

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	Sedat Gundogdu
Project title	Potential Interaction between sea turtles (<i>Caretta caretta</i> and <i>Chelonia mydas</i>) and marine litter in Samandağ (Northeastern Mediterranean Sea) beach
RSG reference	23605-1
Reporting period	November 2017-2018
Amount of grant	£5000
Your email address	sgundogdu@cu.edu.tr
Date of this report	09.11.2018

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
Current state of plastic pollution				Plastic concentration of Samandağ Beach were estimated. According to our results, Samandağ Beach is one of the most polluted beach of the Mediterranean shores.
Observation of Turtles and their interaction with plastics				We have only observed <i>Chelonia mydas</i> .
Possible encountering rates of turtles and plastics				Based on type of collected plastics, we estimated potential effects of those plastics on female sea turtles.
To share results with local people and local governments				During the project, all results were shared with local governments. Local people also informed about the preliminary results of the project during survey study. Some of the locals also participated to our sampling campaign.
Necessity of Cleaning Campaigns				The posters we prepared within the scope of the project were hung all around the Samandağ. Thus, necessity of cleaning campaigns is promoted.
Awareness-raising activities				Three different posters used for awareness-raising campaigns and those posters hung all around Samandağ. We have also posted these posters to the schools in Samandağ.
Impact and Value Added with this project				We made an oral presentation in an international symposium (MARFRESH2018). Our results about the potential interaction of the plastics on turtle will be submitted to a SCI indexed Journal soon.

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

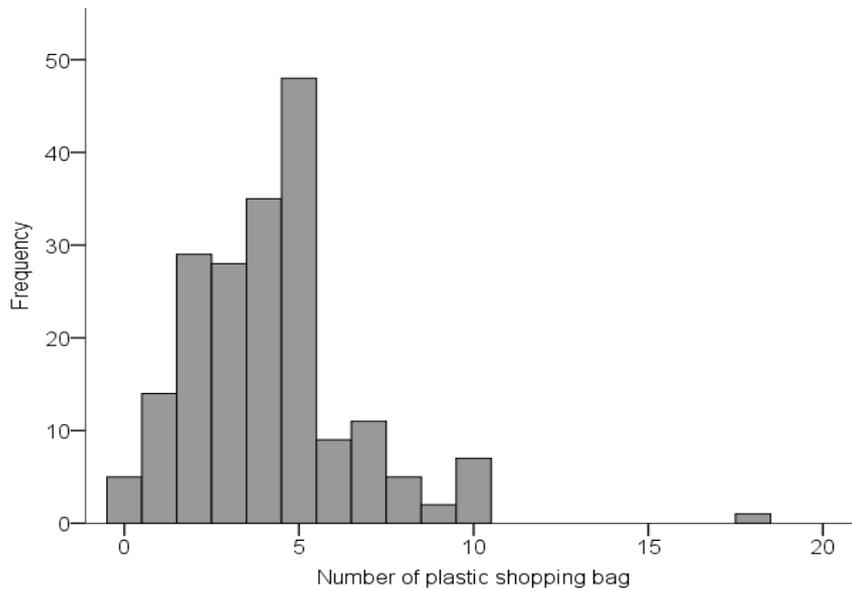
During the survey, people avoided answering questions. Moreover, the majority of the respondents also preferred not to provide contact information. We asked a professional research company manager whether the problem of these difficulties of surveys was a case specific to our study. They said that the current political atmosphere in Turkey makes people suspicious of all kinds of survey. This situation made it impossible for the second survey to be carried out at the end of the project. In order to measure the impact of the project, the number of posters prepared to increase the impact of the project was increased and posters were hung all around the Samandağ.

During sampling study, we have seen that the local authorities used the method of ploughing the beach using a tractor to handle the plastic pollution. This caused a serious problem. Due to the disappearance of the turtle traces, we had to postpone our sampling day.



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

- a) As a result of the survey study, participants had a high level of awareness of plastic pollution and they are aware that the plastics are harmful to the environment. However, on the contrary, it was determined that the participants were not willing to transform their awareness to act.
- b) There are no statistically significant difference between the demographic characteristics and the answers given to the questions on plastic pollution
- c) The vast majority of participants (96.4%) continued to use plastics in market and grocery (88.7%) shopping, although they knew that plastics were harmful to the environment.
- d) In terms of membership/volunteerism to nature conservation associations, participants were found not to be very enthusiastic. However, although participants did not tend to be members of nature conservation associations, they noted that they participated in many clean-up campaigns and nature conservation training
- e) The usage of plastic bags of participants were found to 4.19 plastic bags per shopping day.



f) During sampling of the turtle tracks, plastics on 39 different turtle tracks were counted. Among these turtle tracks, 13 belonged to hatchlings, 11 belonged to turtles that crawled out of the sea and lay eggs, eight belonged to turtles that crawled out of the sea and nesting, but didn't lay any eggs, and seven belonged to turtles that crawled out of the sea, but returned to the sea without doing any digging. Plastics were discovered in all quadrants. In total, seven different types of plastics (disposable, film, fishing-related, foam, fragments, miscellaneous and textile) were found. The amount of plastics gathered on the Samandağ beach was significantly higher than any other beach on the Mediterranean coasts. Plastic litter from Syria, Lebanon and Egypt was encountered frequently during the sampling.

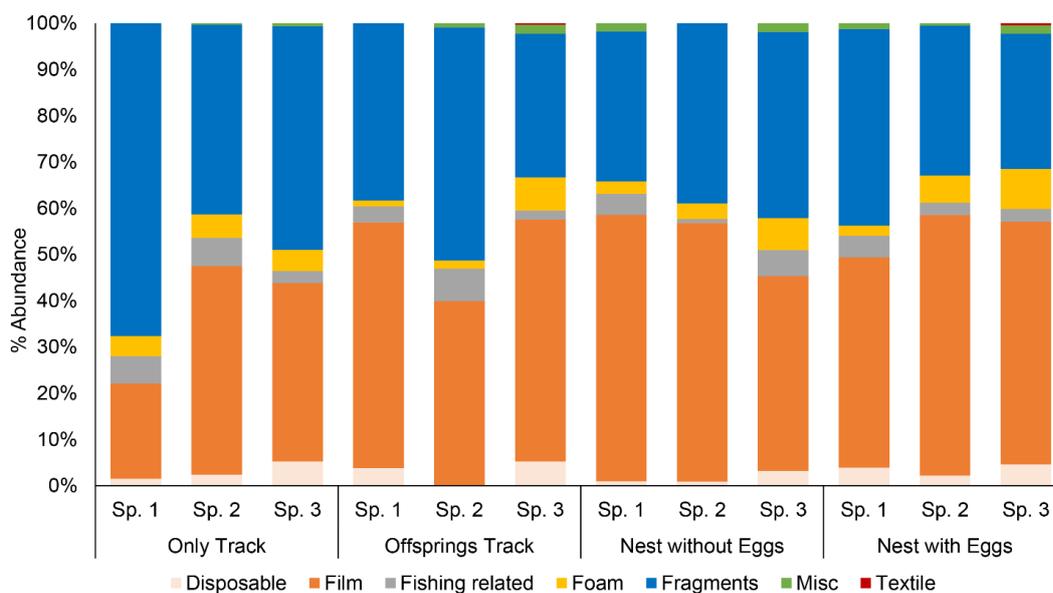


Figure: % abundance of plastic types on turtle tracks

Among the sampling points on the tracks, the differences regarding plastic pollution were only found to be significant for the only track (OnT) group ($p=0.00$). In the OnT group, it was found that the plastic concentration, found to be low at the point the turtles crawled out of the sea, increased at the points turtles turn around and head back to the sea, and decrease to the same level as the landing point at the point they reach the sea again

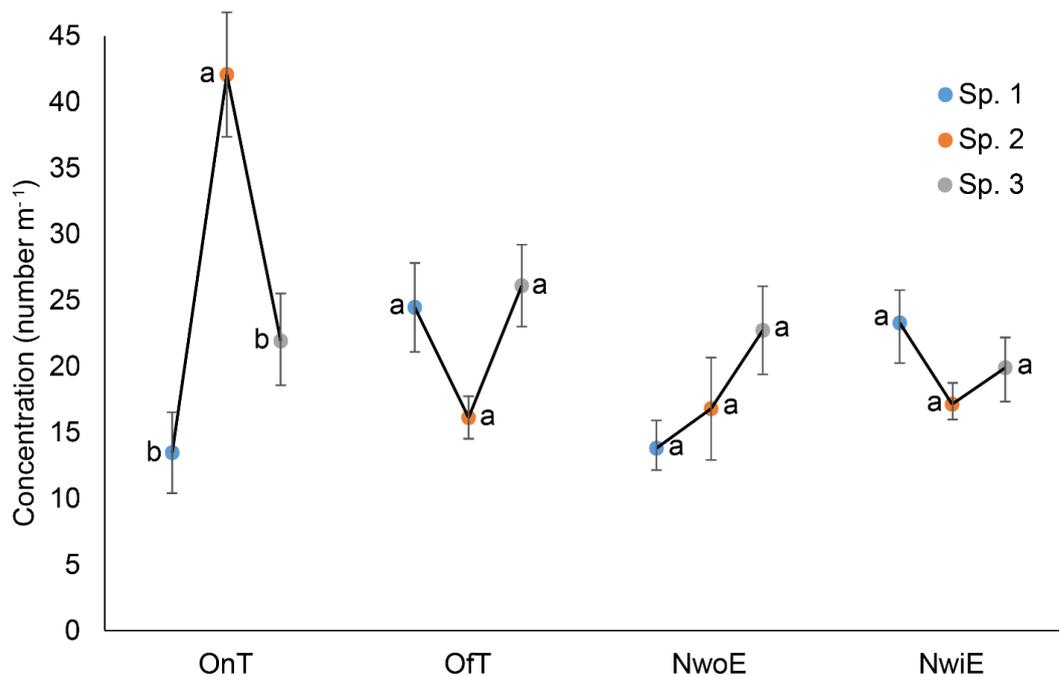


Figure: Plastics concentrations in different crawling types and sampling quadrants. Bars shows standard errors and letters indicates difference

g) Potential risks of the plastic types might pose on the turtles are given in following table. The types of plastics found in this study show that Samandağ beaches are very difficult and risky nesting areas for green sea turtles.

Table. Abundance and potential effects of collected plastics

Collected Plastics Group	Categories	Potential effects
Fishing-related	Rope	- Entanglement
	Nets	- Reduce nesting success
	Line	
Disposable items	Straw	- Barrier for offspring to reach sea
	Pet Cups	- Reduce nesting success
	Pet Bottle	- Becoming microplastics and increase the permeability and decrease the temperature of sediment
	Plastic sack	- Entrapping effect
Foam and foam rubber	Foam cups	- Becoming microplastics and increase the permeability and decrease the
	Foam rubber	

		temperature of sediment - Entrapping effect
Film	Wrappers	- Entanglement,
	Nylon Bags	- Reduce nesting success,
	PE greenhouse covers	- Becoming microplastics and increase the permeability and decrease the temperature of sediment - -Entrapping effect
Textile	Shoes	- Barrier for offspring to reach sea, - Entrapping effect - Reduce nesting success
Plastic Fragments	Broken hard plastics	- Barrier for offspring to reach sea - Reduce nesting success, - - Becoming microplastics and increase the permeability and decrease the temperature of sediment
Miscellaneous	Medical items	- Reduce nesting success,
	Toys	- Becoming microplastics and increase the permeability and decrease the temperature of sediment
	Cigarette box nylon	- Entrapping effect

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

During the surveys of the project, the local people's desire to participate in the survey was quite low. As we have explained above, this situation is not specific to our project. However, they became natural partner of our project by our close interaction with them. They participated to us during sampling and posters hang. Moreover, besides close interaction, flyers and posters about the project also were positive responds behalf of conservation of the turtles. In order to reach our project to a wider audience, we continue to announce the project work through our website: <http://www.mikroplastik.org/index.php/tr/projeler/plasturtle.html>

5. Are there any plans to continue this work?

Although, we acquired significant information with this work, it is easy to say that potential interaction between plastics and sea turtle fully understood. Samandağ is the one of the important nesting site of green sea turtles. There are more beaches (Such as Akyatan, Ağyatan and Yumurtalık) are by green sea turtles for nesting, and these beaches are need to be investigated.

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

We made an oral presentation in International MARFRESH 2018 Symposium which was held in October 2018 in Antalya-Turkey. Our results about the potential interaction between plastics and green sea turtles has been submitted to a substantial international journal indexed in SCI. We are also publishing our results on

our website <http://www.mikroplastik.org/index.php/tr/projeler/plasturtle.html>. When our final report has accepted, we are planning to publish them towards internet into Turkish.

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 grant was used as stated in the project proposal. First, we conducted interviews with the local people as part of the survey. Then we visualised the results and we hung these visual materials (poster flyer etc) all around Samandağ. At the same time, in June-July and August, we collected the plastics on the turtle traces for 3 days. As a final part of the project, we shared our results with stakeholders, local communities via posters, flyers and social media. We will share our final report with local authorities.

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
Accommodation	600	1000	-400	Due to difference of currency balance and inflation rates.
Tablet Pc	350	700	-350	Due to difference of currency balance and inflation rates.
Billboards, posters and brochures	1000	400	600	
Survey study	1000	850	150	
Field Survey	2050	2200	-150	During project, we planned to visit area for 18 days. However due to difficulties of survey it took 25 days total.
Totals	5000	5150	-150	

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

With this study, we found that the plastic pollution pressure on the turtles is quite high. In this way, we realised that plastic pollution on the northeast coasts of the Mediterranean could have a negative effect on the sea turtles. This information revealed that these coasts should be investigated more and the effect of this plastic pollution on other living things should be investigated. Next step should be investigation of plastic pollution effect on sea turtles and other coastal life in other beaches.

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?

You can see the materials used with Rufford logo in attachment.

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

Project leader, Sedat Gündoğdu, actively attended all work packages of project and made data analyses and visualisations with İrem Nur Yeşilyurt and Celal Erbaş. Presentations and contacts mostly performed by Sedat Gündoğdu. All project members performed surveys. Sedat Gündoğdu, İrem Nur Yeşilyurt, Celal Erbaş, and Harun Gümüş were attended plastic samplings. İrem Nur Yeşilyurt also identified species of turtles.

12. Any other comments?

All participants would like to thank Rufford Foundation.

