

The Gulf Of Dolphins: a multi-stakeholder project at the service of the bottlenose dolphins conservation

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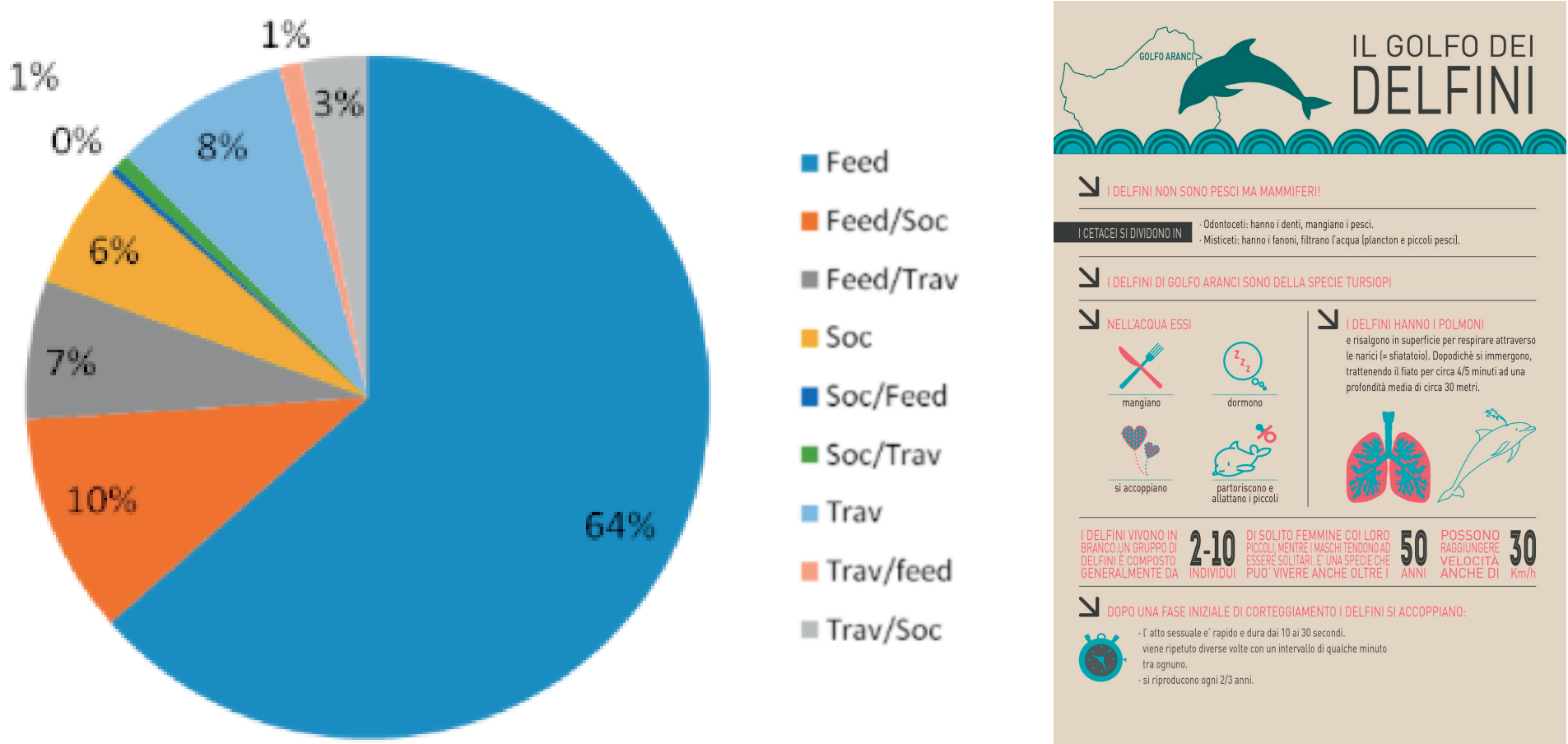
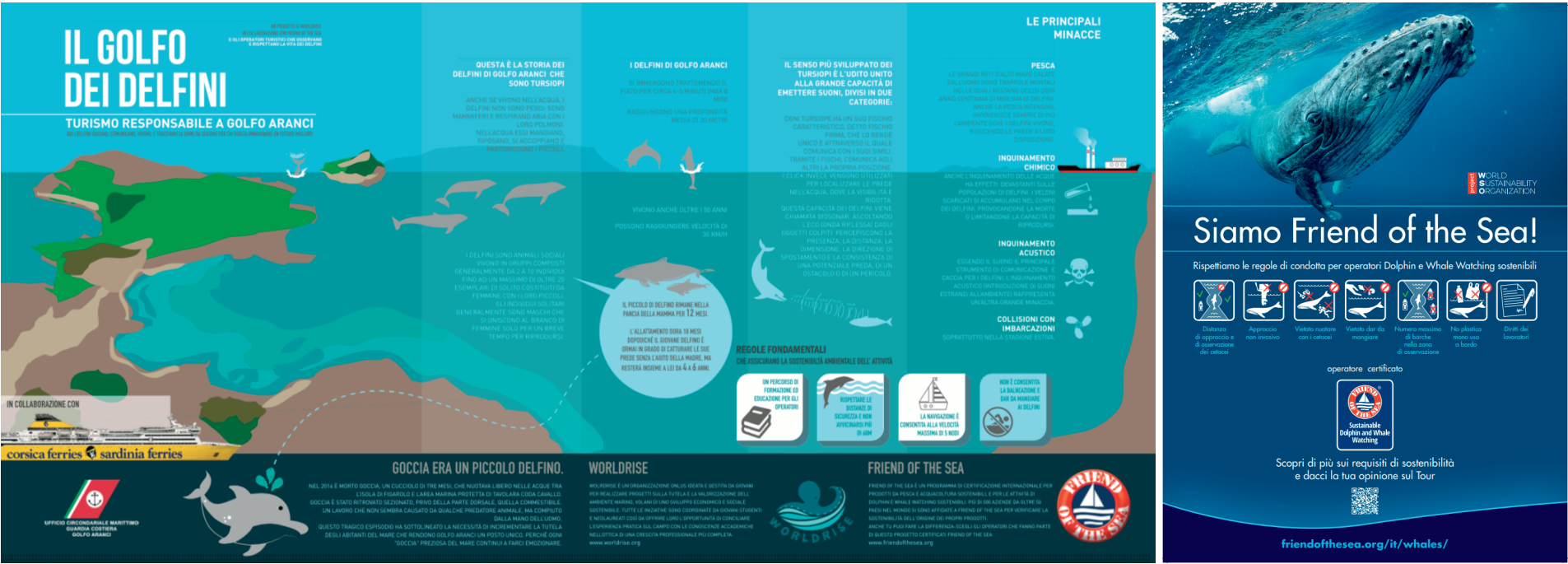
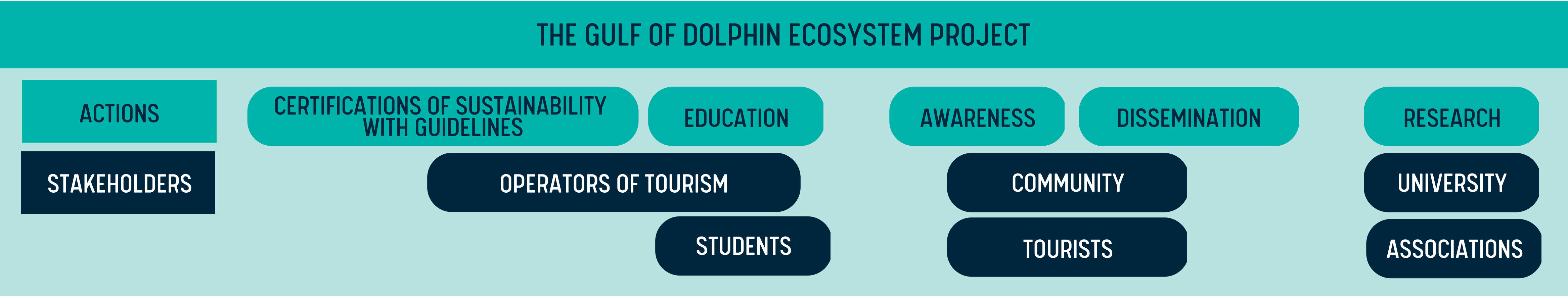
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INTRODUCTION

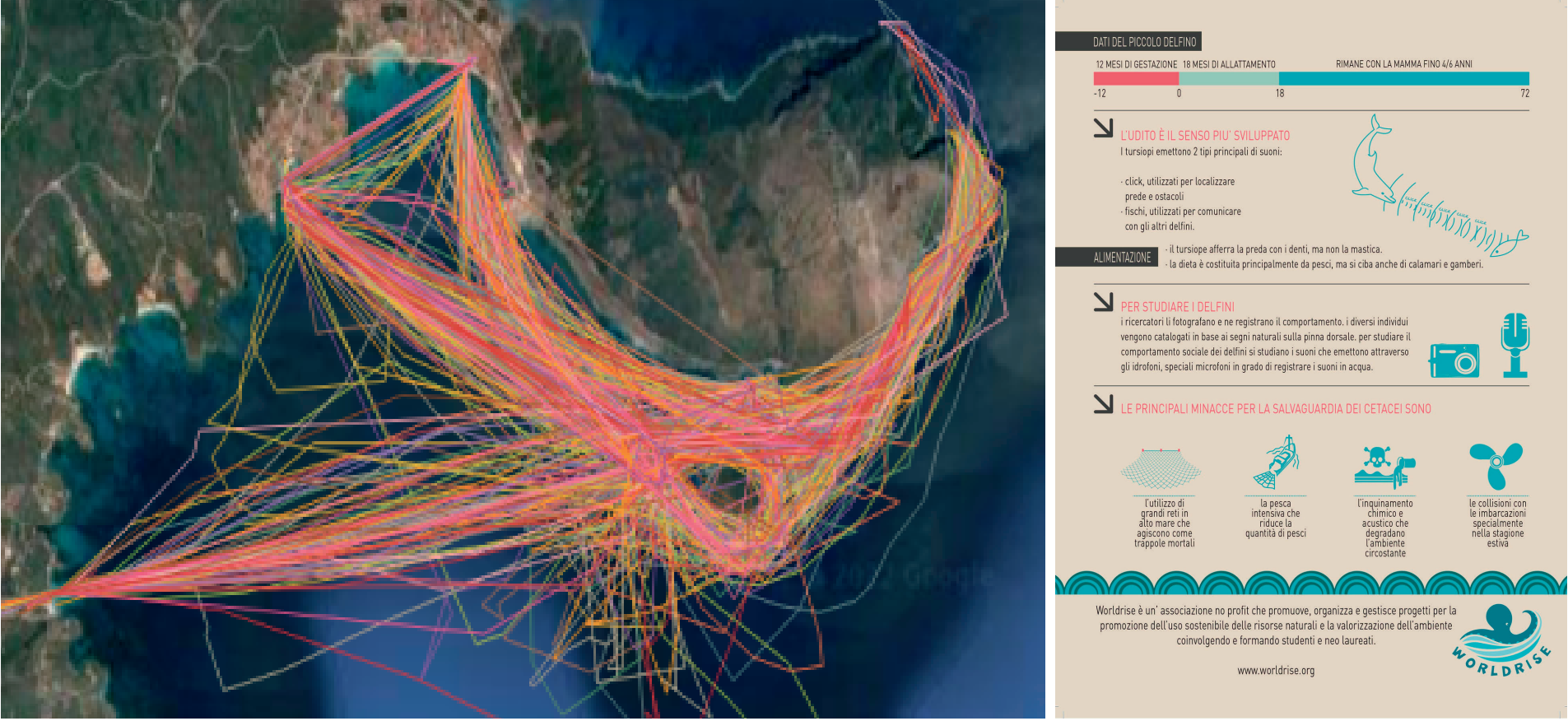
The fish-farm in Golfo Aranci (Sardinia) is an attractor for bottlenose dolphins (*Tursiops truncatus*). The dolphins presence in the gulf is so frequent that, over the years, locals have activated an economy based on dolphin watching. In Italy dolphin and whale watching activities, outside Marine Protected Areas and the Pelagos Sanctuary, are not regulated. Individuals are exposed to numerous threats such as noise pollution and vessel traffic (Bejder & Samuels, 2003; Nowacek et al., 2007). Ferry transit does not seem to affect their presence (Minnucci, 2023). In this context, "The Gulf of Dolphins" works to transform dolphin watching into a sustainable activity, to implement a green management in an unregulated area.



THE GOLFO ARANCI COVE: CAN IT BE A POSSIBLE NURSERY AREA FOR BOTTLENOSE DOLPHINS?

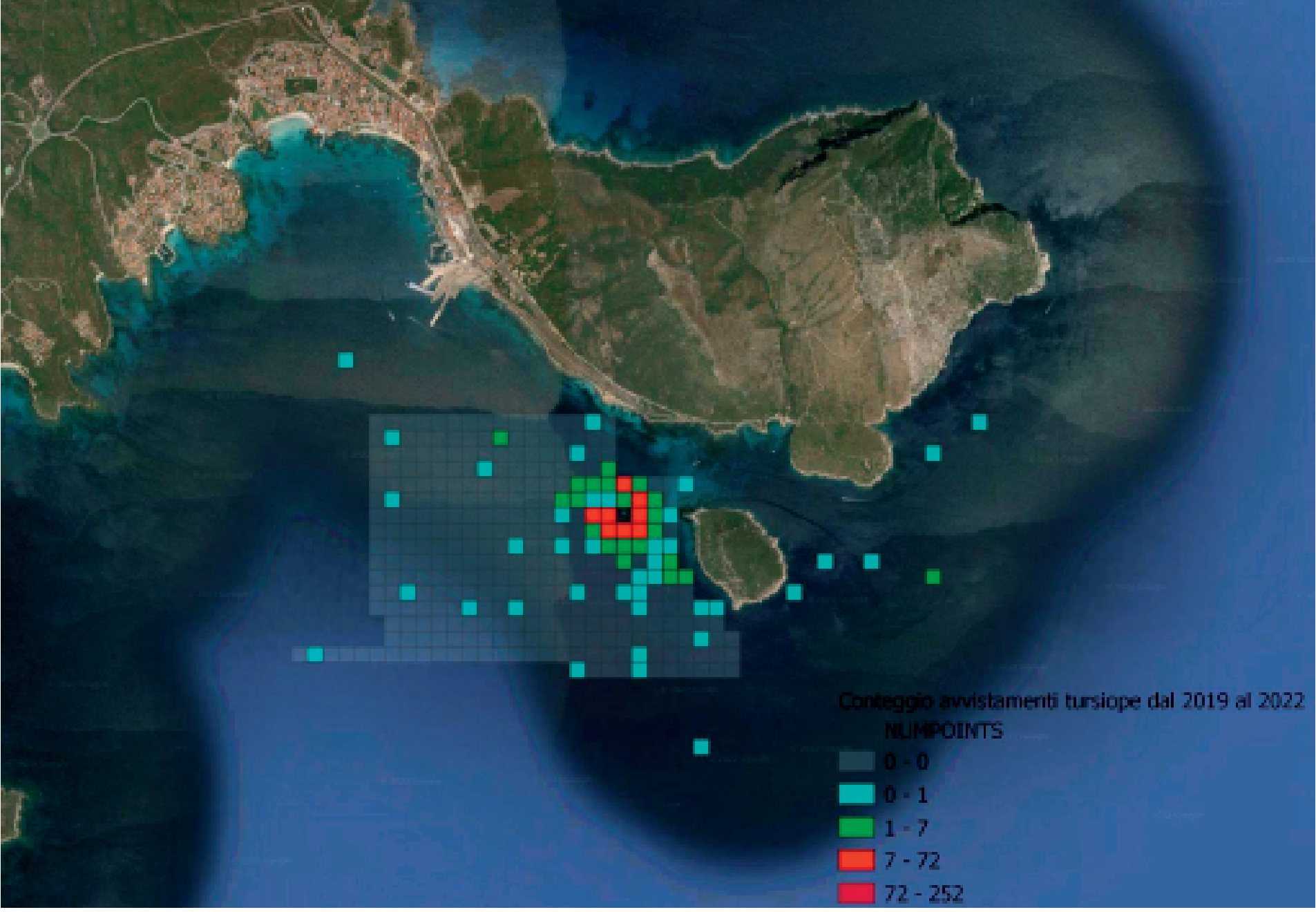
MATERIALS AND METHODS

The coordinates of the study area are long 9.58-9.70; lat. 41.01-40.97. The data have been collected by students, extensively trained and embarked on the opportunity platforms (inflatable rafts of the network SDW during tourist excursions) in a fixed line transect. Each sampling was recorded via GPS in summer seasons (June-September) from 2019 to 2022 with good sea conditions. The Encounter Rate [(n° sightings tot/n°Km on effort) %] and the effort calculations (n° km tot was traveled inside the study area) were calculated using the QGIS 3.16.16 software. During the sightings, dolphins were photo-identified and collected on the designated catalogue. For each individual identified, its association with a calf was evaluated. In the case of calves presence in a pod (< 10 individuals sighted) all adults were assigned the association with a calf (simple 1) and for each one its residency was calculated by Resident Rate [(n° of months in which the individual was sighted/total months of sampling)]. The Residence Rate index was also calculated for individuals who don't sightings with the calf (simple 2). With the open source calculator (Social Science Statistics), the Mann-Whitney U test (two tails) was applied comparing the categories of the two samples: individual sightings with a calf and individual sightings without a calf. Additionally, during all sightings the dolphin behaviour (feeding, traveling, socialising) was recorded.



RESULTS

The study area consists of 7.37 square nautical miles, and the sampling effort on operators boat's in 2019-2022 amounts to 4.060 km traveled covering the entire cove. In 4 years (included Covid-19 period) 107 individuals were identified out of 377 sightings, with a 93% encounter rate. The individuals associated with a calf are 73, recaptured up to a maximum of 21 times, while the individuals sightng without calf are 34, recaptured up to a maximum of 3 times. The values of Mann-Whitney U test showed a significative results (p < .01): The U-value is 875, the Z-Score is 3.598, and the p-value is .0,0034. The picture show the thematic map with the dolphin sightings (2019-2022) in to the study area. High-ranking values showed around the fishfarm, who suggested an it's attractive role on dolphins presence. The resident rate values obtained, were divided into 3 categories (Vanacore et al, 2021): resident, frequent and sporadic. The table shows the values reported. In the pie chart are visible the portions of the dolphin's behavior (%) in the study area.



CONCLUSIONS

The sustainable tourism project is most certainly a source of useful information for monitoring the protected bottlenose dolphin species. In three years, 107 individuals of bottlenose dolphin were identified in the study area. The data obtained show the presence of individuals from a large population distributed over a wider range. The presence of the fishpond is likely a certain food source that attracts many individuals and supports a small resident core of females with calves. However, further survey tools are needed to be able to refine the recognition of reproductive females.

REFERENCES

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