

Final Evaluation Report

Your Details			
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Project Title	Fogwater provision to flora and fauna in biological corridors from a threatened Mediterranean ecosystem (Central Chile)		
Application ID	39558-1		
Date of this Report	27/07/2024		



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

Objective	Not achieve	Partially achieve	Fully achieve	Comments
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Provide an additional source of water for local fauna and flora consumption		X		We were able to install the infrastructure at five sites and to collect decent amounts of water to provide it to animals by water troughs. Nevertheless, the quantities were not sufficient to also sustain nearby tree individuals, as first intended. Several problems arose with the infrastructure (that I detail in the next section), hampering the quantification of accumulated harvested fog-water. Several litres were harvested in all the sites, with the most being 9 litres harvested in 8 days. Trap cameras recorded native animals consuming the provided water.
Promote biodiversity divulgation among local community			X	Two local biodiversity cultural days were held at public sites of Casablanca during summer. These included divulgation activities, music and dance workshops, among other initiatives where people actively participated.
Characterize the efficiency of a	Х			As quantities of harvested fog- water wasn't enough to also



traditional water- management technique: infiltration trenches, in augmenting native tree's physiological hydric status (New objective)		provide it to trees (as first intended), I opted to test the physiological efficacy of a traditional water-management technique already established at several sites, with a robust experimental design. Nevertheless, (and for reasons I explain in the next section) analysis of foliar samples couldn't be developed for the totality of the sampling period devoted to this aspect. This severely hampered the efficiency and interpretation of the collected data.
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2. Describe the three most important outcomes of your project.

a). Supports the feasibility of this fog-water harvesting technique for ecological restoration purposes.

b). It gave some fruitful cultural and divulgation activities that enriched the local community during summer (and gave some relief to the benefited animals).

c). It empowered us (and some of the landowners) as local change agents that will continue to promote conservation by different means.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The infrastructure was not able to effectively record in most cases the amount of collected water. Inefficiencies in the pump potency to deliver the collected water and in electric signalling (switch) tended to occur at some sites and were repaired (but sometimes they failed again weeks later). Besides, flowmeters subdued to disconnection of their hoses (displaced by animals, or chewed by rabbits), and to precipitation (despite having sealed carcases installed), erasing the accumulated registers in the latter.

Some registers were also probably distorted by rain (not distinguishable from fog-



water because of the design)

As the water was prioritised for animals, I aimed to fulfil the botanical aspect. This by testing the efficiency of a traditional water saving technique that was already applied by local landowners, known as infiltration trenches. This took place in three sites with different longevity of the infiltration trenches (years, months to weeks). Native tree individuals from three species (located at treatment and control sites) were submitted to foliar analysis to infer water hydric state from mineral content (B, K, Ca, Mn, Fe, Zn). The tree species were *Schinus latifolius, Peumus boldus* and *Quillaja saponaria*, each with different water metabolism performance in drought scenarios. Sampling was executed twice: during austral spring and summer. These were analysed in laboratory, but we only got the results for the spring period. This was because of the closure of the laboratory for holidays (during February), my impossibility to stay residing at the city where the university is located and the sudden lack of time of the university's lab manager colleague that was kindly helping us to develop the analysis, once she came back from said holidays.

Unfortunately, much of the variation in the data is driven by many other factors than the presence of the infiltration trenches, and having the results of the summer sampling (with more water stress) would have better accounted for individual physiological changes among those periods dictated by those other factors (such as genetics, soil composition, etc.).

I think that the latter severely hampers the significance of collected data and therefore, the possibilities of publishing about this topic, although some of it could still be submitted (as the following topic "foliar mineral content for different plant species from three different sites in central Chile, and influence of infiltration water trenches").

We couldn't register *in-situ* osmotic pressure as we lost touch with the investigator that was going to lend us his measuring device.

Batteries of the camera traps were rapidly exhausted, as those registered every movement of branches and other objects, so not many total registers were collected. Although, we did compile native species using the water laid at the troughs.

Other difficulties in term of the infrastructure itself were successfully tackled throughout its design and construction (too many to count).



4. Describe the involvement of local communities and how they have benefitted from the project.

Local landowners that received the infrastructure were pleased to promote biodiversity in their parcels. Local communities were directly benefited with the biodiversity cultural days held at public sites, in terms of joy, cultural enrichment and acquiring knowledge on local biodiversity subjects; in days where no other cultural activities were taking place in the town.

5. Are there any plans to continue this work?

The infrastructure will continue to operate and to be maintained, collecting fogwater and laying it at troughs, in up to six sites. I will judge if recording the collected water is still feasible at some few sites. If so, I will re-assemble the infrastructure that performed that function at some remaining sites. If eventually I can afford them, I'll get more batteries to re-install the camera traps.

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

I am planning to develop a tutorial on how to assemble the fog-water harvesting infrastructure and posting it as a video in social media for similar initiatives that could take place all over the country.

Unfortunately, scientific papers are no longer feasible to redact and submit with current data, at least until more registers are performed in terms of fog-water harvest.

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

Trying to measure efficiently the amount of water harvested by these devices, in order to determine what factors promote more water acquisition, by accounting differences amount studied sites.

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

I used the Rufford Foundation's logo on digital flyers promoting the cultural biodiversity activities.



9. Provide a full list of all the members of your team and their role in the project.

Besides me, the people involved were René Vergara, construction technician who helped in the design and construction of the infrastructure. Also, Cristian Villarroel, who helped in the botanical surveys. Another person worth mentioning would be Esthefany Reyes, lab manager at the University who helped to process and analyse botanical samples.

10. Any other comments?

Just thank you again for the opportunity.