

# Blue Carbon Workshop – the Role of Coastal ecosystem in climate change mitigation and adaption (March 20- 21, 2017)

## KAUST Mangroves: Rehabilitation and Conservation

KAUST Health, Safety and Environment Department

### ABSTRACT

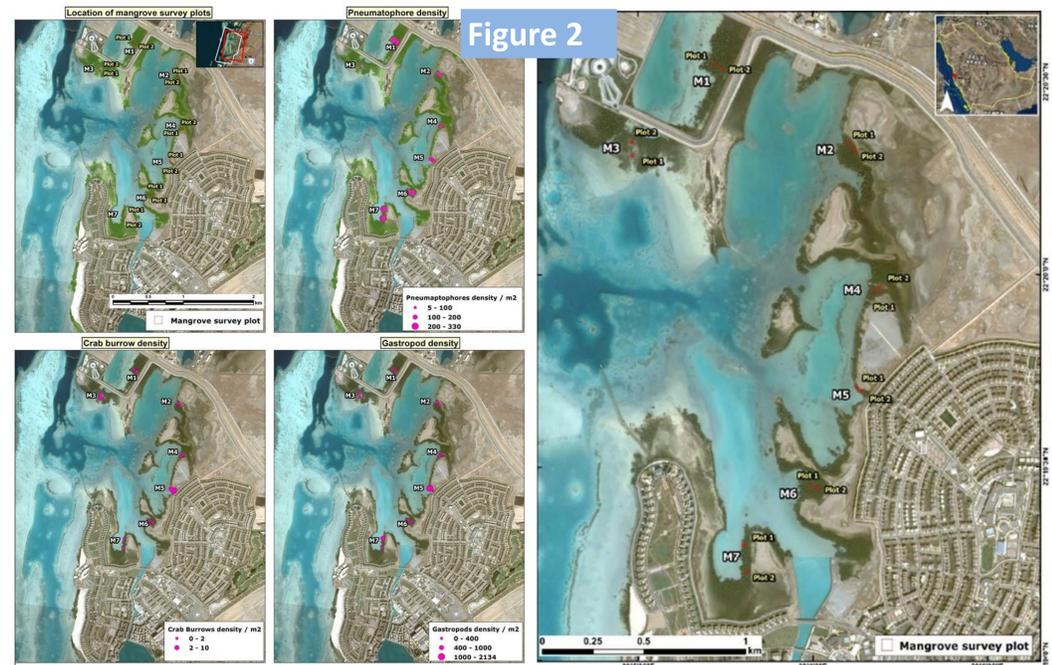
Protecting the precious marine environment surrounding King Abdullah University of Science and Technology (KAUST) is one of the key guiding principles of KAUST's Environmental Stewardship Policy. KAUST Health, Safety and Environment Department (HSE) is chartered with the management of environmental impacts of KAUST operations and new developments, including the marine environment. In carrying out its mandate, HSE adopts an integrated Environmental Management System approach to ensure habitat protection and sustainable use of marine resources.

KAUST shoreline hosts a healthy mangrove ecosystem. Mangroves rehabilitation and conservation is an integral part of KAUST environmental protection program managed by HSE Department.

A recent marine environmental study conducted by HSE Department has identified a net positive increase (16 hectares – about 20 %) in the total KAUST mangroves area when compared with the pre-construction mangrove area in Figure 1.

This expansion is largely due to the extensive natural colonization of seedlings and saplings in almost all nearshore areas adjacent to existing mangrove stands and by successful KAUST mangrove afforestation program. In the past years, KAUST team planted almost 150,000 sapling at various selected locations within KAUST. These afforestation projects, proved effective in compensating for the losses during the development phase (Hanan et al 2015).

In this study, in addition to mangroves coverage assessment; a number mangrove health indicators, e.g. plant growth: height, girth, and the presence of fruit, pneumatophore density, as well as commonly occurring gastropods and crabs were identified, Figure 2. Mangrove density varied considerably between study areas, influenced by the location of the survey plots, the depth and type of substrate overlying the rock platform, as well as factors related to hydrodynamics.



Within the mangroves, counts of pneumatophores, crab burrows and gastropods were also recorded as the basis of future monitoring of mangrove 'health'. The densities varied considerably between areas, influenced by the location of the survey plots, the depth and type of substrate overlying the rock platform, as well as factors related to hydrodynamics.



Overall there has been a net increase (around 20%) in mangrove area. This expansion is largely due to the extensive natural colonization of seedlings and saplings in almost all nearshore areas adjacent to existing stands and by successful KAUST mangrove afforestation program.

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Mangroves Area Comparison (hectare)		
Sub-Plot	2005	2016
1. King Abdullah Monument	22.3	26.8
2. Around Island Houses	11.9	29.9
3. Around Garden Houses	34.7	33.7
4. South of KAUST	6.3	1.7
Total	75.9	91.2

### Health, Safety and Environment Department

KAUST Health, Safety and Environment Department (HSE) is part of Office of Executive Vice President for Administration & Finance, and is responsible for fostering a culture of health, safety and environmental protection among KAUST community by providing leadership and guidance related to HSE.

Environmental Protection division of HSE is the custodian of the University's Environmental Stewardship Policy that calls in part University's "operations and new developments should be a model of global environmental responsibility." KAUST efforts in this regard has been recently recognized with ISO 14001 Environmental Management System certification.

Environmental Protection division of HSE office can be contacted: [environmentmatters@kaust.edu.sa](mailto:environmentmatters@kaust.edu.sa)

### KAUST Mangrove Habitat Facts

Recent HSE led marine study found;

- KAUST hosts more than 91 hectares of mangrove area.
- Avicennia marina* is the predominant marine species.
- Young, dense and sapling stands of mangroves with large numbers of mid-sized tree of 2-3 m are abundant within KAUST.
- Larger mangrove trees are restricted to mid-intertidal zones, with the tallest trees reaching 4–5 m in height.