Southwest

Navajo Nation: Diné Native Plants Program

Background

Hundreds of native plant species are culturally significant to the Diné (Navajo), and climate change impacts have led to substantial changes in the abundance, distribution, and life history of these native plant species. The Diné Nation experiences ongoing threats from climate change resulting in loss of vegetation cover and soil erosion while also experiencing the impacts of mismanagement of natural resources from overgrazing, oil and gas extraction, uranium mining, and invasive plant species. These threats have significantly decreased the availability of traditional medicines and food derived from flora and faunal species, and have drastically altered valuable ecosystems impacting Diné lifeways through their ceremonial and subsistence practices.

In 2017 the <u>Diné Native Plants Program (DNPP</u>) was created, and their mission is to "serve as a living library of locally-sourced native plants for restoration, conservation, and research, while providing the Diné people access to culturally important plants for the benefit of the community, culture, wildlife, and land." The DNPP is a sub-department of the <u>Navajo Nation Department of Fish and Wildlife</u> and consists of a team of botanists and horticulturalists who developed a priority plant species list to design their collection and restoration strategies.



Willows and cottonwoods growing in the greenhouse and wild sumac seed drying Photo Credit: Kelsey Jensen

Native Seed Collecting and Banking

The Diné Nation stretches through Arizona, New Mexico, and Utah and encompasses diverse landscapes from montane conifer forests, canyon bottoms, and arid deserts. Native plants are naturally adapted to the local precipitation, temperature, and soil conditions, and these conditions vary across plant species. Different populations of the same species often adapt to different environmental conditions, and these adaptations can be expressed in the genetics of the plants. Genetically appropriate plants are therefore uniquely suited to grow in the environment where they derive. Therefore, the strategy to represent the Diné Nation's diverse landscapes is to target seed collection from each unique ecoregion to maximize genetic diversity in the seed bank. Since its inception, the DNPP has conducted over 250 native seed collections. The DNPP's seed bank is located in Fort Defiance, Arizona, on the Navajo Forestry Department grounds. Seed banking helps address the challenge of climate change by ensuring against the loss of plant species in the wild. Seed banking secures access to diverse, locally adapted native plant species for restoring resilient ecosystems.

Riparian Restoration and Revegetation

A goal of the DNPP is to develop and carry out land restoration projects across the nation. In the high desert; riparian areas, springs, and wetlands are especially important for people and wildlife. Currently, DNPP seeks to increase groundwater recharge, vegetation, and wildlife habitat in two regions of the NN; the Chuska Mountains and Tsegi Canyon; through riparian restoration using native plants, livestock exclusion, and simple in-stream structures. Restoration also involves conducting stream assessments within treatment areas to determine restoration goals, collecting baseline data, and writing detailed revegetation plans for treatment areas. In addition, DNPP staff attend local community meetings referred to as governance or chapterhouse meetings that are located within targeted riparian areas needing revegetation in the Chuska Mountain area. The purpose of DNPP staff attending the chapter meetings is to inform the community of the restoration project goals, acquire feedback, and gain clearance from grazing leaseholders to fence specific treatment areas. The riparian restoration projects aim to address erosion occurring in stream banks and prevent future erosion by planting and seeding native plant species.



Willow and Cottonwood collecting in Tsegi Canyon Photo Credit: Kelsey Jensen

Tsegi Canyon Restoration Project

The Tsegi Canyon Riparian Restoration Project focuses on DNPP's efforts to continue revegetation (with willow and cottonwood cuttings, native plant seed, and container-grown plants), fence maintenance, livestock removal, and building erosion control structures in Dowozhiebito and Keet Seel canyons. The project was started by the Bureau of Indian Affairs and a third-party consulting company (Fred Phillips Consulting). The Tsegi Canyon watershed is an essential ecosystem for many species on the <u>Navajo Endangered Species List (NESL</u>). DNPP

staff plan to continue the restoration work started in 2018 by Fred Philips and BIA Western Agency and will work closely with these partners and Navajo grazing permit holders to develop restoration plans for additional regions within the Tesgi Canyon system.

Native Seed Increase Fields

A common obstacle to revegetating with native plant species on the Diné Nation is the lack of locally sourced, native plant material. Most plant materials are often acquired from commercial growers in other regions and can threaten the success of restoration projects. In 2018, a partnership between DNPP, <u>Tolani Lake Enterprises</u>, and <u>US Geological Survey RAMPS</u> was formed and was funded through the BIA Tribal Resilience Program. The main component of this grant was to conduct a workshop series to develop and encourage the capacity of Diné natural resource professionals to restore degraded lands on the nation using native plants and teach them how to grow seeds in irrigated fields to increase seed yield from small collections.

In 2020, the partnership's next objective was to establish the Diné Nation's first native seed increase field located at North Leupp Family Farm, while using it as a teaching tool for local farmers and tribal professionals. The project aimed to increase seeds of important restoration grasses and forb species. The goal for the subsequent years is to harvest large amounts of native seeds that will be made available for future restoration projects on the Navajo Nation. This particular seed increase field method addresses the need to expand native seed supplies and serves as a simplified model for converting wild-collected native seed into a native seed crop. This project influences ongoing work to address ecological impacts of climate change on the Diné Nation's degrading grass, scrubland, and riparian ecosystems.



Established grass seedlings planted in drip-irrigated seed increase field. Photo Credit: Diné Native Plants Program

Moving Forward

The native plant program created a unique job position to hire a cultural plants coordinator. The position is funded for two years by the Catena Foundation. The individual will work towards

developing a network of Diné herbalists to help advise program operations and conduct community workshops about traditional uses of native flora and fauna. Accessing Diné Traditional Knowledge and receiving traditional perspectives about best practices has been a challenge for the program. The work of the Cultural Plant's Coordinator will help revitalize traditional teachings that are at risk of being lost.

The Diné Nation's environmental issues will continue to reduce native plant cover and threaten the Diné people's natural resources, traditional teachings including cultural and language preservation, and livelihoods. These threats will continue to be exacerbated by climate change. The Diné Native Plants Program preserves highly adapted native plant species through seed banking, plant propagation, and land restoration. The creation of the program and their ongoing work is a crucial and primary step in a long-term endeavor to protect native plants for the land and the people they are most culturally meaningful to.