



State and Private Forestry Fact Sheet

Guam 2023



Investment in State's Cooperative Programs

Program	FY 2022 Final
Community Forestry and Open Space	\$0
Cooperative Lands - Forest Health Management	\$0
Forest Legacy	\$0
Forest Stewardship	\$100,000
Landscape Scale Restoration	\$0
State Fire Assistance	\$200,000
Urban and Community Forestry	\$5,150
Volunteer Fire Assistance	\$0
Total	\$305,150

NOTE: This funding is for all entities within the state, not just the State Forester's office.

Guam is the southernmost island in the Mariana Archipelago, with a land mass of 560 km², a maximum elevation of approximately 405 m, and a total shoreline length of 244 km. The northern half of the island is a flat plateau composed of uplifted coral reefs. It is relatively flat and is a mix of forest, urban, and cultivated land. Beneath the plateau is the island's principal aquifer or freshwater lens. The southern half of the island is volcanic in origin, featuring rolling terrain dominated by grasslands and savannas, and drained by many streams and rivers. The island of Guam is surrounded by coral reefs that provide habitats for large numbers of diverse marine species. Guam is the most heavily populated island in Micronesia, with an estimated population of 170,900 in 2022. However, over half of the island remains forested, with 26% of forests in reserved or protected areas, such as refuges or conservation areas. Land ownership of Guam's forests is divided between private (53%) and public management (47%). Public lands are managed by the Department of Defense, National Park Service, National Wildlife Refuge, and the Government of Guam which manages 20% of the land area.

The Government of Guam Department of Agriculture has primary responsibility for conservation management of local government conservation lands. The Forestry and Soil Resources Division (Guam Forestry) is the central agency of the Department that is responsible for protecting and restoring forest ecosystems and soil resources in Guam. The mission of Guam Forestry is "to conserve, protect and enhance Guam's vegetative environment and sustain the natural resources which are dependent on healthy forests". The agency works with stakeholders to promote healthy and productive forests in both rural and urban areas throughout the island in partnership with non-governmental organizations, the USDA Forest Service, and other government agencies.

Program Goals

- Strategy 4: Implement a forest health program and unify interagency efforts to control invasive species.
- Strategy 3: Improve fire prevention, control, suppression and prescribed fire activities through organizing training and equipping staff and resources.
- Strategy 2: Protect, conserve, and restore forests on public, private, and other non-military lands.
- Strategy 1: Implement highest priority plantings in urban, rural, and undeveloped areas that meet multiple objectives.

Key Issues

- Issue 1. Wildfire and Public Safety: Wildfires accelerate erosion and the movement of soil pollutants into surface waters and domestic water supplies. Fires also contribute to the decline of the coral reef systems by hastening the delivery of soil sediment into the coastal waters. On average, 4.4% of the island's total land area was burned each year between 2015 and 2022.
- Issue 2. Water Quality and Water Supply: Movement of sediment from erosion into waterways is one of the most pervasive problems associated with poor land cover, which degrades surface waters, domestic water supplies, and fragile reef systems. Forest management strategies that direct resources toward reestablishing native forests, preventing and reducing fire frequency, and providing rehabilitation of degraded landscapes will improve water quality and assure safe water supplies for the future.
- Issue 3. Deforestation of Native and Old Forests: Approximately 1,000 forested acres have been cleared to support military buildup, including about 80 acres of high-quality native limestone forest. Additional forest areas or fragments may be cleared to accommodate roadways, transmission lines, and other infrastructure related to the buildup, as well as private development associated with the activities.
- Issue 4. Urban Forest Sustainability, Population Growth and Urbanization: Between 1960 and 2019, Guam's population increased 150%. The rapid population growth led to an increase in urbanization, which has resulted in forest degradation and fragmentation. Strategies to mitigate the impacts of urbanization include planting trees along roadways, parks, greenways, and in areas to offset runoff.
- Issue 5. Degraded Lands: Lands that have limited vegetative cover or are barren areas are considered a threat to future ecosystem health as they are more likely to face issues of erosion, soil loss, and increased fire risk. Degraded lands are strategically prioritized for management because they can contribute to higher amounts of eroded sediment to streams and reefs.
- Issue 6. Invasive Species and Forest Health: Invasive plants, insects, and diseases are a serious threat to Guam's forest. The coconut rhinoceros beetle (*Oryctes rhinoceros*) was first detected on Guam in Tumon in 2007. Its distribution is now island-wide and puts all coconut palms at risk. Little fire ant (*Wasmannia auropunctata*) was detected in 2011 and has quickly spread island-wide by humans transporting green waste.

Forest Facts and Accomplishments

Selected Facts	Value	FY 2022 Accomplishments	Value
Population	153,836	Landowners Receiving Educational or Technical Assistance	29
Acres of Forest Land	69,703	Acres Covered by New or Revised Forest Stewardship Plans	0
Acres of Nonindustrial Private Forest Land	28,771	Acres in Important Forest Resource Areas Covered by New or Revised Stewardship Plans	0
Number of NIPF Landowners	2,877	Volunteer Fire Departments Assisted	0
Acres of Federal Land Under State Fire Protection	0	State Fire Communities Assisted	25
Acres of Private Land Under State Fire Protection	81,000	Coop Forest Health Acres Protected	0
Number of Rural Fire Departments	12	Forest Legacy Project Acquisitions	0
Cities and Towns	19	Communities Provided Urban Forestry Program Assistance	74
Forest Based Employment	0	Population Living in Communities Provided Urban Forestry Program Assistance	296,610
Economic Impact of Forestry (by rank)	0	Urban Forestry Volunteer Assistance	5,946
State Forestry Budget (All Sources)	1,150,318		

Program Highlights

Conservation Education

Although the COVID-19 pandemic challenges were reduced, the ongoing effort to deliver interactive and engaging content across various social media platforms remained a priority for the Guam Forestry Division. The division's social media platforms @DOAG.Forestry (Facebook, Instagram, and Twitter) have a following of 1,323 followers on Facebook; 2,196 followers on Instagram, and 70 followers on Twitter with a total following across all platforms of 3,589. From January 4, 2022 – December 30, 2022, on Instagram alone, Forestry created and shared 197 posts (forestry images, games, factsheets, did-you-knows, public service announcements, and videos not including the numerous livestream events and captures). The pandemic reinforced the need for additional avenues for the community to reach reliable content and connections with the division's work taking place, island-wide.

In addition to the weekly postings developed for community engagement and interaction, the Guam Department of Agriculture, Forestry and Soil Resources Division provided more than 25 in-person outreach events throughout the year which included tree plantings, presentations, and service days for the people of Guam.

Cooperative Fire Protection

Guam Forestry is responsible for firefighting on conservation areas in the initial attack and supports Guam Fire when requested. Guam Forestry's primary responsibilities are within conservation reserves, with significant resources dedicated to the COTAL reserve. During the 2021 dry season 177 wildfires having burned 3,624 acres were mapped, approximately 2.7% of total area burned (the first time in 6 yrs when no individual wildfires exceeded 300 acres in size). There was a slight increase in the number of wildfires during the 2022 dry season to include 3 individual wildfires that exceeded 300 acres in size. The fire class size with the highest number of individual fires was, 0.26-9 acres. The 2022 dry season ended with a total of 193 wildfires having burned 4,745 acres, approximately 3.5% of total area burned.

On the ground projects, included the installation and maintenance of firebreaks across various management areas located in southern Guam, measuring over 12,000 linear feet and approximately 25-30ft wide and contractual services for fuel load reduction projects spanning 30,000 linear feet across various sites.

The Division coordinated 1-week of trainings broken into several sessions and trained 56 participants from Forestry, Conservation Officers, Guam Fire Dep., Guam Police Dep. and DoD Fire Agencies. The first training session was a 1-day (two sessions offered), FI-110 Wildland Fire Observations & Origin Scene Protection for First Responders Training. The second phase of training was a 3-day FI-210 Wildland Fire Origin & Cause Determination Refresher Course which included field exercises.

Guam's 1st Community Wildfire Protection Plan (CWPP) is being developed and is an extension of ongoing community engagement in the villages of Piti & Asan-Maina.

A Remote Automated Weather Station (RAWS) was purchased and coordination between Guam Forestry and the National Weather Service - Guam Field Office, are ongoing for installation.

Forest Health Protection

The Cooperative Forest Health Management Program (Forest Health Protection) targets enhancement of native forests that have been impacted by the effects of invasive species, forest pests, development, drought, and typhoons. Guam Forestry has a close working relationship with UOG, other staff in Guam Agriculture, and the Animal and Plant Health Inspection Service (APHIS). These partners are involved in monitoring and managing outbreaks of invasive pests and plants at the island scale, as well as within conservation areas and plant nurseries. Typically, if any outbreaks are identified, Guam Forestry seeks the assistance of UOG on identification of the pests or plants as well as assistance to prioritize species and control methodologies.

Forest Stewardship

Under the Forest Stewardship Program, Guam Forestry provides technical assistance and planting materials to private landowners for establishing forests, managing forests or for agroforestry practices.

The FSP supports the Guam Forestry nursery which provides native and non-native plants for erosion control projects and other uses such as establishment of wind breaks and Urban and Community Forestry planting programs. Currently, the program encourages private landowners to adopt conservation practices on their land by replacing non-native species with desired native plants, and to develop and implement stewardship plans, by educating the public on the importance of protecting and expanding the surrounding forest on their lands, by propagating native plants to accommodate Forest Stewardship plans, and by participating in volunteer planting events.

This year, 9,501 trees were planted within the COTAL reserve and Manell Watershed reforestation sites with the help of 646 volunteers (2,584 volunteer hours).

Efforts are ongoing toward the goal of supporting landowners with Stewardship projects, the program established a \$10,000 pilot program with a non-profit organization (Island Girl Power) for "In-Kind" Assistance Funds. This program will help landowners to apply for future in-kind funds to help with projects on their property that incorporate Stewardship goals.

Improvement of Guam's Forest Management Using Biochar as a Soil Amendment Project

The experimental plan has been completed and is currently being implemented with the As Gadao reforestation site in Malesso, Guam. The local Coral Reef Conservation Program Office, which is located at the Guam Department of Agriculture, provided support for monitoring and data collection for the months of May through October 2022. The first annual analysis of the data will be available end of February or early March of 2023. Additionally, the project coordinator has established a community firebreak maintenance program which works in tandem with the biochar project, which means, monitoring and maintenance are provided to ensure continued protection of the project sites from wildfire.

Landscape Scale Restoration

The Guam Restoration of Watersheds (GROW) team planted 4,475 trees during the 2022 season with the GROW Guam Ugum Watershed project site. The GROW team continues to maintain the plant nursery at the Guam Department of Agriculture, which houses the majority of the plant inventory. The GROW team completed the reconstruction of the Center of Island Sustainability nursery. Nursery benches have been assembled and the irrigation system has been installed. This additional nursery will allow the team to expand species variety as well as increase inventory.

A seedball machine was built and tested, and can produce thousands of seedballs within minutes compared to manual seedball production. Approximately, 3,000 acacia seeds were dispersed by drone on badland sites within the Ugum project site. The GROW team is in the final stages of producing a brochure which contains educational material pertaining to the Ugum project site including, conservation practices, stressors, the ridge to reef concept, and provides its readers a means to participate in GROW activities. The brochure contains a watershed model and a watershed map of southern Guam. With regard to fire awareness, the team created a "WILDFIRES" sticker with the acronym meaning W-wound I-Indigenous L-Landscapes D-Destroying F-Fertile I-Island R-Resources & E-Ecological S-Systems to increase fire prevention awareness. The brochure and stickers are to be distributed at outreach/planting events.

The Stewardship Management Plan for the GROW Guam Ugum Watershed Project Site is currently under review.

Urban and Community Forestry

The UCF program successfully completed nine plantings and four outreach events and included hosting an ISA Arborist Certification Training for government agencies and partners; and Forestry staff completed an ISA Tree Climbing Training for Arborists.

Outreach and plantings included: Untalan Middle School committed to a full school grounds UCF plan for native and naturalized trees. The initial native tree garden was planted on April 29, National Arbor Day. Forty-five (45) students planted forty-five (45) native trees within their courtyard. The native tree garden will be used to educate students of native flora and benches will be installed to offer outdoor classroom opportunities for teachers.

In partnership with the University of Guam (UOG) Seagrant Program, the UCF Program hosted the first annual ArborFest on October 1, 2022. Thirty government and nonprofit programs were assembled to

educate the community about their work related to trees through fun activities for all ages to enjoy. The event was a huge success with over six hundred (600) community attendees.

UCF Program held an assembly at PC Lujan Elementary to celebrate Guam's Arbor Day. Senators read the 2022 Arbor Day Resolution, UCF Coordinator, spoke to the students about the importance of trees, and two hundred (200) Ifit (Instia bijuga) seeds. One hundred and sixty-nine (169) students and five honorary personnel planted seventy (70) native plants to initiate PC Lujan's full school grounds UCF plan.

Developing Communities went up to 99% with activities spanning the whole island. Volunteer hours increased nearly 400% compared to 2021 and people in communities with assistance more than doubled. All accomplishments were possible through the amazing teamwork within the FSRD Division from the Chief, to all the staff, and personnel. All accomplishments were a success because of everyone's hard work and commitment to creating a positive change for the community and advocating for our trees.

Contact Information



Guam Forestry & Soil Resources Division

Christine C Fejeran
Forestry Division Chief
192 Dairy Road
Mangilao, GU 96923
671-300-7976
Christine.Fejeran@doag.guam.gov

US Forest Service Pacific Southwest Region

Kathleen Stearns Friday
Forest Legacy/Stewardship Program Manager
USDA Forest Service
1323 Club Drive
Vallejo, CA 94592
808-785-5197
kathleen.friday@usda.gov
