

MARINE BIODIVERSITY AND RESOURCE UTILIZATION OF CORAL REEFS AT VINH HY

Similar to Bai Thung, Vinh Hy lagoon also supported a largely distribution of coral reefs (Hua Thai Tuyen *et al.*, 2011). The lagoon is considered as an important place for marine conservation, tourism and fisheries. In order to have a baseline for establishment and management at this location, a comprehensive assessment is considered as a necessary step.

Establishment of a baseline data was conducted through mapping of major marine habitats, assessing status of coral reefs and resource utilization and conservation potentials of Vinh Hy lagoon. Mapping of major habitats was carried out using available data on distribution of marine habitats previously surveyed in 2011 under framework of UNEP/GEF project (Hua Thai Tuyen *et al.*, 2011) and remote sensing data. A detailed assessments of marine biodiversity were conducted at 2 sites locating at Bai Cau (11°71404 & 109°20111) and Bai Coc (11°71775 & 109°20393) in March 2013 following the manual for tropical surveys (English *et al.*, 1997) and reefcheck (Hodgson and Waddell, 1998). Assessments of resource utilization were implemented in March 2013 through a local consultation with involvement of 14 peoples (fisheries local managers, fishers, buyers and farmers) from Vinh Hy village. Some major results are summarized as the followings:

- Coral reefs are major habitat distributed in small embayments along the coast in the north and south of Vinh Hy Bay at depth of less than 10m. A total area of coral reefs was 5.8 ha, mainly located at Bai Coc (0.77 ha), Dam Dang (1.84 ha), Bai Cau (0.81 ha) and Yen Cape (2.38 ha).

- Coral reefs supported a high level of diversity of communities with 96 species (42 genera and 14 families) of hard corals, 86 species (52 genera and 24 families) of reef fishes, 35 species (29 genera and 20 families) of macro-invertebrates (25 species of molluscs and 10 species of echinoderms) being recorded. Some families of corals were Faviidae, Acroporidae, Fungiidae, Poritidae và Pocilloporidae; fishes were Labridae, Pomacentridae, Chaetodontidae, Scaridae and Acanthuridae; molluscs were Muricidae, Trochidae and Strombidae; and echinoderms were Diadematidae and Toxopneustidae. In general, Bai Cau supported a higher species of the reef species mentioned above compared to that of Bai Coc.

- Status of coral reefs were not generally in good conditions with mean cover of hard corals ranging between 16.3 – 40.6% with some dominant genera including *Fungia*, *Acropora*, *Stylopora* and *Porites*. Covers of rock and rubble corals ranged between 13.1 – 42.5% and 20.0 – 34.4% respectively. Most of reef associated resources are heavily harvested, of which small fishes (< 20cm) with low value of ornamental group (damselfishes, wrasses, butterflyfishes), molluscs (Muricidae and Turbinidae) and sea urchins (Diadematidae and Toxo), whereas target fishes with large sizes of fishes and macro-invertebrates were recorded at very low densities.

- Fishing is a major activity found at Bai Thung with 6 fishing gears (hookah diving, hook and line, lobster lift net, barrier net, trammel net and small fixed net) and more than 38 boats, 210 round bamboo boats. Annual total of catch and revenue were about 767.6 tons and 16 billions VND, of which 741.5 tons and 14.6 billions came from fishes, 26.1 tons and 1.5 billions from molluscs, 95.000 seeds (lobsters and groupers) and 6.5 billion from

crustaceans. Besides, tourism and lobster aquaculture are also operated in this location.

- Over-fishing, degradation, presence of coral eating predators (COTS and *Drupella* snails), pollution and sedimentation, uncontrolled tourism and conflicts between stakeholders in utilization of marine resources have been considered as current and potential impacts to coral reefs and environment at Vinh Hy lagoon and adjacent waters.

Implementation of comprehensive solutions including : 1) Rearrangement of fishing capacity ; 2) Development of zoning plan for sustainable uses of space and resources; 3) Restoration of degraded reefs; 4) Prevention of pollution; 5) Development of appropriate mechanisms to collaborate and share responsibilities among resource users; 6) Raising awareness of public communities on protection and conservation of marine resources and environment; and 7) Establishment of long-term financial mechanism are considered as appropriate measures for maintenance and sustainable uses of resources and environment at this location.