

# **Coral reefs mapping using photography by parasailing- A feasibility study: Kish Island, Persian Gulf**

Project manager: **Keivan Kabiri**

Contributor: **Hamid Rezai Marnani, Masoud Moradi**

## **Abstract**

A novel technique of aerial photography was examined using parasailing for mapping the coral reefs located in the coastal waters of Kish Island (central north of the Persian Gulf). A total number of 11 overall and 96 overlapped aerial photos were taken (6 overall and 67 overlapped were selected to use) and then were mosaicked and geo-corrected using ENVI<sup>®</sup> 5.1 image processing software by considering 8 pre-located diving buoys as ground control points. Afterwards, the corrected overall photos were stitched and used to produce a schematic map while the mosaic was digitized by applying a manual on-screen digitizing method in AutoCAD<sup>®</sup> raster design software, and a GIS-based topological thematic map was generated as output. The final results revealed that the method is applicable to map the coral reefs, while the ability to distinguish coral types by visual interpretation is the most advantageous factor for the proposed technique. Particularly in the studied area, an area ~4500 m<sup>2</sup> comprising *Porites* and *Acropora* spp. as dominant coral genus could be mapped. Additionally, the low cost, quick and easy to manage and implementation, as well as producing precise thematic maps are considered as advantages of applying the proposed technique, in comparison with other alternative methods such as satellite imagery and field observations. In contrast, the limitation of this method is to use it in remote regions or areas with high turbid waters where it is not possible to interpret the coral types visually on the photos.

**Keywords:** Coastal mapping, Close-range photography, Remote sensing, Benthic habitats, Coral reefs