

Sampling techniques evaluation for monitoring and control of a non-native crab population



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INTRODUCTION

The subphylum Crustacea includes the most successful species among aquatic alien invaders. The impacts of invasive alien crustaceans (IAC) are often substantial, due to the complex trophic role of most of these species leading to cascading effects throughout the invaded ecosystems [1].

The rowing crab (*Cronius ruber*), given its biological characteristics and behavior, is a species susceptible to becoming invasive in the ecosystems in which it is established. Since its first sighting in two Gran Canaria locations in 2016 [2], the presence of this species has been confirmed in practically the entire coastline of Canary Islands archipelago.

It remains elusive whether the way we quantify ecological metrics might influence our perception of ecological patterns. Species density may be sampling techniques dependent. This dependence is linked with technique's limitations and species behaviour.

RESULTS

The total abundance of *Cronius ruber* differed between the rocky reef and sandy bottom for all sampling techniques (Fig 2., $p < 0.01$), the highest total abundance of crabs was recorded in the rocky reef.

For the visual census with attractors, a larger total abundance of crabs was archived in rocky bottoms (Fig 2., $p < 0.01$).

When collected through the baited traps, the total abundance was affected by high crab density. The baited traps recorded the lowest densities among techniques in locations with low abundances of crabs (Fig 3., $p < 0.01$).

AIMS

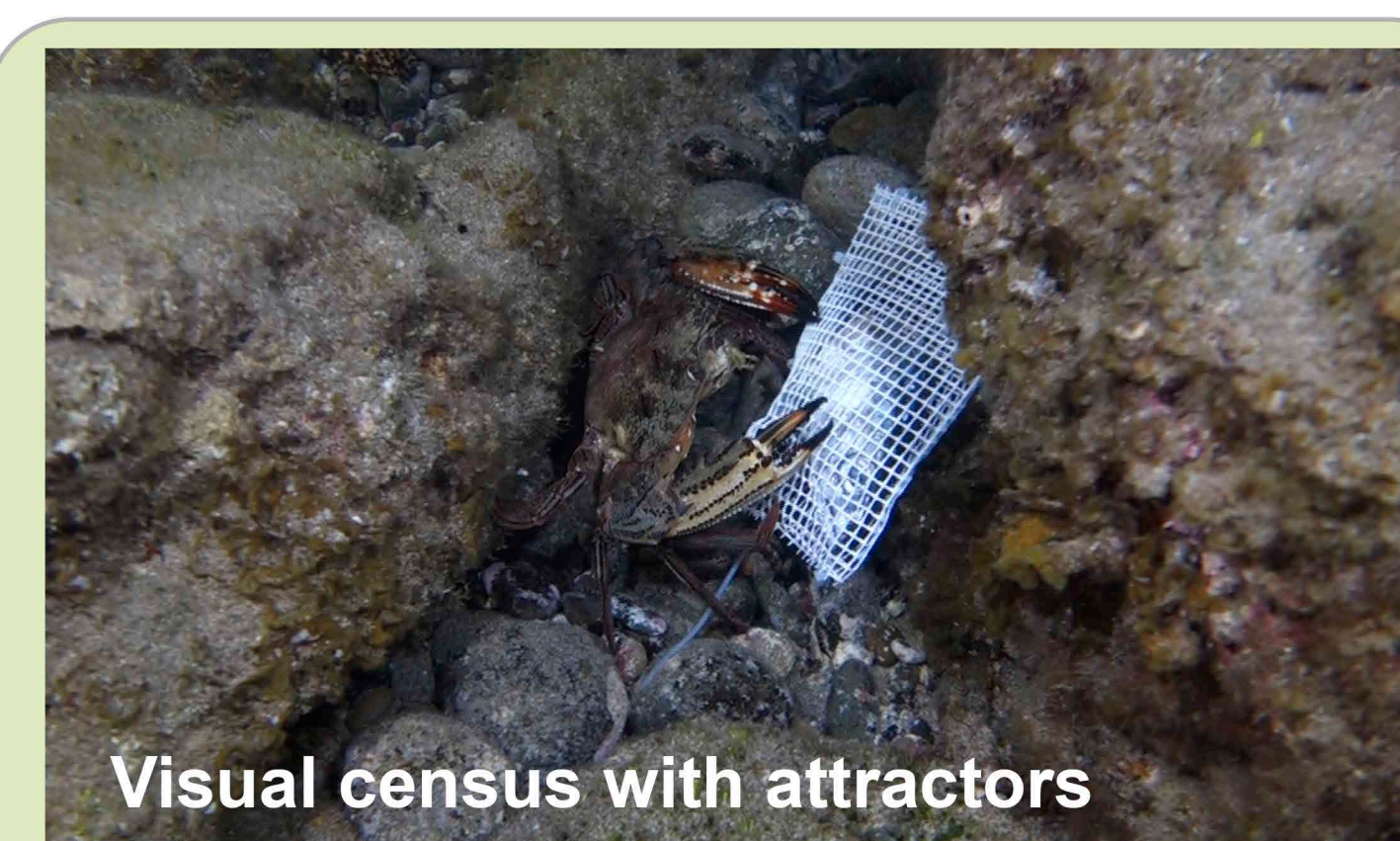
We aimed to determine the effectiveness of different sampling techniques for a control and monitoring of non-native crab *Cronius ruber* (Fig.1)

MATERIALS & METHODS

Four different locations, between 2 and 6 m depth, around Gran Canaria Island were selected. In each location two scientific divers installed 3 fixed transects on a rocky reef and 3 on sandy bottom with seagrasses (*Cymodosea nodosa*). The techniques that we have tested were visual census, visual census with attractors and baited traps. The transects were 75 m² and the effective fishing area (EAF) of each group of baited traps was 1,650 m². In each transept, all the different techniques mentioned were carried out. Due to the nocturnal activity of the species, all the techniques were developed during the night time. The crab densities were compared according to the type of the bottom, and for each sampling technique.



Fig 1. *Cronius ruber* (Lamarck, 1818) from the Canary Islands. Males, dorsal view, greenish (81.20×54.70 mm) and reddish (68.53×43.86 mm) colour pattern.



Visual census with attractors



Baited trap in sea grass meadow



Baited trap in rocky reef

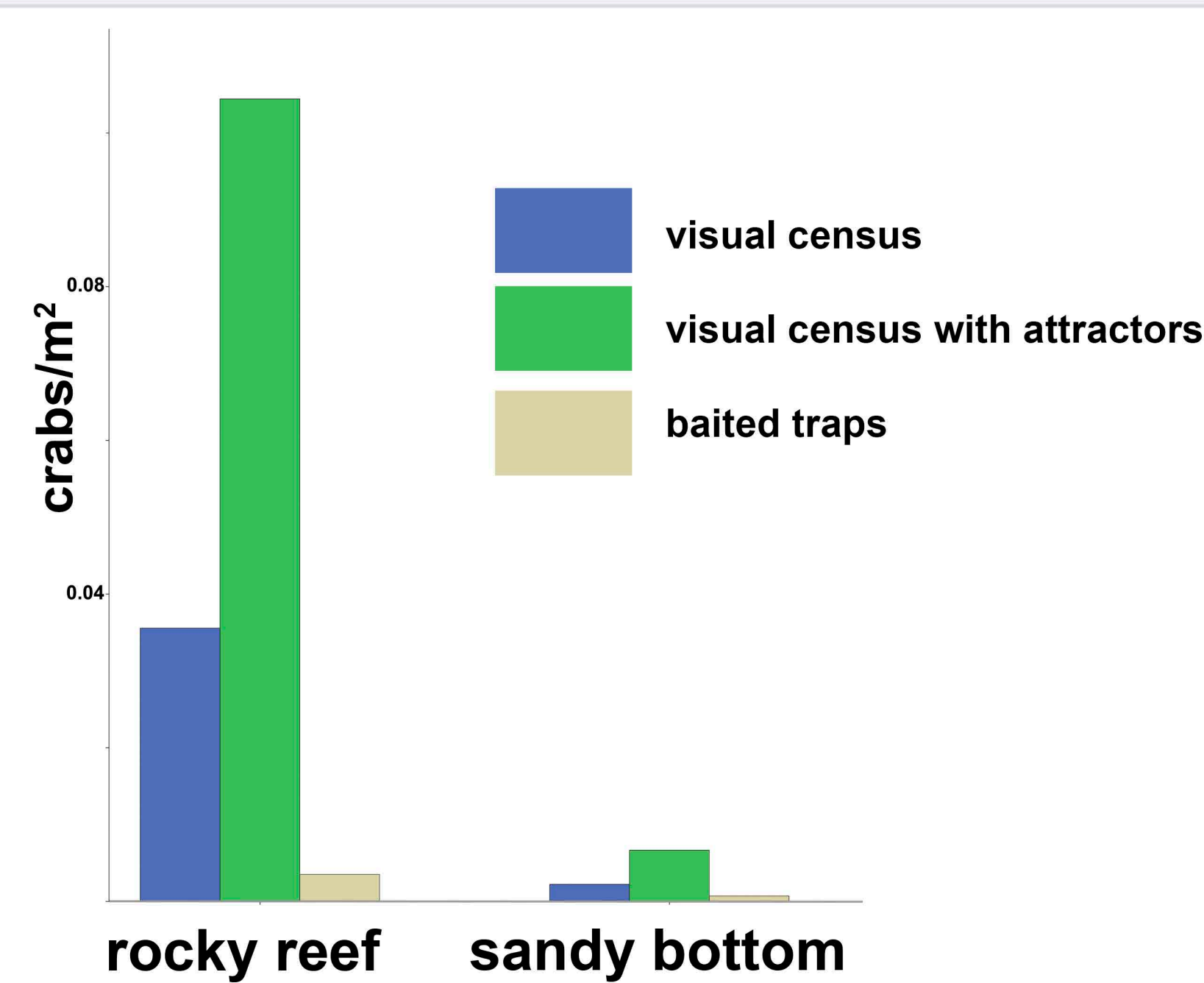


Fig 2. Abundance of *Cronius ruber* in the rocky reef and sandy bottom for all sampling techniques.

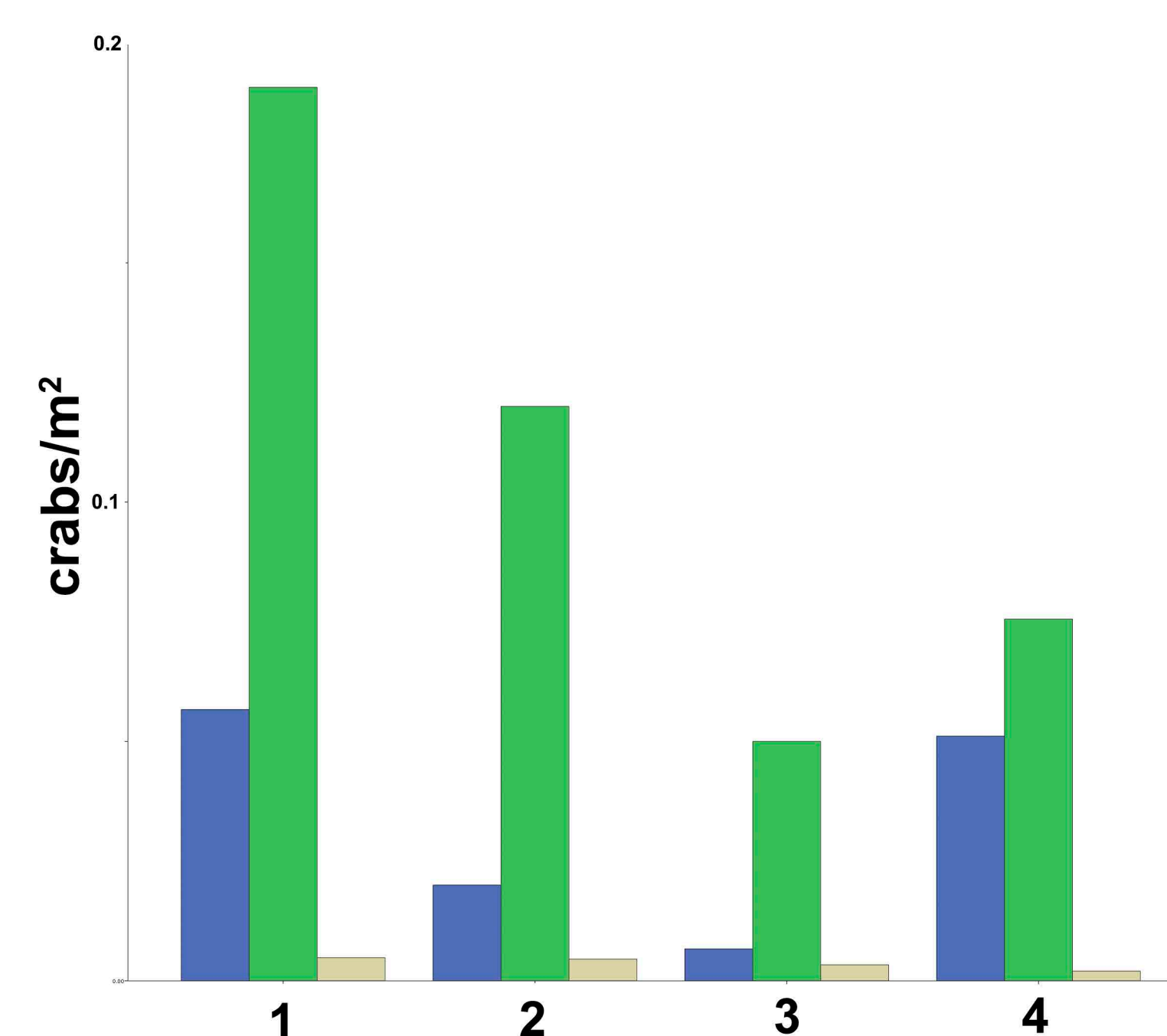
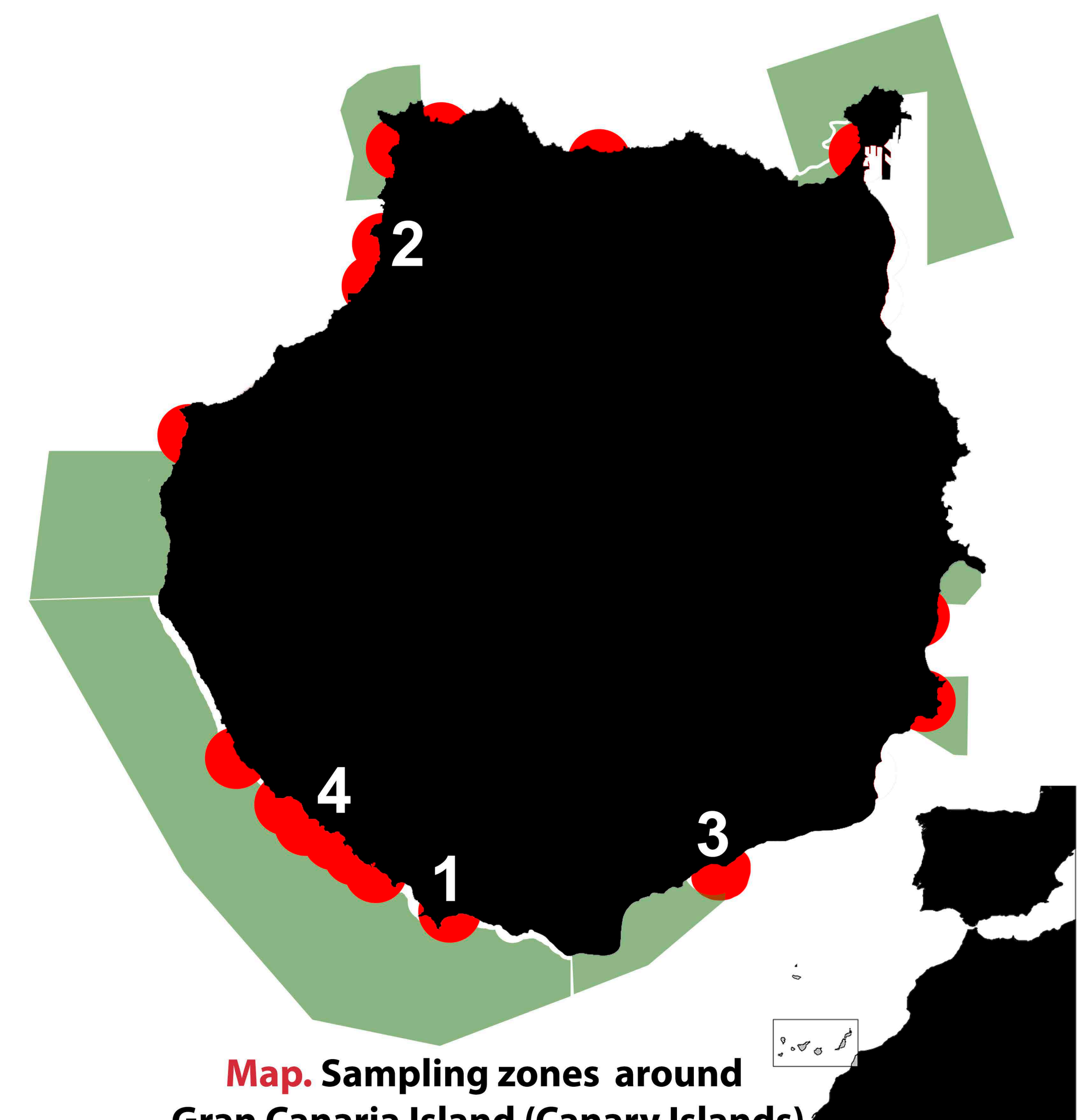


Fig 3. Abundance of *Cronius ruber* in each sampling zone and for all sampling techniques.



Map. Sampling zones around Gran Canaria Island (Canary Islands)

FUTURE STEPS

- 1 Determine the main ecological characteristics of *Cronius ruber* to assess its potential as a colonizer
- 2 Impact of *Cronius ruber* on habitats of special protection and effects on native species
- 3 Proposal of possible control measures.

REFERENCES

- [1] Hänfling et al., 2011.
[2] González et al., 2016.

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