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NYBG Scientists and International Partners Document How Plants Are Used in Centuries-old “Weather Magic” Practices on Islands in the Southwestern Pacific Nation of Vanuatu

In One of the Few Studies of Its Kind, the Research Team Shows That Plant Knowledge Potentially Important to Conservation and Resilience Is Preserved in Rituals Meant to Understand, Predict, and Even Influence Weather



Species of plants used in weather magic practices in southern Vanuatu include plants known locally as (left to right) *mari mari* (*Zingiber zerumbet*), *namap* (*Maesa* sp.), and *karuarua* (*Meryta neoebudica*). Photos by Gregory M. Plunkett, Ph.D.

Bronx, NY—In one of the few studies of its kind, three New York Botanical Garden (NYBG) scientists and their colleagues have documented how plants are used in “weather magic,” centuries-old rituals and other practices intended to understand and even influence the weather, on two islands in the Southwestern Pacific nation of Vanuatu. NYBG’s Vice President for Botanical Science and Director and Senior Philecology Curator of the Institute of Economic Botany Michael J. Balick, Ph.D.; Director and Curator of the Cullman Program for Molecular Systematics Gregory M. Plunkett, Ph.D.; and NYBG Affiliate Scientist K. David Harrison, Ph.D., of VinUniversity in Hanoi, Vietnam, collaborated on the research with two other scientists and three Indigenous weather magic practitioners. They present their findings, the result of seven years of field and literature research, in “Weather Magic as Environmental Knowledge in Southern Vanuatu,” recently published in the peer-reviewed *Journal of Ethnobiology*.

The study was carried out on the volcanic islands of Tanna and Aneityum in southern Vanuatu's Tafea Province. Acknowledging that Western science typically excludes magic as a legitimate domain of knowledge, Drs. Balick, Plunkett, and Harrison and their colleagues argue that weather magic is a critical repository of sophisticated Indigenous environmental knowledge, particularly knowledge about plants. This holistic system of belief, expertise, and practice supports human well-being.

Weather magic is aimed at influencing a wide variety of meteorological conditions such as bringing or stopping rain, causing the wind to blow, bringing out the sun, or calming the sea.

For example, the plant known on Tanna as *mari mari* (*Zingiber zerumbet*), a member of the ginger family, is used in a rain-making ritual in which a *tupanas*—a weather magic practitioner—ties a large bunch of the plant's leaves in a bundle with branches of *namap* (*Maesa* sp.), a member of the primrose family. The *tupanas* places the bundle in the sea, and when the leaves start to rot in about a week, rain will come, according to local residents who are steeped in weather magic lore and practices.

Karuarua (*Mertya neoebudica*), which belongs to the same family as ginseng, is intended to have the opposite effect—stopping the rain—when a *tupanas* places four of its branches in a cross formation, washes them in sea water, calls for the rain to stop, and then hangs the branches in a tree for five days.

“The detailed knowledge that weather magic practitioners on these islands hold regarding their local environment represents an important means of transmitting not only cultural heritage, but also botanical knowledge, the maintenance of which may be critical for current and future conservation efforts,” the authors write. In addition, the detailed understanding of weather patterns—for example, through observation of the shape and appearance of clouds and shifts in the direction of winds—helps to support resilience and livelihoods on these remote islands.

Despite scientists' increasing recognition that environmental knowledge is conveyed through a diverse array of Indigenous systems such as music, magical practice in general has received little attention as a vehicle for such knowledge. In Vanuatu, weather magic is a central part of magical practices and lore, which, along with traditional systems of governance and worship, are essential parts of what is called in the local Bislama language *kastom*, the Bislama rendering of the English word “custom.” Through these practices, specialists also can help guide people on these islands to prepare for ever-increasing catastrophic environmental events such as cyclones. For example, they can direct people to construct special houses made of local plant materials that are able to resist high winds more effectively than Western-style homes with cinder block walls and tin roofs.

In the course of their field work between 2016 and 2021, the researchers and their local partners recorded narratives with Indigenous weather magic practitioners and experts, three of whom (Reuben Neriam, Johnson Noar, and Jean-Pascal Wahe) are co-authors on the paper. They also collected and identified herbarium specimens of nearly 4,000 plants. Of these, 26 are used in weather magic on land and sea.

Most of these plants are native or naturalized plants found growing in the wild. Practitioners must know when and where to find them and how to properly harvest them, the researchers note. Some of the practices that involve weather magic are well-known generalist knowledge while others are passed on in secret, to be learned and practiced only by those who inherit it.

The research team's groundbreaking weather magic research is part of NYBG's *Plants and People of Vanuatu* multidisciplinary project, co-led by Drs. Plunkett and Balick along with a diverse group of plant scientists, ethnobotanists, mycologists, cultural specialists, and linguists, including staff at the Vanuatu Forestry Department and Vanuatu Cultural Center. The project's objective is to study and preserve plants, fungi, ethnobotanical and ethnomedical knowledge, cultural practices, and plant-related language information in Vanuatu, which is not only a hotspot of biodiversity but also the most linguistically dense country in the world, with an estimated 138 languages spoken by a population of 270,000.

In addition to Drs. Balick, Plunkett, and Harrison and three Indigenous weather magic experts, the authors of the *Journal of Ethnobiology* paper are Neal Kelso and Dominik M. Ramík, Ph.D.

In their conclusion, the authors write that the proper recognition and incorporation of all Indigenous knowledge systems, including magic, will ensure that environmental conservation efforts are as well informed as they can be. Non-Western cultures, they add, often see magic as part of a continuum of political, social, and religious beliefs and practices, noting that "weather magic, culture and environmental knowledge are tightly connected."

"Our investigations of weather magic strongly support this view: 'magic' is a concept imposed from the outside," they write, cautioning against interpreting this term in the Western context. "Magic in southern Vanuatu is a lens through which people know and learn about the world around them, and the associated histories and stories reinforce an intimate relationship to environment and place."

"Weather Magic as Environmental Knowledge in Southern Vanuatu" is available at the following link: <https://doi.org/10.2993/0278-0771-42.4.383>

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