

## 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

---

Grant Recipient Details	
Your name	Rahma Attia El Hili
Project title	Distribution and vulnerability assessment of freshwater turtles in Tunisia
RSG reference	21716-1
Reporting period	April 2017 – April 2018
Amount of grant	£ 5.000
Your email address	rahma-hili@hotmail.fr
Date of this report	30/04/2018

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
Literature search to identify previously published data about sites occupied by <i>Emys orbicularis</i> and <i>Mauremys leprosa</i> in Tunisia.				In order to have a good basis to initiate the survey and to begin the monitoring of populations, we started by preparing a database about the old distribution of the tow species of freshwater turtles in Tunisia and the other accessible data.
Acquisition of actual distribution data.				<p>To develop an updated distribution map of freshwater turtles in Tunisia, we combined previously published data with current field collected data.</p> <p>We explored 51 sites over different regions in Tunisia from the extreme north to the centre and the south of the country. During this fieldwork, data were collected from several new sites, which were not mentioned in the literature.</p> <p>All presence-only data and spatial environmental data were used to develop the ecological niche modelling of the potential distribution for the tow freshwater turtle species in Tunisia using Maxent/ArcGIS programmes.</p>
Capture-mark-recapture population studies (CMR).				Turtles were captured using non-harmful traps set for periods extending from 1- 3 days according to the nature of the site. Traps were firmly attached by a rope to the shore or vegetation, baited with sardine and bread soaked in sardine oil, and then set in such a way that trapped animals were able to breathe. The traps were checked regularly during the day and collected turtles were marked with marginal cuts on the carapace,

			<p>following standard operating procedures for Capture-Mark-Recapture (CMR). The previous protocol was planned to be undertaken for three different sites, but due to weather condition and dried up water courses, CMR was only applied for two sites from three planned.</p>
Collecting DNA samples.			<p>During the field work, valuable data were collected such as morphological measurements, information about threats and DNA samples before releasing turtles at the exact place of capture. DNA samples were transported in two different ways, in liquid nitrogen container or in dry ice.</p> <p>These samples will be used to analyse the genetic variation of the two species <i>Mauremys leprosa</i> and <i>Emys orbicularis</i>.</p> <p>Especially, that already published studies have evoked the importance of studying the genetics of <i>E. orbicularis</i> in Tunisia in order to confirm the presence of new subspecies for which no name is yet available.</p>
Identify and assess the impact of major threats.			<p>The main identified threats include changes in hydrology and streamflow due to new dams and weirs construction, habitat loss or degradation through soil and water pollution, clearing for agriculture and trampling of nest sites by cattle. During this project, It has indeed been noticed that this threats had an impact mostly on <i>Emys orbicularis</i> especially that we reported a major decline or maybe extinction of this species from 11 sites already mentioned in the literature.</p>
Estimate the degree of vulnerability of each species.			<p>During the project, <i>Mauremys leprosa</i> was commonly found in several places in Tunisia, this species was abundant and considered as stable. However, <i>Emys orbicularis</i></p>

			are deserving priority conservation actions at the national level. Before the project started, the status of <i>E. orbicularis</i> was virtually unknown, but actually we reported the deterioration of its habitat and a major loss of its population. This species was absent from 11 sites already mentioned in the literature and that it's present in only two sites with a very low population size.
Awareness program			As part of the raising awareness programme for freshwater turtle conservation in Tunisia, we had the chance to participate in an international event "Semaine du Grand Bleu" and to present our project to more than 10 NGOs and scientists coming from Tunisia, Algeria, Morocco, and Spain. Also, we conducted awareness workshops and outdoor awareness programmes to increase young generation consciousness to towards the importance of conservation of freshwater turtles.
Meetings with the national authorities and local NGO.			Owing to the fact that we believe on the effectiveness of participatory approach for nature conservation, we initiated meetings with the national administration (the general direction of forests in Tunisia) and local NGOs in order to exchange ideas about freshwater turtle situation in Tunisia and to propose a long-term conservation solution.
Suggesting an action plan for freshwater turtle conservation in Tunisia.			First draft of action plan for freshwater turtle conservation in Tunisia is prepared and will be shared in May with administration of forestry for comments, revision and upcoming adoption in Tunisia.

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

We faced two major difficulties. Despite the great field effort we had difficulties to capture *Emys orbicularis*. This species was absent in sites already mentioned in

previous published studies. Nonetheless, we have focused our field work on other suitable potential habitats located in its range and finally we capture it in only two sites that we report for the first time.

Also, in summer many sites were dried out, so we were forced to come back after the rainy season.



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

- Develop a distribution map of *Emys orbicularis* and *Mauremys leprosa* in Tunisia (updating old data since 1970) and discover new sites not mentioned in the literature. Those outcomes will help scientific community to develop ulterior scientific research on freshwater turtle in Tunisia and in North Africa.
- Assessment of vulnerability of each species which leads us to conclude that *E. orbicularis* situation is critical in Tunisia.
- Proposition of the first action plan for conservation of freshwater turtle in Tunisia.

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

- Local communities benefitted from raise awareness programme.
- Schoolchildren from Monastir, Manzel Borguiba and hikers in Sidi Barrak site participated in raise awareness programme and field visit.
- Biology researchers from the University of Sfax, university of Tunis and volunteers from many NGOs benefitted from training on freshwater turtle conservation.

## **5. Are there any plans to continue this work?**

Given the current low level of knowledge on freshwater turtles in Tunisia, this project presents a first step to create a scientific basis for launching longer-term conservation actions for the two species.

Distribution of the two species in Tunisia remains partially known, as shown by the discovery of several sites during this project.

This work enabled us to define new objectives and actions in the light of the knowledge acquired. Therefore, we plan to continue working on conservation measures for freshwater turtles in Tunisia.

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

- Data from this project will be used for writing scientific publication where RF will be acknowledged, also the distribution maps of each species will be shared with IUCN.
- Action plan will be printed and distributed after adoption by forestry administration in Tunisia.
- Communicate in social media on freshwater turtle conservation effort and needs.
- Organise a national/Mediterranean conference on freshwater biodiversity with focus on freshwater turtle.
- Installation of permanent raise awareness materials in freshwater turtles habitats frequented by hikers, farmers and fishermen.

## **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 success of this project is based on the success of field work to determine the actual distribution of freshwater turtle in Tunisia and to assess their situation and vulnerability.

Rufford Foundation grants was used mainly for field work and raise awareness program from the beginning of the project in April 2017 until to Mars 2018 as planned.

**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
100m net	100	80	-20	We buy 2 hands net instead of 100m of nets.
20 turtle traps	200	250	+50	Turtle traps were more expensive than we expected.
Waterproof Camera	250	250		
Car renting and travel expenses for field work	2700	2750	+50	Many sites were dried out in summer, so we were forced to come back after the rainy season.
Daily allowance (food / drink...)	1080	1100	+20	We spent more days on the field than expected and sometimes we were more than 4 persons.
Meetings with administrations	100	50	-50	We had only one meeting.
Poster, T shirts , gifts for school kids	150	100	-50	Finally we didn't buy T shirt and gifts but only supplies for raise awareness programs.
<b>Total</b>	<b>4580</b>	<b>4580</b>		

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

At the end of this project, we aim to develop an operational strategy for the coming years based on the following objectives:

- Improve ecological knowledge in order to identify the needs of each species necessary for its conservation, particularly in terms of habitats, at different stages of the life cycle.
- Analyse the use of habitats by GPS tracking.
- Regularly update the inventories and distribution maps of the two species.
- Establish a long-term monitoring of the two species demography.
- Promote connections between populations.
- Identify the impacts of biotic and abiotic stresses in a natural environment.
- Conduct a study on the health status of populations and pathologies.
- Raise users of the environments where the species lives awareness to the stakes of its conservation.
- Establish a network of observers of freshwater turtles.

**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?**

The RF logo was used in all presentations used for raise awareness programmes.

I had the chance to participate in an international event "Semaine du Grand Bleu" and to present this project to more than 10 NGOs and scientists coming from Tunisia, Algeria, Morocco, and Spain. During this event, participants noticed the opportunities that Rufford Foundation offers to work on conservation topics and the importance of freshwater turtle conservation at national and international level.

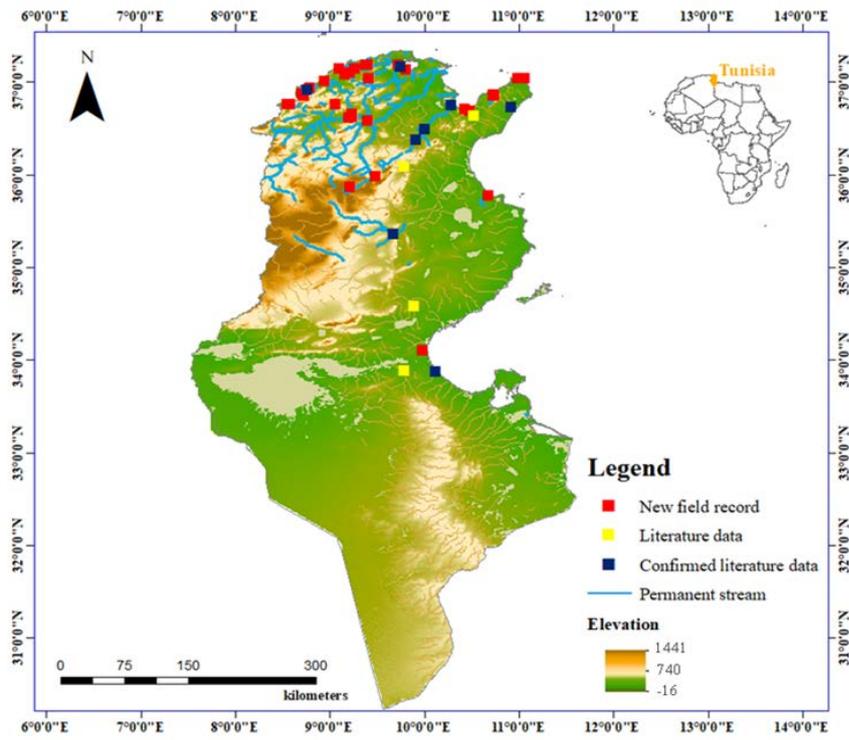
**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

I'm thankful for people who have contributed to this project.

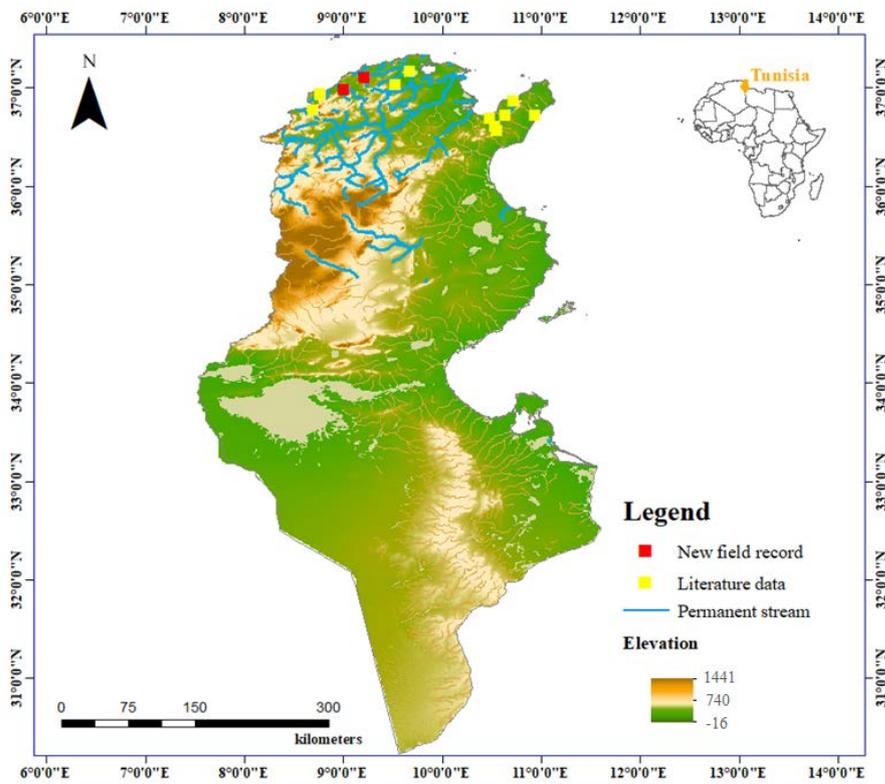
- Jrijer Jamel: teammate
- Syrine Maslah: field assistance in several sites
- Badreddine Jomaa: field assistance in Manzel bourguiba
- Bayram Miledi, Sofien : field assistance in Haoueria
- Dhaker Sakka, Hamed Mallat, Intisar Mnasri: field assistance in Oued abid.
- Zakher Bouregaoui , Sahar Abid: field assistance and help in cartography work
- Sahbi Dorai: field and raise awareness program assistance
- Wael Ben Aba: field assistance in Sajnen
- Tunisian association health-environment and Notre Grand Bleu association: field and raise awareness program assistance
- The laboratory of biology and evolutionary systematics within the Faculty of Mathematical, Physical and Natural Sciences of Tunis in Tunisia: supply the consumables for the preparation of Biological samples.

**12. Any other comments?**

I would like to thank Rufford Foundation for financial support and for giving me the opportunity to carry out this project. This funding allowed me to start my scientific research career in the field of nature conservation.



Updated distribution of *Mauremys leprosa* in Tunisia



Updated distribution of *Emys orbicularis* in Tunisia