The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Ahmed Mohamed Shawky Mohamed El-Sadek Daoud
Project title	Analysis of feeding trails provides evidence of the number of dugongs excavating seagrass at key habitats seasonally in the Egyptian Red Sea.
RSG reference	26053-B
Reporting period	11.07.2018 – 10.07.2019
Amount of grant	£10,000
Your email address	Ahmedshawky_7@hotmail.com
Date of this report	06.09.2019

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Apply the laser photogrammetry to measure the total body size and muzzle width of the dugongs.				Three different adult dugongs were measured using laser photogrammetry techniques. Total length and muzzle width were measured successfully in addition to the trail width that created by these dugongs. Measurements for other individuals not occurred successfully due to their far distance and swam quickly. So, the results of the estimation of the dugong body length from the feeding trails will not be published in this report until more dugongs are measured in further studies.
Analysis of the temporal and spatial variation of feeding trails.				According to seasons, in winter, 12 different sizes of trail width were recorded followed by 11 in spring; these decreased to only eight different sizes in autumn and summer. According to sites, Marsa Abou Dabbab is the site that recorded 10 different sizes of trail width, followed by Ras Baghdady, while Marsa Mobarak had only four different sizes followed by Sheikh Malek with five sizes. The highest percentage for the presence of mother with calf was recorded in winter (44%) followed by autumn (38%); these were completely absent in summer.
Assess seagrass abundance and diversity.				Five different seagrass species were recorded in the all study sites: *Halophila stipulacea, Halophila ovalis, Halodule uninervis, Cymodocea rotundata* and *Syringodium isoetifolium* that varied in time and space. The details are shown in the technical report

				according to seasons and sites.
Raise public awareness for the dive guides.				Six workshops were conducted to more than 120 persons including dive and snorkel guides, managers of diving centres and tour operators and local communities. The project activities were presented in an event of World Wildlife Day Egypt 2019 in Cairo. Also, it was presented during the participation in an international conference located in Alexandria entitled "Coast to Ocean: Priority Actions and Investments" and Biodiversity Conference by IUCN (COP14) in Sharm El-Sheikh, Egypt. PADI Dugong Conservation Specialty Course is conducted to the guides.
Prepare the first draft of the management plan for dugong in Egypt.				Several meetings were conducted with the design makers to discuss our data for applying the management plan for the dugong conservation for the western coast of the Egyptian Red Sea.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

It was the delays of receiving the laser photogrammetry unit. This is because it was stored in the Egyptian customs that had not happened before. Also, after I paid the customs fees, I needed to get the security permission, which took 3 months. I then paid more fees for check-up the laser device. So, I lost the summer season at the beginning of the project, and I did at the end of the project in August 2019, which is delayed the timing of the final report.

3. Briefly describe the three most important outcomes of your project.

- Understand the spatial and temporal variation in the presence of feeding trails widths on the seagrass beds which is indirect evidence for the presence of dugongs of different size. The data will be used to create a prediction modelling map for dugong distribution and calving areas. Also, it recorded evidence for the presence of a large dugong in the Red Sea by documenting a large feeding trail of 30 cm wide for the first time.
- Perform the morphological measurements for the dugong using laser photogrammetry technique for the first time underwater by SCUBA diving. This allows us to calculate the total body length and muzzle width for each individual.

- Rising the public awareness to the dive and snorkelling guides by conducting the training of PADI Dugong Conservation Specialty Course and completing the requirements of knowledge development, workshop training and skills during the field survey. The size of the Egyptian Dugong Team has increased and anyone can recognize them through visiting the link on my web site at: http://ahmedshawky.net/egyptian-dugong-team.html

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Managers of diving centres, tour operators, diving and snorkelling guides are the most local communities who involved during the field work and workshops. Now, they understand that the dugong population has changed in time and space and they can monitor it with themselves through following the changes in feeding trail dimensions. According to their request, more education and training are needed to publicise these results.

5. Are there any plans to continue this work?

Yes. More dugongs are needed to be measured using laser photogrammetry. More data records will be used to create a better linear regression fit, and then the equation will be more applicable.

6. How do you plan to share the results of your work with others?

I wrote a manuscript during the project period and it was published during the project period in the journal of "Egyptian Journal of Aquatic Research" and can be visible at "https://doi.org/10.1016/j.ejar.2019.08.001". In the paper, I mentioned the objectives of the projects and some results or recording the evidence of the presence of a large dugong in the Red Sea. I uploaded my project activities on my account of ResearchGate (https://www.researchgate.net/profile/Ahmed_Shawky30). I conducted several presentations in the diving centres and resorts of Marsa Alam using the laser photogrammetry technique and allow the participants to practice how to use it. I uploaded the update reports in my account at LinkedIn and on my personal website (www.ahmedshawky.com). Also, mainly I posted some results on the Facebook page entitled "The Egyptian Dugong". I published an article about the new record in the newspaper of *Al-Ahram*, the most common newspaper in Egypt.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The actual period of the project was used from August 2018 to August 2019. This is more comparable to the proposed length of the project, due to the delay of the receiving the laser photogrammetry unite because of the reason previously stated before.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Laser Unit	400£	700£	+300£	**150£** for customs fees. **110£** for the public security check-up fees and permission. **40£** transportation to the airport and public security office several times.
External drive with 8 Tera capacity	200£	200£		
20 PADI Certificates for Dugong Conservation Diver course with the printed materials.	1000£	1000£		
Training fees for 10 Snorkelling guide	300£	900£	+600£	20 more guides are trained.
Accommodation	1600£	1600£		
Transportation	1040£	1250£	+210£	Due to the increase in gasoline prices.
Field Survey	5460£	4100£	-1360£	Study sites decreased to seven only.
Publication fees for a manuscript		250£	+250£	We document the new record of 30cm trail width in "Egyptian Journal of Aquatic Research" and paid for the English text revision.
Total	**10,000£**	**10,000£**		

9. Looking ahead, what do you feel are the important next steps?

Next step is to improve the public awareness by education through training programmes, Dugong Conservation Diver courses and workshops. I think we have a lot of data about the dugong along the coastline of Marsa Alam and Wadi El-Gemal National Park. So, urgently we need to tell people more about this information in different ways. More survey is needed in other areas in Egypt that are

predicted to have suitable dugong habitats as shown by our predicted modelling maps that created from these project. These areas include South of Sinai (Gulf of Aqaba and Gulf of Suez), deep south of Ras bannas, Shalateen, Abou Ramad and Halayeb areas.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

Yes. I used the Rufford Logo in the poster I presented in Bibliotheca Alexandria, Alexandria for the conference of "Coast to Ocean: Priority actions and investments" and the presentation that introduced in front of the conference committee. The same poster is used in my participation in the celebration of "World Wildlife Day, Egypt 2019". I mentioned your funding support in the acknowledgement. Also, I mentioned the Rufford Foundation in the materials and methods section when I wrote the manuscript during the project period and it was accepted in the journal of "Egyptian Journal of Aquatic Research".

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Ahmed Refaat: public awareness – underwater survey – measuring the feeding trails.

Ayman Nasr: underwater survey – measuring the feeding trails.

Tarek Noaman: underwater survey

Abdelrahman Abdelfattah: measuring the feeding trails.

Mohammed Hassan: measuring the feeding trails.

Mohamed Shazly: measuring the feeding trails.

Michal Kowal: underwater survey and measuring the feeding trails.

Kim Saskia Hildebrandt: measuring the feeding trails.

Mohamed Fared: an underwater survey.

Mohamed Saleh: an underwater survey.

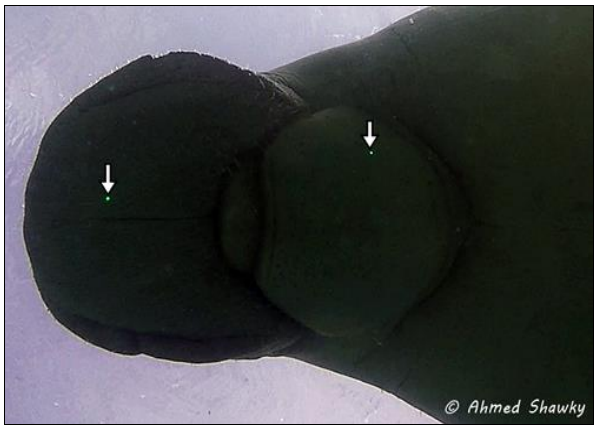
Ibrahim Fares: underwater survey.

12. Any other comments?

I'd like to thank Rufford Foundation for supporting the dugong projects in the Egyptian Red Sea. This support allowed us to know and understand a lot of things on the ecology and behaviour of the Dugong in Egypt. Many people were awarded for

dugong conservation and this will be one of the main reasons to continue the efforts for the conservation of this species.

I'm looking for further fund to continue my further study measuring more different dugong sizes using laser photogrammetry. It is very important to get the equation for estimating the numbers of individuals and the dugong population from the feeding trail widths. Also, major part of funding will go to the education activities.



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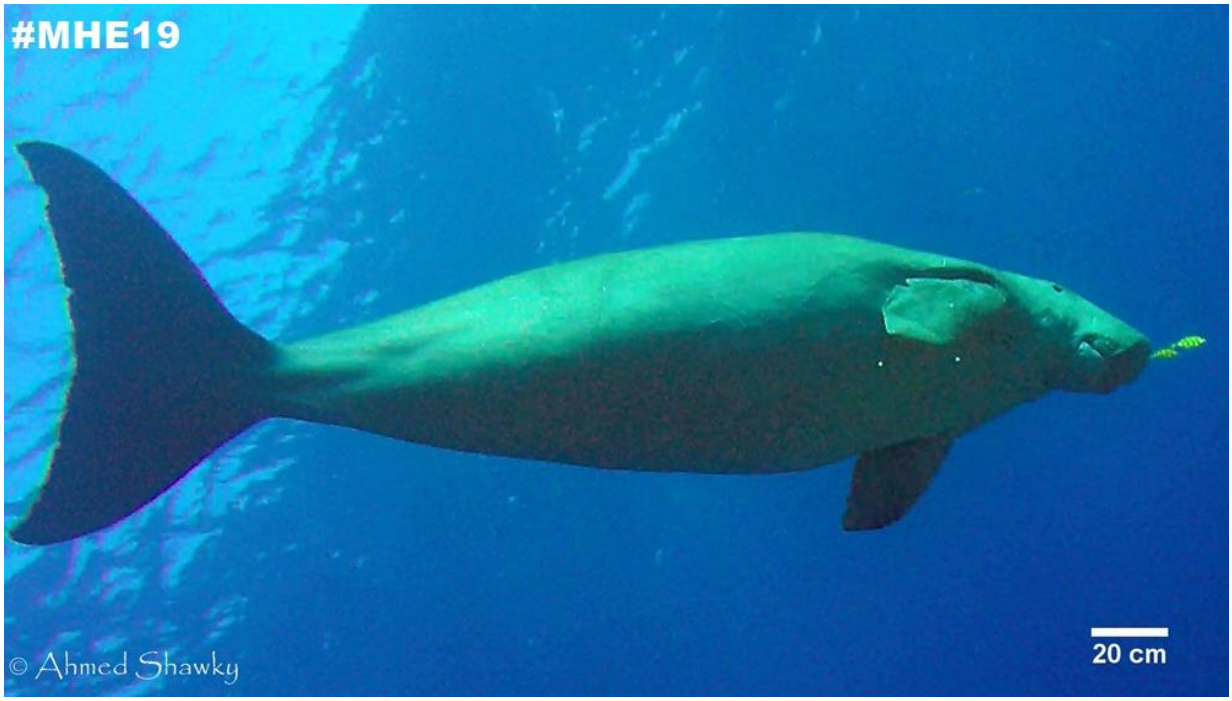

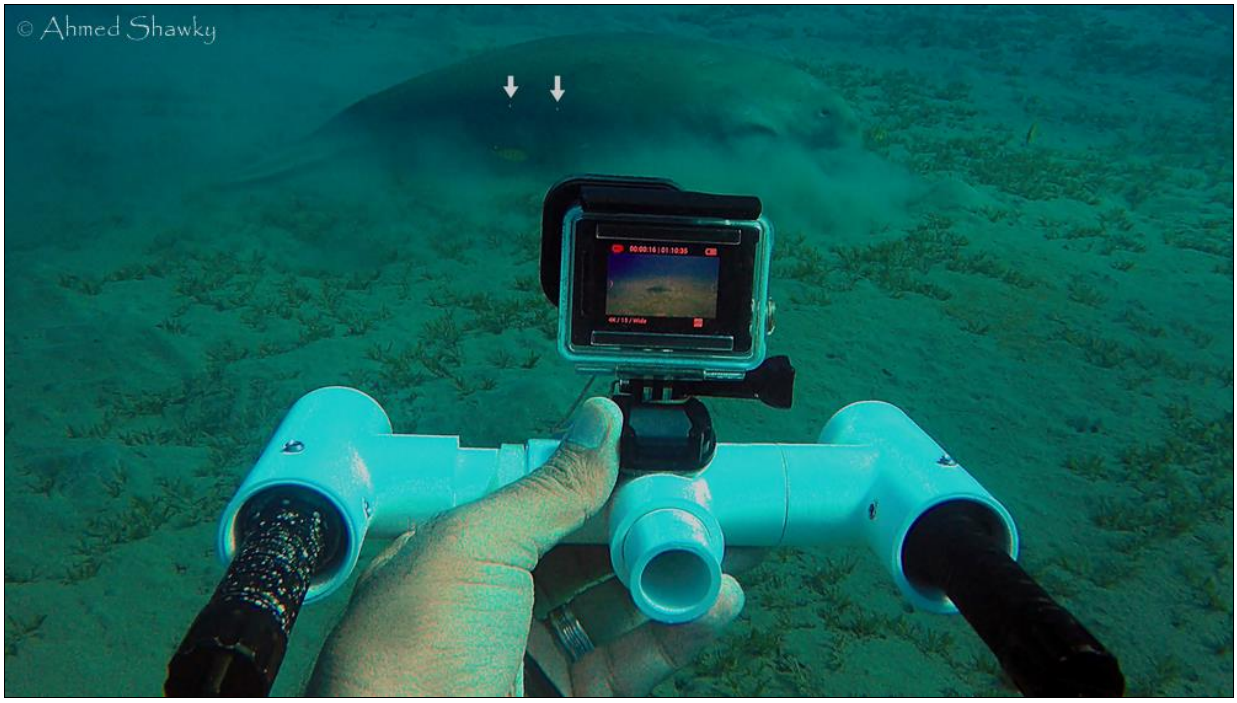

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