Project Update: January 2016

- I shifted the plan of this month, where i started with feeding ecology survey in two sites while the last questionnaire survey will be done next month.
- Boat and coastal survey was done at Wadi El Gemal area to detect the dugong area through recording its feeding trails on seagrass beds.
- SCUBA diving was conducted to collect the data for characteristics of feeding sites and foraging methods in two sites:
  1- Shams Alam Beach 24°41'28.41"N and 35° 5'8.17"E
  2- Torpha North 24°39'42.93"N and 35° 6'39.35"E

(A) Characteristics of feeding sites

1. Sediment characteristics:

- The substrate in which seagrass grow could be important to the bottom feeding dugongs for two reasons. Firstly, the type of sediment can determine microbial activity, oxygen content and levels of nutrients availability. The dugongs may benefit by feeding selectively on seagrass with relatively high levels of otherwise limiting nutrients.
- Secondly, the physical characteristics of the sediments may determine the ease with which dugongs can grub the seagrasses.
- An index of sediment compaction was obtained by measuring the resistance of the surface sediment to vertical penetration. The 'penetrometer' consisted of a 1.2m by 1cm, round-tipped, stainless steel rod. The rod was fired vertically into the sediment by the release of a stretched surgical rubber band. The stretch of the rubber, and the height above the sediment from which the rod was fired were rigidly standardized and the 'penetrometer' was always completely submerged. Sediment compaction was measured by the distance of penetration. Penetration was determined at 10 haphazardly located positions at each site.

2. Abundance of seagrass:

- Initially the abundance of seagrass was estimated as the percentage cover. At each site, two 20 m rope transects were laid. Seagrass abundance was assessed in 10 quadrates (0.25 m^2) located at 2 m intervals along each transect (20 quadrates/ site). Total cover, and relative abundance of each species were estimated in each quadrate. If the seagrass in a quadrate had been affected by recent dugong feeding, the quadrate was moved laterally until an intact area was sampled.
- When seagrass abundance was based on shoot density only, a 0.0225 m^2 quadrat (0.15 m x 0.15 m) was used.
- I used 0.25m^2 quadrate and design another two smaller sizes using small rope (0.15m^2 and 0.1m^2) in the same quadrate (i.e. 3 in 1) to facilitate the data collection and save time.

(B) Foraging methods:

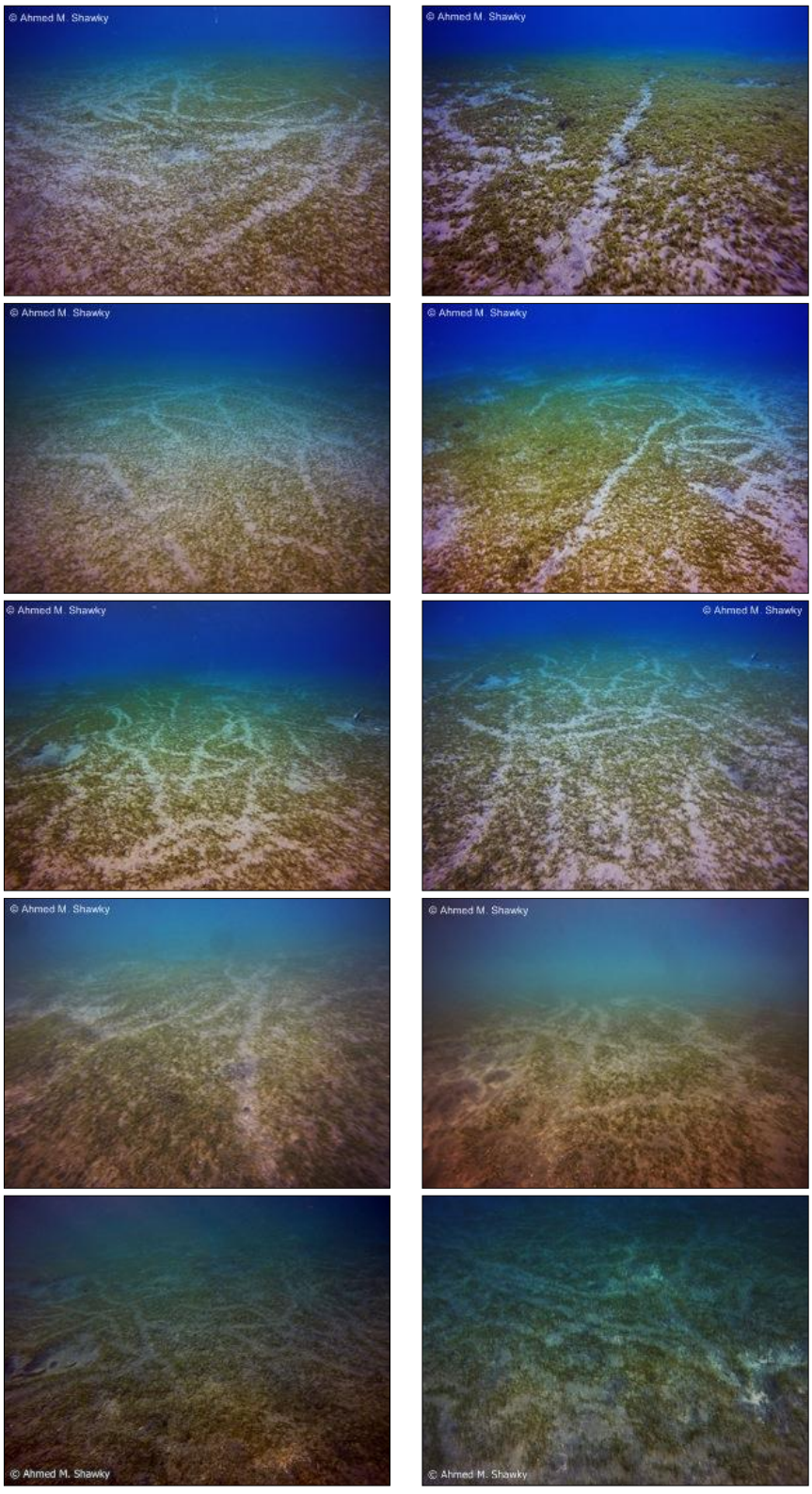
1. **Feeding trail dimensions:**

- The density of feeding trails may be high or low among sites, so the ends of individual feeding trails often could be determined or not. Furthermore the measurements of length, widths and depths of feeding trails not always accurately and the edges of feeding trails sometimes collapse after formation, so the obviously ones only measured.
- One of the most record was that of small trails with width 7cm, which means that it was related to small dugong coming to feed in this site.

2. **Proportion of seagrass removed from feeding trails:**

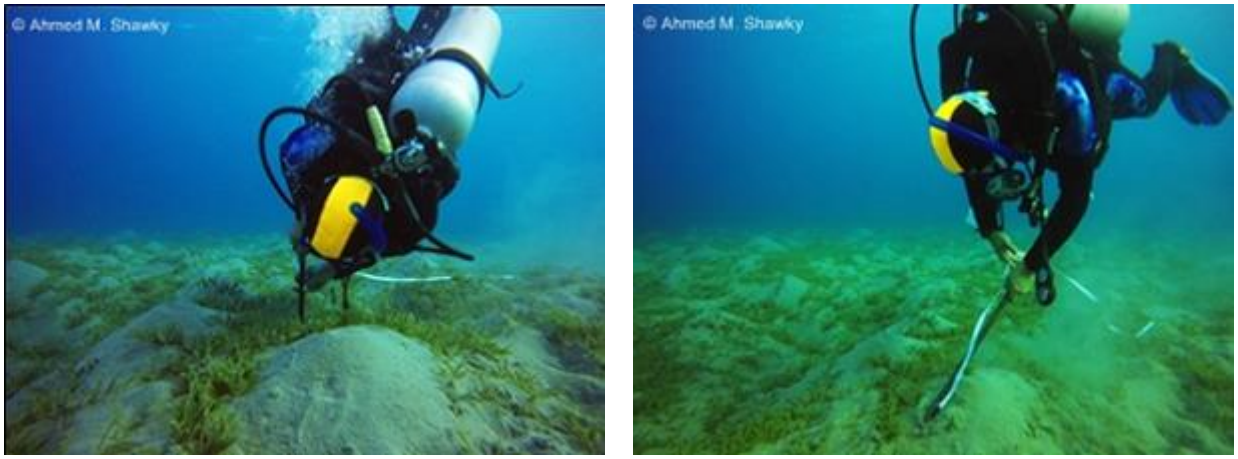
- The proportion of seagrass removed by feeding dugongs was measured by comparing the abundance of seagrass in feeding trails with the abundance of seagrass immediately adjacent to the trails at the feeding sites. Seagrasses were sampled in 0.01m² (10 cm x 10 cm) located haphazardly along several feeding trails, and in an equivalent number of matched quadrats positioned immediately adjacent to the feeding trails (0.2 - 0.5 m away).
- The amount of seagrass removed from the feeding trails at each site was determined by subtracting the mean abundance of seagrass along the feeding trails from the mean abundance immediately adjacent to the feeding trails.

Appendix 1: Photos for the field work in Shams Alam Beach Site



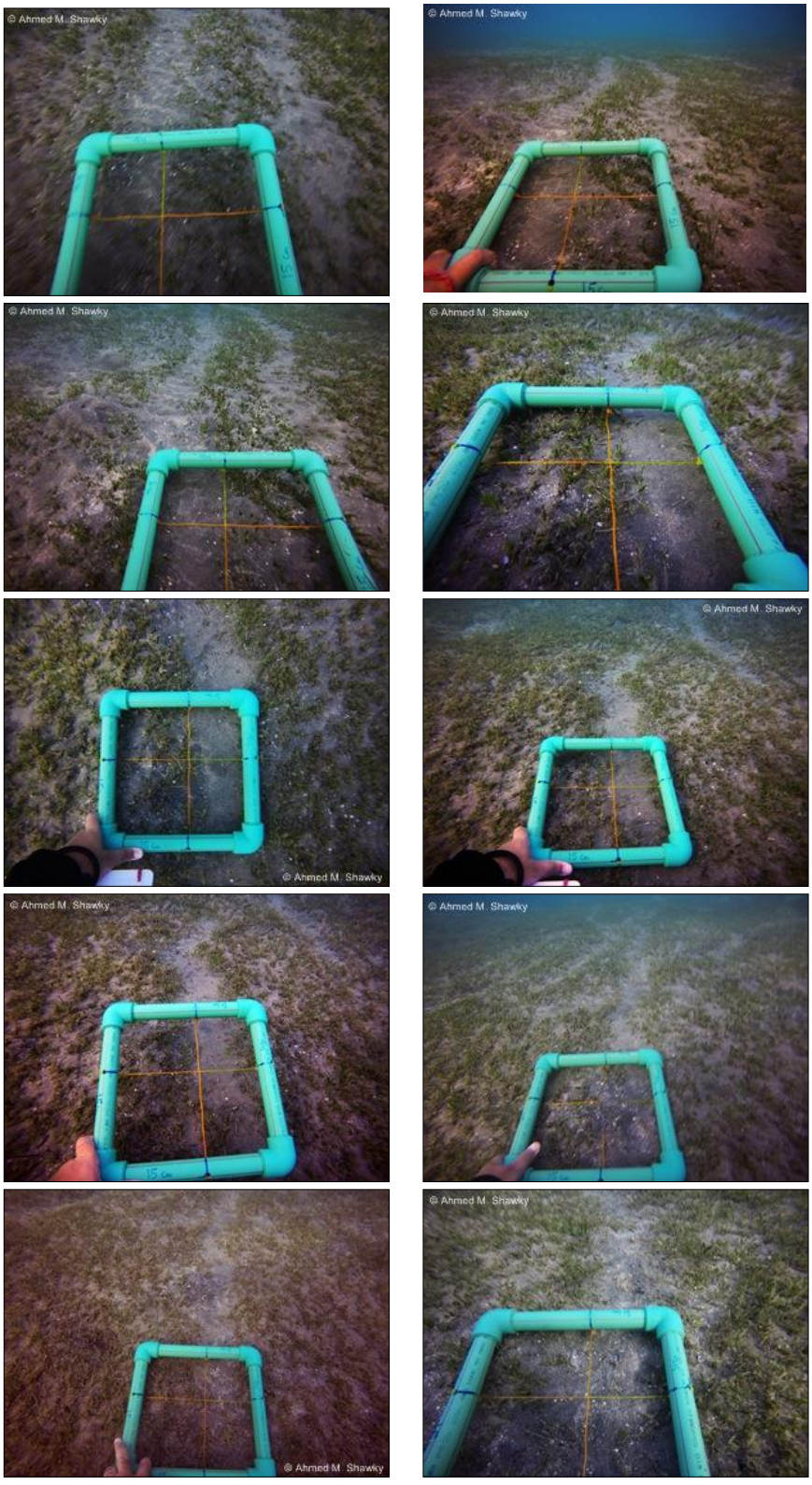
Examples of feeding trails recorded in Shams Alam Beach Site

Examples of seagrass estimation using 0.25m² and 0.15m² quadrates in Shams Alam Beach Site



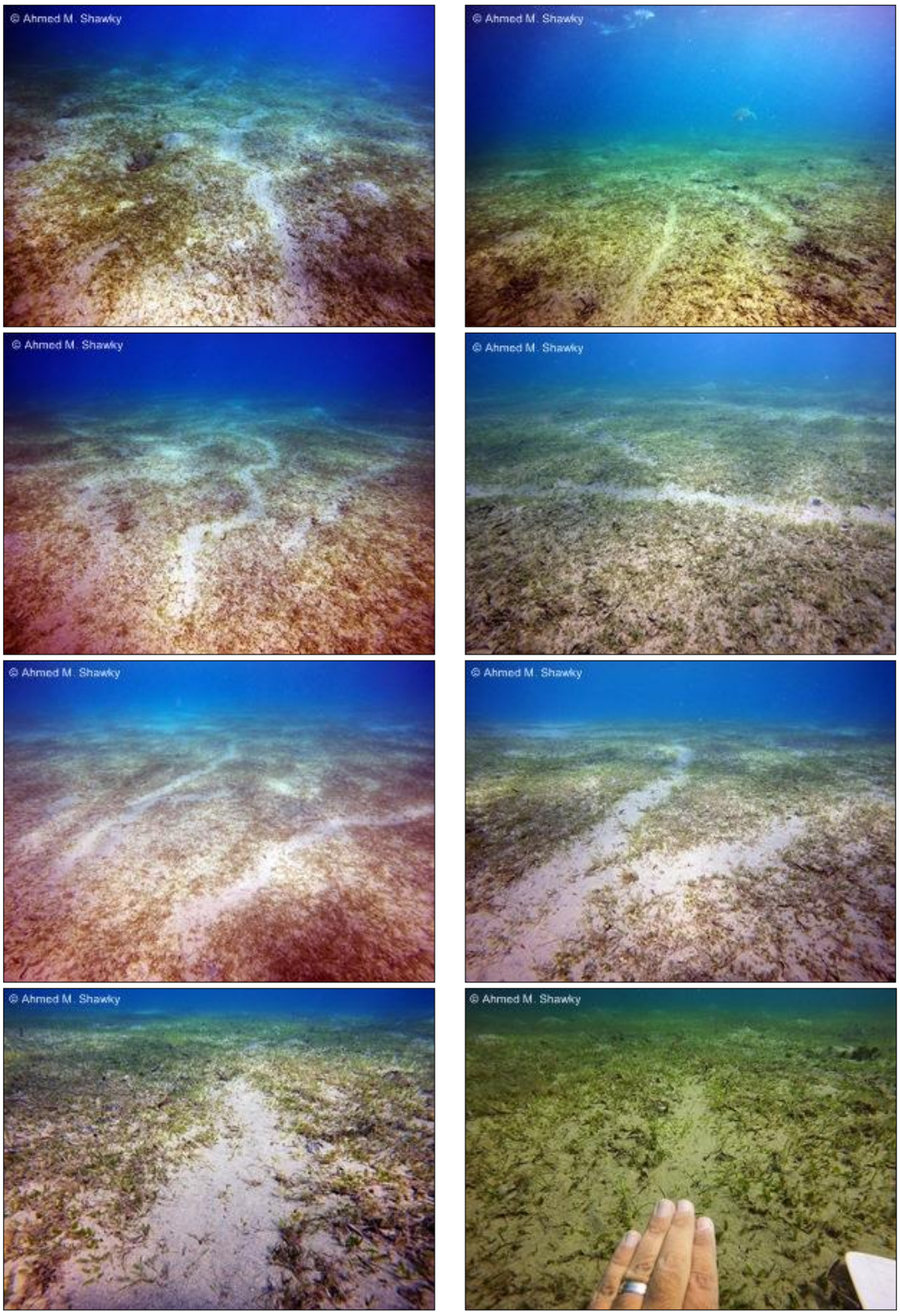
One of the team work during measuring the sediment compacting

The researcher Ahmed M. Shawky during collecting the data of seagrass abundance



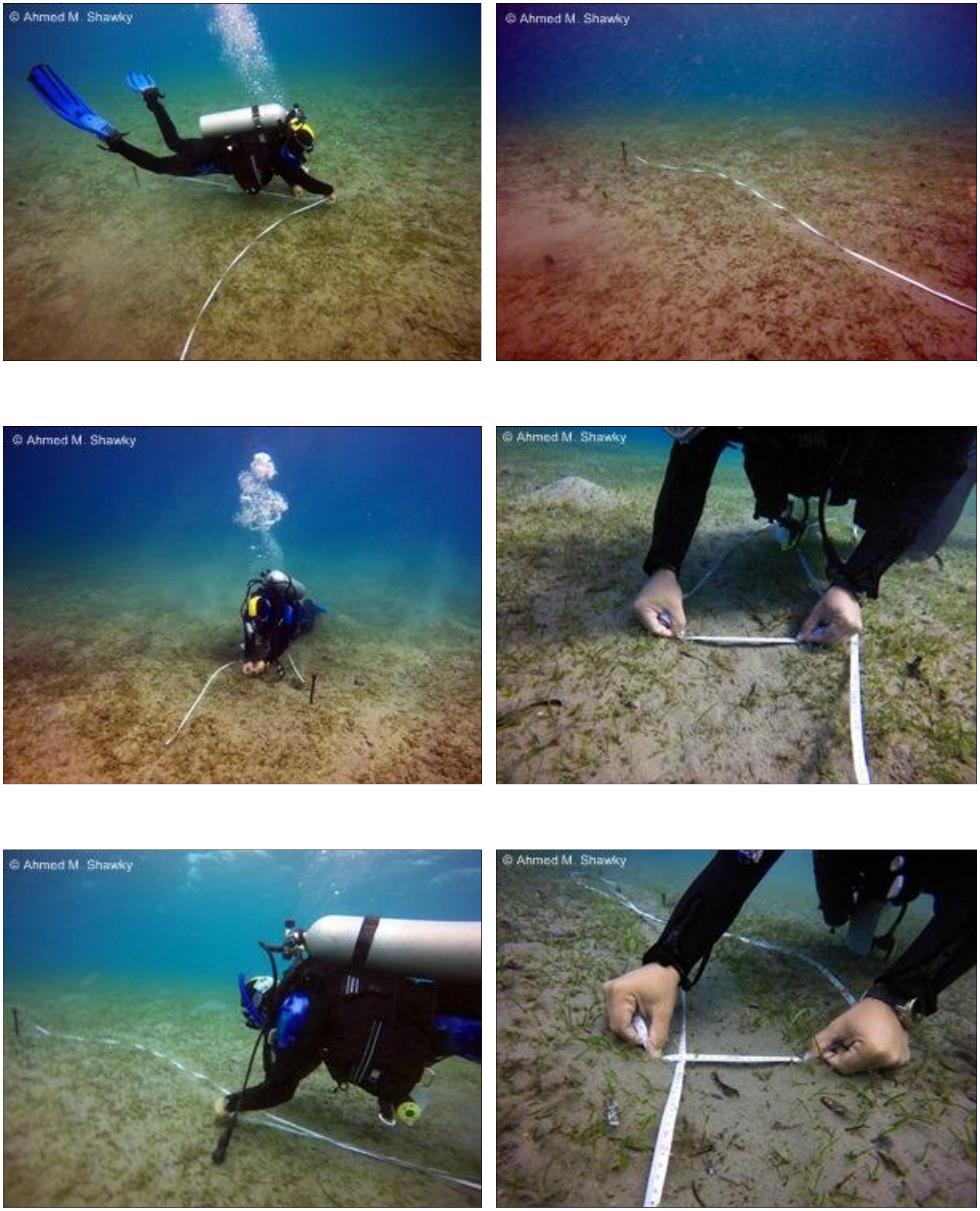
Recording seagrass grazed inside the trail using 0.10m² quadrates in Shams Alam Beach Site

Appendix 2: Photos for the field work in Torpha North Site

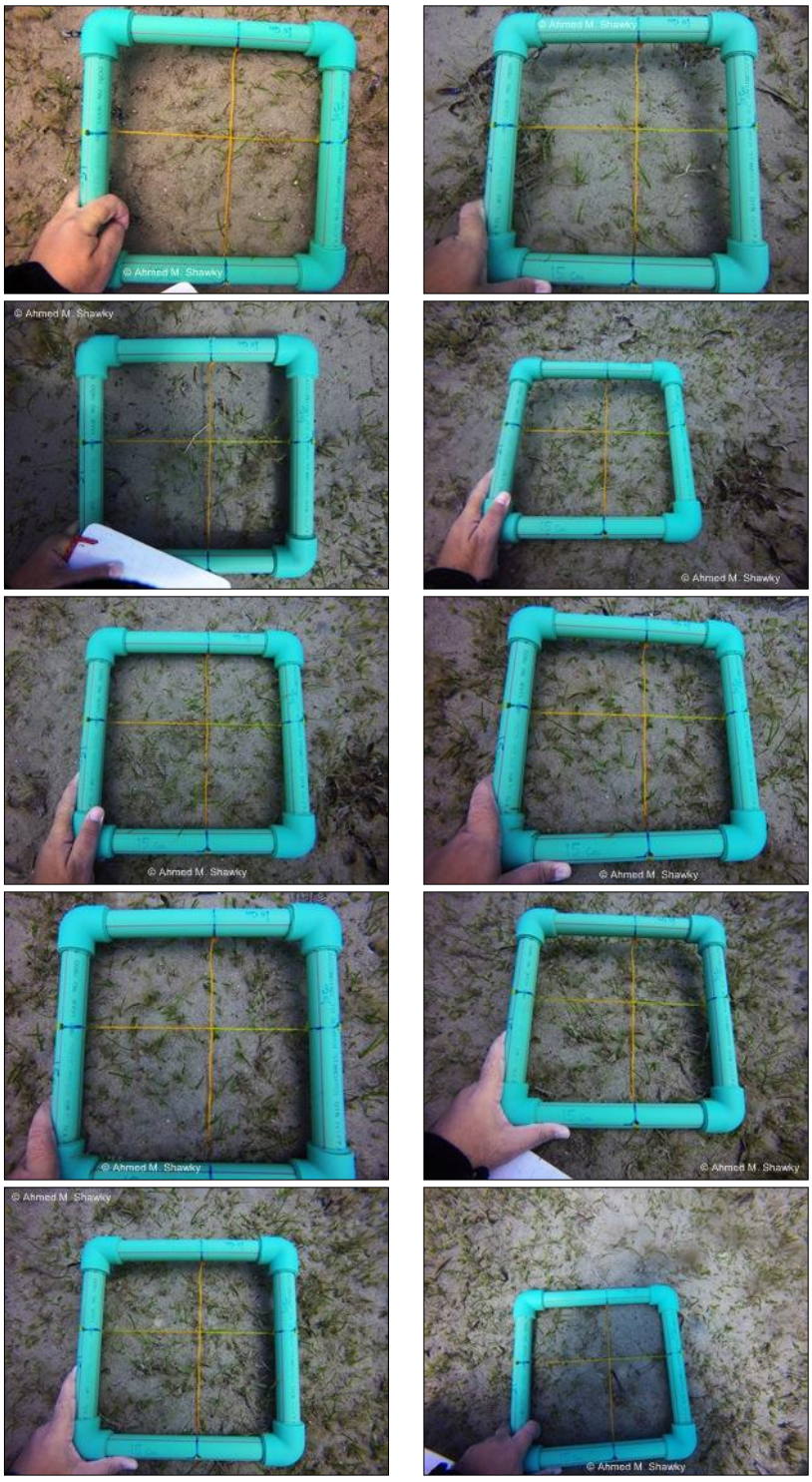


Examples of feeding trails recorded in Torpha North Site

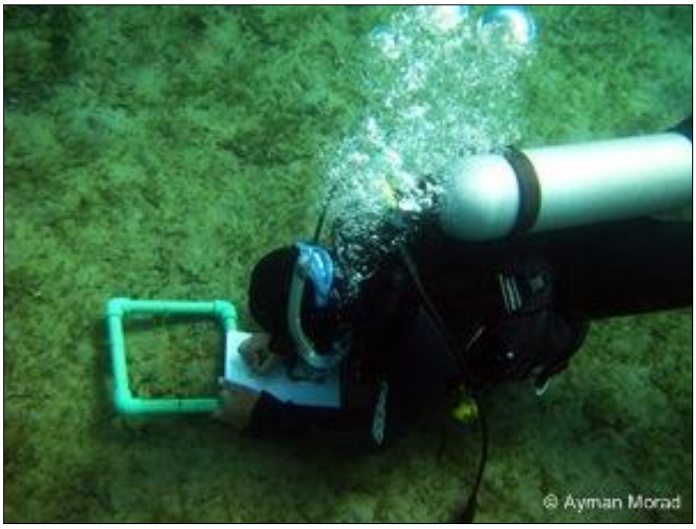
The small feeding trail of the dugong calf recorded in Torpha North Site



Measuring the feeding trails recorded in Torpha North Site



Examples of seagrass estimation using 0.25m² and 0.15m² quadrates in Torpha North Beach Site



During field work in Torpha North Beach Site