“Oceanographic and socio-economic factors affecting the spatio-temporal patterns of small pelagic fish fishing grounds in the Philippines”

Accurate mapping of fishing activities is largely restricted to developed countries with sufficient resources to use Automated Identification Systems and Vessel Monitoring Systems. For most developing countries, the spatial extent and boundaries of fishing grounds are not completely known. Nighttime satellite images provide a unique opportunity to define these core fishing areas for fisheries that utilize powerful lights to attract small pelagic fishes. We used NOAA’s nightly boat detection data for the Philippines from 2012 to 2016, covering 1,696 nights, to fill in data gaps in spatio-temporal patterns of fishing activities in this country. Using a density-based clustering algorithm, we identified 145 Core Fishing Areas (CFAs) ranging in size from 8 to 22,000 km² within the Philippines’ Contiguous Maritime Zone. The CFAs had different seasonal patterns and range of intensities in total light output, reflecting differences in multi-gear and multi-species signatures of fishing activities in each fishing ground. We analyzed the factors that explain the selection of these fishing grounds and the implication of future climate change on these small pelagic fish fishing areas.