Project Update: March 2022

Achievements to date:

The soil moisture will be determined in 900 plots of 0.001 ha.
Fully Achieved
Although it was planned to make a single humidity measurement in 900 plots, it was convenient to measure the humidity in 485 average points but monthly for a year.


The 10,893 seedlings and 3,383 established individuals marked in the first stage will be remeasured.
Not achieved
We had a very dry spring, so the seedlings still have no leaves. This activity is rescheduled for April 2022 (after the summer rainy season).

The production of seeds of the timber tree species will be counted.
Fully achieved.
We planned to work with three species, but we increased the effort to study the 12 timber species. I quantified the seed production of 12 tree species (at least 20 individuals per species). In addition, I studied the phenology of those species on a monthly basis for a full year.

Data Forest□t: processing of the Forest□tion obtained in the field to establish silvicultural guidelines that favor the regeneration of the Forest.
Partially achieved.
I evaluated the conservation status of 12 tree species:

Názaro, Paula, et al. "Preliminary assessment of the conservation status of timber species in the threatened piedmont dry forest of northwestern Argentina." Journal for Nature Conservation 59 (2021): 125947.

I am working on a manuscript on the phenology of the 12 tree species.

Information transfer: preparation of technical reports, exhibitions in two transfer workshops (one in Jujuy and the other in Salta), dissemination material such as brochures, posters and advertising spots.
Partially achieved.

Due to the covid-19 pandemic, the strategy for transmitting the results was changed. The information was disseminated in:

- Scientific article in the Journal for Nature Conservation.
- Informative disclosure bulletin.
- Documentary video.
- Scientific poster and explanatory video at the LACA Conservation Latin America Congress.
- Social networks of the Cebio Foundation.
- Live interview on social networks of the Cebio Foundation.
- Journalistic note in the newspaper El tribuno de Salta.
- Interview on TV show VideoTar (regional).
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  https://fb.watch/aGzkMnM_jV/
  https://www.eltribuno.com/salta/nota/2021-11-8-22-54-0-preocupa-la-baja-cantidad-de-lapachos-amarillos-y-rosados?fbclid=IwAR2VHuI48pno7dgXXtC4M1wNa6EtPeJJ-1CadxP6k3NQpYylz37c6TzRWNY
  https://www.dropbox.com/s/ovupzuz03n0sv3g/Bolet%C3%ADn%20N%C2%BA%2012.pdf?dl=0
  https://www.sciencedirect.com/science/article/abs/pii/S161713812030193X

Difficulties to date:

The flowers and fruits of some species of trees are located above the level of the leaves, therefore they could not be observed from the ground level. Reason why we bought a drone that allowed us to observe the tops of the trees with flowers and fruits from above.

I had to postpone the monitoring of the saplings to April 2022, after the summer rains, because the spring was very dry and the saplings still didn't have leaves.

Due to the pandemic we had to change the strategy to disseminate the results. Instead of conducting face-to-face workshops, we spread the information through social networks (Facebook, Instagram, web pages, newspapers, congress).

I bought a tablet to avoid the use of paper forms in the field and save time digitising the data.

In the field we do not have electricity so we use the truck to charge the batteries of the tablet, drone and camera.

We increased the soil moisture sampling effort, that is, instead of making a single measurement at 900 points, we made 485 monthly measurements for a full year.

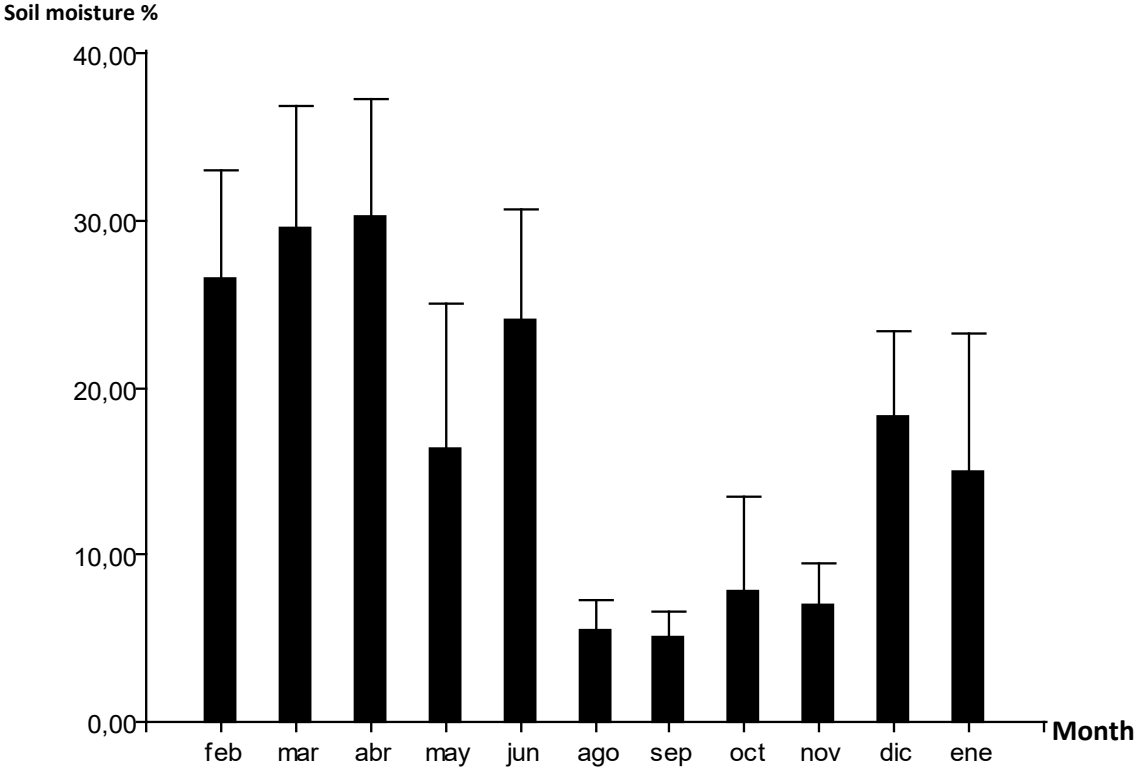
We increased the sampling effort, in principle we were going to work with three species and we decided to do it with the 12 species of importance for the lumber industry.

In addition to quantifying the seed production of each tree of each species, we did a monthly follow-up to know at what time of the year it flowers, bears fruit, leaves fall and new leaves grow for each of the species.

Most important issues to date:

1. I evaluated the conservation status of 12 tree species. Eight of the 12 species evaluated are in an inadequate conservation status. The results were disseminated on the Videotar Noticias channel (reach 60,000 people), Cebio's Instagram (reach 580 people), Cebio's Facebook (reach 2,900 people), El Tribuno Salta newspaper (reach 550,000 people), LACA Conservation Latin America congress (reach 500 people).

2. I monitored soil moisture monthly for a year. Humidity decreased in the period from August to November. It started to increase in December with the maximum peak in April.



3. I monitored the phenology of 12 tree species monthly for a year. I took photos of the canopy of 20 individuals of each species with the help of a drone and a camera.

   In the dry season, 10 of the 12 species studied lose all their leaves. *Myroxylon peruiferum* and *Parapiptadenia excelsa* do not lose all the leaves.

Individuals over 40 cm DBH produce over 55 m^2 of canopy. Individuals with a DBH between 21-39 cm produce 20-55 m^2 of canopy. Individuals less than 20 cm DBH that produce flowers and fruits have a canopy area of less than 20 m^2.

- *Calycophyllum multiflorum* flowered in March and April. The fruits form in May, open in November and remain on the tree until the next bloom. The leaves begin to wither in May. It is without leaves in September, October and November. In December it has new leaves. All individuals over 20 cm DBH flower and bear fruit. 33% of individuals over 10 and less than 20 cm DBH did not bear fruit.

- *Phyllostylon rhamnoides* leaves fall from May to November. The flowers begin to develop from November. The fruits ripen in February. In December it has new leaves. It flowers from 20 cm DBH.

- *Cedrela balansae* blooms from December to February. The fruits begin to develop between February and March and mature in September. From June to October it is without leaves. All individuals over 30 cm DBH produce flowers and fruit.

- *Jacaranda mimosifolia* blooms from September to November. The fruits develop in December and ripen in September of the following year. Leaves fall in August and September. From September to November new leaves begin to grow.

- *Enterolobium contortisiliquum* flowers begin to form in October. The fruits begin to develop in December and mature in May. In August it has no leaves. In October it has new leaves. It flowers from 22 cm DBH.

- *Anadenanthera colubrina* flowers from October. The fruits begin to develop in December and mature in September. From May to September the leaves fall progressively. In October and November new leaves begin to grow. The reproductive stage begins at 15 cm DBH. 97% of the monitored individuals flowered.

- *Parapiptadenia excelsa* flowers from October and November. The fruits begin to form in December and mature in September and October. In September some leaves fall. New leaves grow in October. It flowers from 16 cm DBH.

- *Amburana cearensis* leaves fall from April to August. New leaves begin to develop in September. In 2021 it did not bloom.

- *Myroxylon peruiferum* blooms in September and October. The fruits begin to form in October and ripen in December and January. In October it renews some leaves. Not all the leaves fall off. It flowers from 12 cm DBH.

- *Myracrodruon urundeuva* leaves begin to fall in August. In September it has no leaves. In October and November new leaves begin to sprout. It begins to bloom in August and September. Fruiting begins in October and the fruits ripen in November. All individuals greater than 26 cm DBH flower.

- *Handroanthus impetiginosus* blooms in August. Fruits between September and November. In August it has no leaves. The leaves sprout again between September, October and November. In December all individuals have new leaves developed. It flowers from 22 cm DBH.

- *Handroanthus ochraceus* flowers and bears fruit in October and November. In October and November it has no leaves. In December they have new leaves. It flowers from 20 cm DBH and fruits from 40 cm DBH.

Local community involvement to date:

The generation of information on the regeneration dynamics of each of the species under study allows us to propose forestry guidelines that ensure the natural regeneration of these tree species, which will guarantee the long-term use and conservation of species with high timber value. If the forestry companies do not take urgent measures, high value tree species could disappear, impoverishing the forests and eliminating the possibility of the forestry sector using a timber resource. In addition, by improving forestry practices, it is possible to contribute so that many native families and communities can also make sustainable use of wood.

These forests function in an integral way, so if this ecosystem is fully functional, it can benefit other species of trees, birds, reptiles and mammals that depend on the conservation of this habitat. Society at large will also benefit from the role forests play in sequestering carbon to mitigate climate change.

Sharing:

- Scientific article.
- Newsletter.
- Documentary video.
- Interviews.
- Social networks.
- Regional newspapers.

Timescale:

The grant will be used for a longer period than anticipated. Originally, a project duration of 13 months was established, but we will extend it to 24 months because I still need to resample the saplings and then process and disseminate that information.

Next steps:

Finish writing the phenology manuscript and disseminate those results. Re-sampling of saplings in April 2022. Process and disseminate regeneration data.

Team:

Scientific advisers: **Natalia Politi y Guillermo Martinez Pastur**

Volunteers who accompanied me to the field: **Alejandro Massa, Pia Pozzi, Agostina Muños, Ezequiel Cavadini, Juan Terrazas, Valeria Bento, Sebastian Aguirre, Florencia Baca, Ariel Suarez, Sofia Ocaransa, Alvaro Buitagro, Florencia Barbarich, Bruno Rendón, Agustina Belicari y José María Acuña.**

Comments:

In the middle and the end of the year I will send a report to Rufford with the progress made.