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Thesis title: *Modelling potential distribution of coastal cnidarian jellyfish (Scyphomedusae, Cubomedusae) in Tayabas Bay using citizen science data*

ABSTRACT

Cnidarian jellyfish are notorious for their impacts in fisheries and tourism due to their blooms and stings. They provide beneficial services including high aesthetic value for tourism and food source for both humans and marine organisms. Jellyfish also bring negative consequences such as life-threatening sting incidents of tourists and fishermen and enormous blooms that clog power plant intake systems resulting to large-scale blackouts. Despite importance of jellyfish, accurate information on managing these impacts are lacking in the Philippines, which entails determination of their distribution in the country. This study aims to examine spatio-temporal distribution of coastal cnidarian jellyfish (scyphozoans and cubozoans) along municipal waters of Tayabas Bay, Philippines. Specifically, this study will create species distribution models (SDMs) of coastal cnidarian jellyfish using citizen science distribution data and remotely-sensed environmental data. SDMs of jellyfish across various taxonomic levels (genera, order, class, and 'jellyfish' as a whole) within 10-km coastal waters and with 1x1 km spatial resolution will be constructed using Genetic Algorithm for Rule-set Predictions (GARP). These models will be evaluated using Area Under the Receiver Operating Characteristic Curve (AUC-ROC) test. Relative contribution of environmental variables to these distributions will be assessed using Jackknife Analysis. Jellyfish dataset will be obtained from Facebook public photos of jellyfish in Tayabas Bay uploaded within 2015-2019. These will be compared statistically across years, months, and quarters to select temporal resolution of SDMs. Remotely-sensed environmental data will be obtained from online sources such as ERDDAP and Google Earth Engine. Resulting distributions will be validated through a questionnaire survey to be answered by residents of coastal barangays along the bay. Results from this study can be used as baseline data in planning jellyfish impact management strategies and future studies on their biology and ecology.

Keywords: jellyfish, cnidaria, coastal, species distribution modelling, remote sensing, citizen science, Tayabas Bay