

The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants 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	M. Florencia Spina
Project title	Comparison of the level of disturbance in areas subjected to trawling activities with that occurring in temporarily protected areas and its relevance to habitat conservation
RSG reference	38.12.09
Reporting period	May 2010 - April 2011
Amount of grant	£ 5755
Your email address	florencia.spina@cedepesca.net
Date of this report	15 th July 2011

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

Objective	achieved Not	achieved Partially	achieved Fully	Comments
<p>Compare the level of disturbance of the macrobenthic community between areas subjected to bottom trawling and protected areas.</p>				<p>We finished the suggested research (see the Word file attached with a full report).</p> <p>We took macrobenthic samples from 318 points, harvesting a total of 11,020 individuals and identifying 46 species which belonged to 29 families.</p> <p>The data analysis made includes: three indexes estimation (Shannon Wiener diversity index, CHAO 2 richness index and Pielou evenness index), the ABC curves, the partial dominance curves, the K – dominance curves, analysis of similarities (ANOSIM) and Similarity Percentage Analysis (SIMPER).</p> <p>Different scientists helped us with the sample and data analysis, among them PhD. Ricardo Bastida, PhD. Andrés Jaureguizar and PhD. Wilmer Carbajal.</p> <p>Principal results obtained:</p> <p>The currently protected areas are moderately perturbed, which could be related to the lack of recovery from the bottom trawling effects that was only recently prohibited. Other possible explanation is that these areas are sometimes subjected to illegal trawling activities perpetrated by vessels that are not controlled with satellite positioning systems.</p> <p>The areas subjected to bottom trawling were also found to be moderately disturbed.</p> <p>All study sites show low diversity levels, fact that fits in the intermediate disturbance model.</p> <p>The specific composition in the trawling areas and the protected ones differs significantly. In the bottom trawling areas, the macrobenthic community is dominated by an echinoderm species group that has been described as predominant in environments subjected to trawling activities.</p> <p>We point out the necessity of preserving the benthic community of the areas currently protected, as these macrobenthic species are part of the diet of commercial fish and other vulnerable species. By doing this, a series</p>

			<p>of chain reactions involving the rest of the species and the interactions between the trophic levels in the ecosystem might be avoided.</p>
<p>Promoting awareness among artisanal fishermen about the impacts that bottom trawling has on the ecosystem.</p>			<p>November 2010: we organised a workshop for more than 40 artisanal fishermen from an association called Asociación de Pescadores Costeros (APC). During the meeting, we presented the project that CeDePesca is carrying on to analyse the bottom trawling impact over the coastal ecosystem with the support of Rufford Small Grants. We introduced some relevant topics as what benthos is, its importance and how the commercial species that they fish are related to the macrobenthic invertebrates. Taking these issues into account, we explained the possibility of triggering off a series of chain reactions due to the benthic perturbations that may arise from bottom trawling.</p> <p>After the explanation about the relation between the benthos and the rest of the ecosystem from which the fishermen depend on, we presented the regulations that protect the first nautical miles from bottom trawling. We quoted the Provincial Law 11.477 and decree 3237/95 and the Resolution No. 18/06 from the Subsecretariat of Fishing Activities of the Buenos Aires Province.</p> <p>Nowadays, there are two different points of view between the artisanal fishermen. Some of them want to preserve their passive fishing activities (gillnets) and the natural resources and a minority still wants to start fishing with trawling gear in the protected areas, because it results economically more profitable.</p> <p>The artisanal fishermen that want to change their fishing art maintain some misconceptions about bottom trawling, for example: they consider that their trawling activity isn't bottom trawling, but midwater trawling, that's why they believe the benthic community would not be disturbed. In the case of this misconception, we explained that trawling fishing in areas of low depth is considered bottom trawling. Other misconception was that if the net doesn't capture invertebrates, then the fishing activity wouldn't be causing any impact on the sea bottom. We presented to them different researches that show different kinds of bottom trawling effects on</p>

				the benthos, which are not restricted to the presence or absence of non target invertebrates in the captures. For example: the direct impacts of trawling include the dragging of different elements such as chains, ropes, skates, nets or any other part of the equipment.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

- During the period since the project presentation until the reception of the grant, the value of the exchange rate was reduced and we received 3655.14 \$ argentine pesos less. Also the oil price raised by approximately 30 %. These two facts forced us to make some adjustments in the quantity of sample days programmed and the quality of the graphic material for the workshop.
- The bad climatic conditions, that made the job inside the sea much more difficult, generated a lower number of samples per day than the 10 samples that were expected. Also, the bad climate delayed the sample days countless times.
- The problems between the artisanal local fishermen and the naval command (Prefectura Naval Argentina PNA) delayed our job. PNA controls became very strict and the fishermen couldn't get into the sea for more than a month. This instability in the fishermen activities and the conflicts they went through impacted on the regularity of our sample days.
- So that the selected fisherman could do the samplings, it was necessary for him to take a course in Buenos Aires city to obtain a first class driving card (that allows them go more than 5 nm. away from the coast) to avoid problems with PNA, which generated an important economic cost.

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

- 1) We obtained a first approximation about the degree of disturbance on the study area, which shows a moderate perturbation level and a low diversity (characteristic of disturbed areas) in all the sites sampled. We generated a description of the specific macrobenthic composition of the different sites and we determined the existence of species that are important prey items of the commercial fish species. The results of this research bring new information relevant to establish management regulations in the study area.
- 2) We deepened our interaction with the local artisanal fishermen, we recognised different points of view related to the bottom trawling activities and we brought them information to encourage them to revise their position.
- 3) We established local political contacts by meeting members of the city council interested in preserving the marine coastal ecosystem. We also met scientists who we can interact with to carry out different researches in the future.

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

- The local artisanal fishermen were involved in the sampling activities.

- We counted on the cooperation of an artisanal fisherman called Héctor Arce, who helped us to obtain the authorization for using the Community Center from Mar de Ajó where we organised the workshop.
- The artisanal fishermen of APC participated in the workshop, received information about the possible trawling consequences, explained their positions about the trawling activities and argued about their ideas.
- The artisanal fishermen of APC signed a complaint note about the trawling activities in the protected area of Mar de Ajó. From this complaint, two vessels were fined because both of them were detected practicing bottom trawling fishing. The complaint was also signed by other two artisanal fishermen associations.

5. Are there any plans to continue this work?

We considered this research a first approach to the topic, it will be necessary to continue gathering information about the benthic community along the time to establish future comparisons and analyse possible ecosystem disturbances. From this study, habitat perturbation indicators bring a first evidence in support of continuing to preserve the area not subjected to bottom trawling and start working for the preservation of the areas currently subjected to trawling activities. We will also highlight to the authorities the need of checking the control measures in the protected areas reserved for passive fishing arts, to avoid the impact of vessels developing illegal fishing activities according to the current regulations (Provincial Law 11.477 and decree 3237/95 and the Resolution No. 18/06 from the Subsecretariat of Fishing Activities of the Buenos Aires Province).

We have also considered obtaining other relevant data, for example: data related with the spatial scale of the fishing activities which would allow analysing the fishing effort gradient and its effects on the ecosystem, damage data caused by an specific type of net and data about the role of benthos over the fish population dynamic in the area, and data from species that can register physical damages produced by fishing activities. This kind of information could be important to reach an optimum management of this ecosystem based on scientific researches. Probably, we must direct our efforts towards this type of data and towards the monitoring of the level of ecosystem disturbance over time. Furthermore, we should give priority to the communication with the management authorities.

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

The scientific research results will be presented in the Latin American Marine Sciences Congress (COLACMAR) 2011 that will take place on Camboriu (Brasil) from October 31st to November 4th. We will also do a second workshop with the artisanal fishermen and city council members interested in working for the preservation of the coastal marine ecosystem to share the results of our work.

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

The RSG was used since May 2010 up to March 2011. However, we have had some delays to finish the sample analysis. Then, when we started the data analysis we found other possible tests to do,

which delayed the results and its analysis because we needed to comprehend and correctly interpret them. Due to these circumstances, we concluded our data analysis on the last days of June 2011, with a delay of approximately 2 months.

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 (local exchange rate: 6,26) *	Actual Amount (local exchange rate: 5,6) **	Difference	Comments
Oil and fuel for vessel	2185.58	2410.71	-225.13	Differences due to the local Exchange rate used and rises in fuel / oil prices
Vessel hire	1928.45	1339.29	589.16	Reduced due to the less number of sample days caused by the increase in the fuel cost
Transport by coach to the sampling site	224.99	267.86	-42.87	There was an increase of the cost of tickets. but it was reduced by obtaining a teacher discount
First class driving card	0.00	254.29	-254.29	We had to include this expenditure to avoid problems for the fisherman when the vessel needed to go beyond 5 nm from the coast.
Accommodation in work location	257.13	151.79	105.34	Reduced due to the less number of sample days
Alcohol	289.27	159.04	130.23	We used less alcohol than expected
Bottles	128.56	272.32	-143.76	The bottles cost was higher than anticipated because we needed bottles of bigger size than we had expected. The change was caused by the big size of the echinoderms and some gastropods species
Gloves	16.07	19.64	-3.57	Small differences
Bags	10.45	13.48	-3.03	Small differences
Dredge (plates. sinkers. chains. net. manpower)	128.56	196.43	-67.87	There were needed more Kilograms of plumb and we had to repair the dredge
Scales	401.76	446.43	-44.67	Differences due to the local Exchange rate used

Photocopies and printed material for forms and workshop with fishermen Bibliography	160.70	197.28	-36.58	We added bibliography related to macrobenthic species identification
Other Materials for the workshop	24.11	14.29	9.82	We needed less materials such as trays for the workshop
Total	5755.63	5742.83	12.80	

* Budgeted Amount: Exchange rate between the pound sterling (£) and the Argentine peso (\$) on 14th December 2009 according to Banco de la Nación Argentina: £ 1= \$ 6.226.

** Actual Amount: Exchange rate between the pound sterling (£) and the Argentine peso (\$) at the moment of grant reception according to Banco de la Nación Argentina: £ 1= \$ 5.60.

The changes in the exchange rate occurred between the proposal presentation (6.22661) and the moment of grant reception (5.60) caused that we received 3655.14 \$ Argentine pesos less than the expected.

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

- 1) Make the second workshop to inform the research results to the fishermen that are interested in pushing for an improvement of the performance of the current regulations and controls.
- 2) Inform the fishing authorities about the results of the project.
- 3) Define future research purposes that could be relevant to habitat preservation.

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

The Rufford Small Grant logo was used in the workshop graphic material and in the abstract sent to COLACMAR 2011.