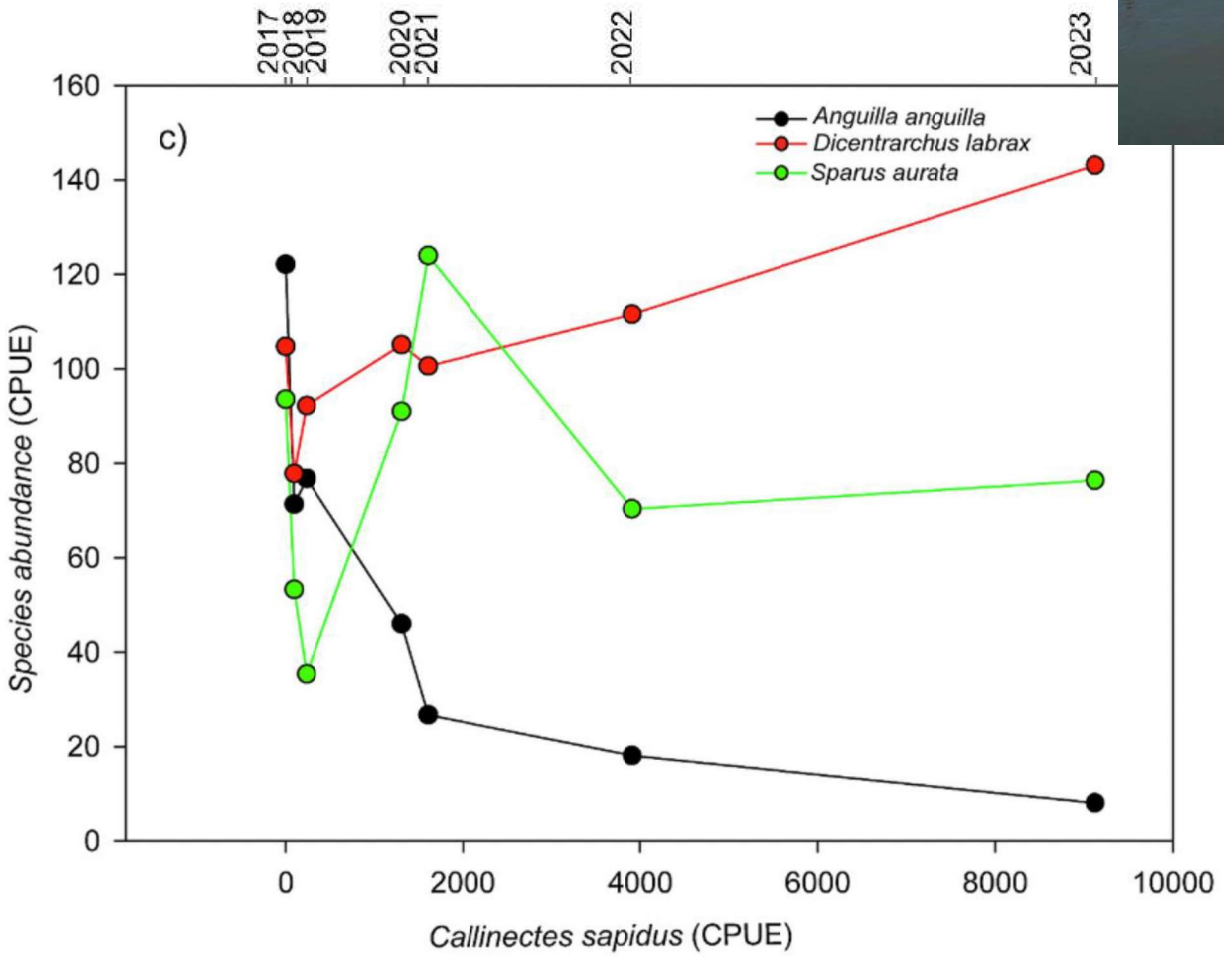

L'orata è la protagonista di questo articolo. La tecnica presa in esame è il Light Drifting, ma ci focalizzeremo in particolare sull'esca impiegata

· Gian Luca Magri

Fig. 5. Annual landing CPUE (kg wet mass by taxa per boat-year) data of Gobiidae (a–b), predator fish (c), lagoon resident species (d), Mugillidae (e–f), Decapoda (g) and Veneridae species (h) related with the blue crab *Callinectes sapidus* CPUE. Years (2017–2023) are also shown in the upper part of each graph. The common names of the species are provided in Table 1.

Summing up and going to conclude

The blue crab invasion is something completely new, a breaking point in the way aquaculture and fisheries have been thought about in the Adriatic for the last 35 years.

The lack of direct sampling data of the blue crab populations penalizes the analysis, but the use of market and containment data can help both analysis and management.

From the data collected and the knowledge of the biology and ecology of the species, well known to American colleagues, and the knowledge of the ecology of Adriatic lagoons, it is concluded that blue crab are likely to remain in the Adriatic and Mediterranean.

In addition to the containment measures that can be taken, the trends in the abundance of the crab and lagoon fish species indicate that the restoration of the components (predatory fish populations) is strategic for the containment of the species, especially in the early stages of development. This requires the implementation of measures to protect some key fish species.