

Policy Review

Cycad Conservation, Peasant Subsistence, and the Military Coup in Honduras

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*In rural Honduras, collaborating U.S. and Honduran researchers have elucidated indigenous technical knowledge and customs surrounding local uses for, and conservation of, an endemic cycad—*Dioon mejiae* Standl. & L. O. Williams (Zamiaceae)—that is an important food source for the lowest economic stratum of local society. Dissemination of research findings within the region has produced positive outcomes for the cycad's conservation without undermining the usufructuary rights of cycad-dependent families. This experience suggests the elements of an effective, low-cost approach to promulgating noncoercive, community-based resource stewardship. However, recent presidential elections notwithstanding, the 2009 coup has undermined the conditions under which participatory research and conservation can take place in Honduras, highlighting the need for researchers and practitioners to consider and confront the assaults on human rights, intellectual freedoms, and natural systems that transpire in the countries where they work.*

Keywords community-based conservation, coup, cycads, ethnobotany, Honduras, hydroelectric, indigenous technical knowledge, political ecology, subsistence, violence

Received 15 December 2009; accepted 13 July 2010.

Thank you to our reviewers and the editors of this journal. Graham is grateful for grants from Berkeley's Division of Arts and Humanities, its Center for Latin American Studies, and the Tinker Foundation. Bonta wishes to thank AFE-COHEDEFOR, Agenda Forestal, Delta State University, Instituto Hondureño del Turismo, Louisiana State University Board of Regents, and Montgomery Botanical Center, and TEFH Herbarium of the Universidad Nacional Autónoma de Honduras for substantial field research support. We also acknowledge and thank our many *tusinte* project collaborators. Our deepest gratitude goes to the Honduran communities that hosted and helped us.

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This article follows Honduran and U.S. investigators' efforts to understand the biology and ethnobotany of a threatened arborescent cycad called *tiusinte*—*Dioon mejiae* Standl. & L. O. Williams (Zamiaceae)—and to promote its conservation by documenting and disseminating local, indigenous technical knowledge (ITK) about the plant and its place in daily lives and practices.¹ *Tiusinte*, important in local diets and for ornamental purposes, is endemic to northeastern Honduras; all other *Dioon* species are restricted to Mexico (Bonta et al. 2006). The authors' collaborations have aided local initiatives to celebrate and conserve *tiusinte* while maintaining or improving subsistence users' effective access to several populations of the plant.

Although our earlier publications (Bonta 2003; Bonta et al. 2005; Bonta et al. 2006; Bonta 2007; Haynes & Bonta 2007) emphasized the plant's biophysical properties, geographical distribution, and ethnobotanical importance to associated communities, our intention here is to reflect methodologically on how our interventions, as well as external political influences, have affected *tiusinte* and associated communities.

We commence by describing the *tiusinte* project. Next, we synopsise knowledge gathered during our investigations (covered in greater detail in the aforementioned publications). The essay's topic then shifts to reflect on the team's knowledge-gathering practices and its members' efforts to socialize the *tiusinte*-related ITK in locally accessible forms. We report on a revalorization of *tiusinte* that may promote the plant's conservation. As we explain, a local legacy of coercive conservation and development—corroborated by the authors' own experiences—clarified the need to ground our research in community members' knowledge and priorities. Nevertheless, as we review recent political events in Honduras, we detect the erosion of protections for researchers and conservationists. This state of affairs may render participatory research methods potentially harmful to intended beneficiaries.

The *Tiusinte* Project

The *tiusinte* project is a collaborative knowledge-production effort by an informal group of Honduran and U.S. researchers-*cum*-conservationists. Fieldwork began in 1999 and is ongoing. United States-based colleagues include coauthors Bonta and Graham and botanist Jody Haynes. Bonta was the first U.S. team member to join Hondurans in researching *tiusinte*. The initial group broadened to include Haynes and Graham, coauthor Ulloa, two Honduran university botanists, and many Honduran conservationists. The problematic omission of these collaborators' names and contributions grieves the authors. Our research partners' participation has been indispensable to the project, but the calamitous sociopolitical trajectory since the coup presents special dangers to Honduran intellectuals and conservationists. The authors urge policymakers and researchers to press for changes that will permit our Honduran research partners to safely enjoy proper recognition for their work.

Summary of Original Findings

Working with long-time *tiusinte* users, project researchers learned much about the plant and its relationship to area communities. We outline our findings below.

An arborescent cycad with specimens growing to 9 m in height over the course of centuries, *tiusinte* is endemic to northeastern Honduras, where an estimated 500,000

cone-bearing plants occur within approximately 30 distinct populations in Olancho, Colón, and Yoro provinces. Prior to our investigations, the species was thought by Western botanists to consist of a sole wild population of several hundred plants; *tiusinte* is now known to be one of the most abundant cycads in the Americas. Nevertheless, the total number of adult plants has been halved since the 1960s due to destructive human activities, as discussed later.

Diminution of *tiusinte*'s range and total population gives cause for concern. *Tiusinte*'s large seeds are a food source for approximately 33,000 Hondurans in both the indigenous (Nahoa) and the ladino (nonindigenous) communities dotting the region. *Tiusinte* is consumed annually from March to August and serves as an important subsistence food when maize stores are depleted. Additionally, *tiusinte* features in local cultural traditions, with its leaves figuring centrally as adornments during religious and secular events throughout the region.

Sexual division of labor between *tiusinteros* (male harvesters of seed cones) and *tiusinteras* (female food preparers) prevails across the region. This division may undermine the plant's conservation. While *tiusinteras* possess valuable ITK, male-dominated households and communities do not benefit fully from their insights. The arduous process of toxin removal during food preparation—a task that falls to women—is practiced with uneven thoroughness between and within communities. Experienced *tiusinteras* express concern about the social deterioration of this skill and lament a diminishment in the variety and quality of *tiusinte* recipes.

Tiusinte-dependent communities have adhered historically to diverse norms of access to and conservation of *tiusinte* populations. In all but one municipality, seed-bearing *tiusinte* cones have long been treated as unregulated, open-access resources. In Gualaco, Olancho, however, municipal authorities traditionally enforced firm harvest seasons to guard against premature harvesting. In the 1980s, this practice was discontinued. Nevertheless, norms against the felling of *tiusintes* prevail in Gualaco and throughout the region—even on privately owned land—and private land ownership does not confer exclusionary rights to harvest *tiusinte* seed cones. Meanwhile, in Esquipulas del Norte, Olancho, the village of La Zuncuya designed its own norms of protection for *tiusintes* growing in maize fields. There, villagers are preserving *tiusinte*, which shades out young maize plants, without harming maize yields.

Despite *tiusinte*'s importance to local users, demographic, economic, and legal-institutional changes in the region challenge the plant's long-term conservation. First, in-migration and the private titling of former commons undermine local norms of usufruct and conservation; many new landowners do not recognize common-pool rights to the *tiusinte* plants located on their land. This replacement of public with private land, in conditions of deep social inequality, is doubly harmful because it reduces *tiusinte*-dependent communities' ability to resist resource degradation in remaining open-access locales. Second, an uptick in licenses granted by the national government for timber extraction, mining, and hydroelectric development—with attendant road building—has been another culprit. These projects encroach on *tiusinte* populations, provoking increased erosion and creating other disturbances. Finally, intensive anthropogenic fire regimes, especially on cattle ranches, appear to be a principal contributor to *tiusinte*'s recent decline in numbers. Nevertheless, several ranching families in the villages of Saguay and Río Grande, Gualaco, have long protected parts of a major *tiusinte* stand by limited use of fire and other measures.

Extremely slow growth and other factors make *tiusinte* impractical for the international nursery trade. However, small-scale commercialization for food and decorative purposes occurs locally. The risk from the nursery trade is commoditization for the Honduran domestic market beyond the local scale (e.g., for the cities of Tegucigalpa and San Pedro Sula), which would incentivize the removal of high-value adult plants from native stands. Emphasis on *tiusinte's* extralocal exchange value would therefore undermine both local food security and the species' conservation.

Socializing the *Tiusinte* Project

The *tiusinte* project team has striven to avoid the neo-imperialist patterns often structuring north–south research relationships (Smith 1999; Davidson-Hunt and O'Flaherty 2007). The composition of the team reflects an intimacy among participants that the authors developed through years of close interaction with the communities where the research took place. Author Ulloa's community engagement began while he was a prominent local environmentalist and politician; for authors Bonta and Graham, it began with their Peace Corps work in the 1990s. The team's recruitment of research participants likewise proceeded from social networks cultivated over time. The project has not been a "regular" (top-down) scientific research operation. It also would be inexact to apply the "participatory action research" (PAR) label to the project, since it originated with Honduran community members. However, project members share with PAR practitioners an assumption of people's innate capacity for intellectual labor. Our project validated this assumption, with Honduran participants generating much of the impetus for the project and providing the lion's share of intellectual and organizational labor. The Honduran and U.S. authors' familiarity with the region occasioned discussions with Honduran friends, colleagues, and communities, culminating in investigations that answered to the curiosity and concerns of all parties.

Personal obligation, professional principle, and the collaborative nature of the project impel the *tiusinte* researchers to recognize the project's informants and other community members as partners in, and owners of, the research. The team members also view their research as continuous with other forms of public involvement with *tiusinte*. Consequently, the team has shared its results widely with Honduran central-state agencies, civil-society organizations, and publics. Graham, Haynes, and Bonta, along with other international collaborators, have all made their work locally available in Spanish and in multiple formats. Ulloa and other Gualaco environmentalists, with the support of the Honduran government's social forestry project, organized the inaugural *Tiusinte* Festival in the village of Río Grande, Gualaco, in 2008.

The team's media messages have presented *tiusinte* as a key part of local and regional identity. Emphasis on *tiusinte's* uniqueness, respect for human–cycad interrelationships, and the underlining of *tiusinte's* alimentary importance during lean times have aided local efforts to ensure the cycad's survival, as detailed later.

Social Impacts of the *Tiusinte* Project

The team's collection and dissemination of cycad-related ITK was met with broad enthusiasm. In Gualaco—where the project's impact has been amplified by the ongoing efforts of Ulloa and others—the communities of Río Grande and Saguary,

located within a large *tiusinte* population, celebrated Gualaco's second and third annual *Tiusinte* Festival (*Feria del Teocinte*) in 2009 and 2010, attracting attention across Honduras. Although the first *Tiusinte* Festival, in 2008, was supported heavily by outside government agencies and nongovernmental organizations (NGOs), villagers launched the second and third festivals with minimal assistance, suggesting a high level of local buy-in.

At the festival, tradition has commingled with new cultural forms, such as the coronation of a *Tiusinte* Queen. *Tiusinteras* now sell cycad breads, tamales, and drinks to a wider public, thereby stimulating younger people to learn how to correctly remove cycad toxins from the foods they prepare. Heightened awareness brought by the festival has led to a municipality-wide call for stronger protection measures and other conservation strategies. The primary organizers of the *tiusinte* festival are adult daughters and sons of the cattle ranchers whose landholdings enclose most of the area's *tiusinte* population; the younger generation's outlooks and actions are influencing the way the older landowners manage the species.

With the increased attention afforded *tiusinte* in Gualaco, local market demand for seeds and small plants has increased. We are unsure how such local commoditization might impact the cycad's conservation, but it does not appear to pose an immediate threat either to subsistence harvesters or to *tiusinte's* survival. The plant continues to be regarded as a common-pool resource, while the ongoing publicity around *tiusinte* further socializes all local actors to this important norm. Ulloa's own complex identity as an ardent conservationist and an in-law of an influential cattle ranching family both exemplify and undergird this process as it unfolds across social difference.

Encouraging Community-Based Conservation on Uneven Social Terrain

Tiusinte conservation has been favored by the project's emphasis on *tiusinte's* use values for food-insecure families and its linking of *tiusinte's* survival to the well-being of *tiusinte*-dependent people. Treating conservation as a relationship that begins with resource-dependent community members' everyday practices, experiences, and attitudes has fostered knowledge production and dissemination—and conservation—by reinvesting knowledge in *tiusinte*-associated communities. The team's practice of specifying local knowledges (Brosius 1997) has been crucial in this regard. This documentation of locally specific human–cycad relationships has produced a rich inventory of public knowledge that reveals unsustainable practices while highlighting locally proven alternatives. The *Tiusinte* Festival has become a clearinghouse for this information and underscores the utility of civic pride and cooperation in encouraging bottom-up, community-based conservation.

This approach diverges from that of extending untenable promises of income generation or equating conservation with the establishment of exclusionary parks. Significantly, the *tiusinte* project remained independent of northern-dominated development agencies and NGOs and avoided imposing a preconfigured conservation plan to which affected community members would be induced to conform. As McAfee (1999) has noted, such projects of “green developmentalism” exploit and exacerbate power differentials between global north and global south, as well as within target countries. This insight, taken together with our misgivings about fortress-conservation schemes (Neumann 1998; Brockington 2002), compels new approaches to constructing ethical and effective conservation models, particularly

in regions, like Olancho, where local people have long bridled against the impositions of outsiders (Bonta 2001; 2004; 2005; Graham 2002; Bonta et al. 2005).

Local distrust of top-down conservation projects is rooted in concrete experience that has also affected the authors and other collaborators. Beyond their involvement in the *tiusinte* project, Bonta and Graham each have documented the ways that an imposed protection plan for nearby Sierra de Agalta National Park backfired for local stewards in Gualaco, beginning in 2000, when they found their village beset by the state-sanctioned, violent installation of a private hydroelectric project (*Proyecto Hidroeléctrico Babilonia* or PHB). The PHB, officially portrayed as eco-friendly, harvested energy from the Babilonia River, which originates in the park's nucleus. The PHB owed its feasibility to peasant families' protection of the local watershed and their prior support for protection of the adjacent national-park nucleus. Nevertheless, when the Babilonia's water was diverted from waterfalls into pipes and turbines, the PHB reduced families' effective access to their coffee farms, scuttled their plans to connect gravity-feed water systems to downstream communities, and belied earlier assurances that they would gain financially by leading waterfall tours (Bonta 2001; 2004; Graham 2001; 2002). The PHB impacted several of the *tiusinte* project's Honduran collaborators as well. Ulloa at the time was Gualaco's mayor and opposed the PHB. As a result, he endured death threats and survived an assassination attempt. Another central *tiusinte* project collaborator—a local conservationist from one of the dam-impacted villages—also resisted the PHB, and was continually in fear for his life over a 4-year period. Dam project backers also threatened Graham and sabotaged his vehicle due to his role in substantiating community members' claims (viz. World Rainforest Movement 2003, 113–115).

Partly in response to this object lesson on the perils of top-down development, the researchers' interest in understanding and conserving *tiusinte* has been accompanied by our determination not to subordinate local harvesters' rights in favor of conservation as an aesthetic abstraction or green-development chimera. While conservation has not been the only goal of the project, positive conservation outcomes have resulted.

Considerations in Light of the Coup

We close with a comment on the problems caused by last year's coup in Honduras. When the coup regime took power on June 28, 2009, its actions deepened the disjuncture between central-state policy and the aspirations of rural Hondurans to manage local resources in a manner that honors tradition, permits self-provisioning, and conforms to the idea that the best use of these resources is to ensure communities' long-term well-being. To be sure, and as the PHB episode illustrates, challenges to noncoercive conservation in Honduras did not begin with the coup. We should also be clear in stating that our concern does not center on central-state institutions per se, especially not in the abstract. There is no sure correlation between central-state stability and noncoercive conservation, as work by Peluso (1993), Bryant (1996), and Neumann (1998), in Indonesian, Burmese, and Tanzanian contexts, respectively, should suffice to remind us. The devil lies in the details. Our concern, then, lies at once more broadly and more concretely on the presence of structural and contingent conditions that support or impede grounded, democratic, noncoercive research and conservation efforts. In this respect, the Honduran coup has been a profound disaster.

Following the coup, the interim regime, headed by Congressman Roberto Micheletti, stripped the country's environmental protections (Palacios 2010) and subverted the autonomy of independent research and teaching institutions that criticized the government (Honduras Coup Weblog 2009). Ulloa and other conservationists became political targets, both for their environmental activism and for their opposition to the coup. The new government illegally sacked the director of the Honduran Institute of Anthropology and History, rendering countless researchers' field notes vulnerable to politicized data mining (Vos El Soberano Weblog 2009).

Rushed elections in November 2009 gave cover to the coup's architects, most of whom continue in positions of power. The administration of President Porfirio Lobo has so far resembled that of the coup regime, effecting crackdowns on democratic activists (Bird 2010) and tolerating or authoring the systematic killing of independent journalists (Amnesty International 2010).

As the Honduran crisis continues to unfold, academics and conservationists who work there must confront a dilemma. As researchers, we are obligated to report our findings in a manner sensitive to local political expression while safeguarding potentially prejudicial identifying information about our informants. It is difficult to see how to meet both goals under present circumstances. Without wishing to romanticize "the local," we insist, following Palmer (2007) and Brockington (2007), on the importance of local-level leadership and governance structures to fostering effective, community-based resource management. We must take seriously the question of how to square nonimperialist research practices—crediting collaborators and sharing findings with partner communities and national research institutions, for instance—with the practical imperative of ensuring our partners' safety. We have chosen to begin sawing through this Gordian knot by naming the forces responsible for producing our dilemma.

Note

1. *Tiusinte*, the cycad discussed here, should not be confused with *teosinte*, which refers to various grasses in the *Zea* and *Tripsacum* genera. Both names derive from the classical Nahuatl "teocentli" (sacred maize ear).

References

- Amnesty International. 2010. Honduran government must take a stand against killings of journalists (AI Index PRE01/142/2010). <http://www.amnesty.org/en/for-media/press-releases/honduran-government-must-take-stand-against-killings-journalists-2010-04-29> (accessed 20 July 2010).
- Bird, A. 2010. Land crisis & repression in Aguán, Honduras. *Rights Action*. http://www.rightsaction.org/Alerts/Hond_Aguan_land_crisis_041410.html (accessed July 20, 2010).
- Bonta, M. 2001. Mapping enredos of complex spaces: A regional geography of Olancho, Honduras. PhD dissertation, Department of Geography and Anthropology, Louisiana State University and Agricultural and Mechanical College, Baton Rouge.
- Bonta, M. 2003. Teocinte, "ear of God". *Cycad Newslett.* 26:7–12.
- Bonta, M. 2004. Death toll one: An ethnography of hydropower and human rights violations in Honduras. *GeoJournal* 60:19–30.
- Bonta, M. 2005. Becoming-forest, becoming-local: Transformations of a protected area in Honduras. *Geoforum* 36:95–112.

- Bonta, M. 2007. Ethnobotany of Honduran cycads. In *Proceedings of the Seventh International Conference on Cycad Biology, Xalapa, Mexico, 8–12 January 2005*, ed. A. P. Vovides, D. W. Stevenson, and R. Osborne. *Memoirs NY Botan. Garden* 97:120–142.
- Bonta, M., M. Castro, J. Haynes, and M. Rey Figueroa. 2005. *Recomendaciones para la conservación de Zamiaceae en Honduras* [Recommendations for the conservation of Zamiaceae in Honduras]. Unpublished report, Montgomery Botanical Center, Miami, FL, and SERNA-Cambio Climático, Tegucigalpa, Honduras.
- Bonta, M., O. F. Pinot, D. Graham, J. Haynes, and G. Sandoval. 2006. Ethnobotany and conservation of Tiusinte (*Dioon mejiae* Standl. & L. O. Williams, Zamiaceae) in northeastern Honduras. *J. Ethnobiol.* 26:228–257.
- Brockington, D. 2002. *Fortress conservation: The preservation of the Mkomazi Game Reserve, Tanzania*. Oxford, UK, Bloomington, IN, and Dar es Salaam, Tanzania: International African Institute, James Currey, Indiana University Press, and Mkuki Na Nyota.
- Brockington, D. 2007. Forests, community conservation, and local government performance: The village forest reserves of Tanzania. *Society Nat. Resources* 20:835–848.
- Brosius, J. P. 1997. Endangered forest, endangered people: Environmental representations of indigenous knowledge. *Hum. Ecol.* 25:47–69.
- Bryant, R. L. 1996. The greening of Burma: Political rhetoric or sustainable development? *Pacific Affairs* 69(3):341–359.
- Davidson-Hunt, I. J., and R. M. O’Flaherty. 2007. Researchers, indigenous peoples, and place-based learning communities. *Society Nat. Resources* 20:291–305.
- Graham, D. 2001. Bloodshed in Babilonia: Honduran dam project shows small is not always beautiful. *World Rivers Rev.* 16:11–12.
- Graham, D. 2002. Paper arrows: Peasant resistance and territoriality in Honduras. Master’s thesis, Department of Geography, University of California–Berkeley, Berkeley.
- Haynes, J. L., and M. Bonta. 2007. An emended description of *Dioon mejiae* Standl & L. O. Williams (Zamiaceae). In *Proceedings of the Seventh International Conference on Cycad Biology, Xalapa, Mexico, 8–12 January 2005*, ed. A. P. Vovides, D. W. Stevenson, and R. Osborne. *Memoirs NY Botan. Garden* 97:418–443.
- Honduras Coup Weblog. 2009. Education is dangerous: Police militarize Tegucigalpa’s universities. <http://hondurascoup2009.blogspot.com/2009/08/education-is-dangerous-police.html> (accessed 20 July 2010).
- McAfee, K. 1999. Selling nature to save it? Biodiversity and the rise of green developmentalism. *Environ. Plan. D Society Space* 17:133–154.
- Neumann, R. P. 1998. *Imposing wilderness: Struggles over livelihood and nature preservation in Africa*. Berkeley: University of California Press.
- Palacios, M. 2010. Dictador Micheletti empenó los recursos hídricos y áreas protegidas del país [Dictator Micheletti pawned the hydrological resources and protected areas of the country]. *El Libertador*. <http://ellibertador.hn/Nacional/3872.html> (accessed 20 July 2010).
- Palmer, C. 2007. The role of leadership in the collective enforcement of community property rights in Indonesia. *Society Nat. Resources* 20:397–413.
- Peluso, N. L. 1993. Coercing conservation? The politics of state resource control. *Global Environ. Change* 3(2):199–217.
- Smith, L. T. 1999. *Decolonizing methodologies: Research and indigenous peoples*. London: Zed Books.
- Vos El Soberano Weblog. 2009. *Desalojan y efectúan despido del Gerente del Instituto Hondureño de Antropología e Historia* [Director of the Honduran Institute of Anthropology and History Evicted and Dismissed]. 3 September. http://voselsoberano.com/v1/index.php?option=com_content&view=article&id=414:desalojan-y-efectuan-despido-del-gerente-del-instituto-hondureno-de-antropologia-e-historia&catid=1:noticias-generales (accessed 20 July 2010).
- World Rainforest Movement. 2003. *Dams: Struggles against the modern dinosaurs*. Montevideo, Uruguay and Moreton-in-Marsh, UK: World Rainforest Movement.