

## **Rehabilitation of Illegally Logged Monarch Reserve Forest on Sierra Chincua**

MBF Board members have been dynamic partners in the planning and carrying out of a rehabilitation strategy for the 10 hectares of Reserve forest which were illegally logged in the Arroyo Hondo on Sierra Chincua in 2015. Bringing their skills and knowledge from many specialty areas, including geography, mapping, reforestation and soil science, has greatly increased the probability of this projects success. Isabel Ramirez and Pablo Jaramillo have been actively involved with this project ever since the first site visits and meetings were held in previous months and dating back to the first report (April 2015) of illegal logging operations at this site.

Using drone images, Isabel Ramirez and her colleagues at CIGA-UNAM prepared a zone map trough a participatory process among all the parties involved in restoring the area, noting 4 zones that should be rehabilitated based on the severity of the damage created by the illegal logging. Decisions about which areas should be reforested or allowed to regenerate naturally were based on site visits and discussions between researchers from UNAM and Michoacana University, as well as some state and federal agencies like COFOM, CONAFOR, PROFEPA and the Reserve's direction.

On June 30, 2016 Pablo Jaramillo, Isabel Ramirez along with graduate students and postdocs from UNAM joined Rosalia Dominguez, sub director of the reserve, along with work crews consisting of forest brigades and forest fire brigades from the states of Mexico and Michoacán met to begin the first day of the project. At the welcoming meeting Rosalia provided an overview using a hand drawn map based on the zonification study, noting that reforestation would begin in the most affected area. The planting locations of oyamel and pine seedlings would be random to resemble a natural forest. Reviewing the ecological significance of this sensitive area, Pablo made sure that the agreement about using specific planting strategies for each seedling and focusing on quality planting was fulfilled. As planting began, Isabel and her postdoc sampled vegetation along the riparian zone of the Arroyos while Pablo and his graduate student participated in the reforestation and also collected soil samples prior to the plantings. These soil samples will be used to monitor changes in the soil composition and chemistry as the area recovers. On this first day, 45 workers planted 1700 oyamel and pine seedlings on 1.5 ha of land in a 15/5 ratio of oyamel/pine seedlings.

On July 6, 2016, Pablo and three students participated in day 2 of the reforestation project. There were fewer participants this day, and Pablo reiterated the importance of planting each individual tree well as per the prescribed strategy. More importantly, they revisited Zone 2 to check the vigorous natural regeneration, and take care that those in charge of the reforestation respect the agreement in allowing other tree species, also vital for biodiversity, and that the area to naturally regenerate. While Isabel an others had noted in an earlier report that the site may need protection by fencing, evidence of wandering cattle observed by Pablo during the first two days left no doubt that fencing would be critical for the survival of the reforested trees and naturally regenerating vegetation.

On July 13, 2016, Pablo and two graduate students returned to the project site to continue their participation with the plantings in Zone 1. Their presence ensured that the planting ratio of oyamel/pine of 15/5 ratio was maintained and the quality of the plantings remained high. The other three zones designated as Zone 2, 3, and 4 will be left to regenerate naturally.

Given the urgent need to protect the four Zones with a perimeter fence, Pablo recommended to the MBF Board that we provide the necessary funding for this fencing. A letter dated July 28, 2016 requesting our support, was received from Reserve Director Felipe Martinez, and the MBF Executive Team has approved this expenditure.