Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras

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Two distinct views are evident in research on how rural communities in developing countries cope with extreme weather events brought by climate change: (*i*) that the resource-reliant poor are acutely vulnerable and need external assistance to prepare for such events, and (*ii*) that climate-related shocks can offer windows of opportunity in which latent local adaptive capacities are triggered, leading to systemic improvement. Results from a longitudinal study in a Tawahka community in Honduras before and after Hurricane Mitch (1994–2002) indicate that residents were highly vulnerable to the hurricane—due in part to previous development assistance—and that the poorest households were the hardest hit. Surprisingly, however, the disaster enabled the poor to initiate an institutional change that led to more equitable land distribution, slowed primary forest conversion, and positioned the community well to cope with comparable flooding occurring 10 y later. The study provides compelling evidence that communities can seize on the window of opportunity created by climate-induced shocks to generate sustained social-ecological improvement, and suggests that future interventions should foster local capacities for endogenous institutional change to enhance community resilience to climate shocks.

adaptation | governance | indigenous peoples | Central America

At the heart of climate adaptation and mitigation policy lies the issue of how rural communities in the developing world will cope with increasingly frequent and extreme weather events (1–4). In the now rich and nuanced literature on this topic, two recurring stands are noticeable. Many researchers stress how the resource-reliant poor are acutely vulnerable (5, 6), warning that climate and other shocks ultimately reinforce the predisaster status quo, maintaining preexisting political and economic structures (7), reasserting socioeconomic inequalities within communities, and deepening the destitution of the poorest (8). Other analysts—particularly those working within social-ecological resilience frameworks—can be more sanguine, especially in their attention to ways in which abrupt environmental change may catalyze rural communities' latent adaptive capacities (3, 9, 10) and stimulate systemic improvements (11–13).

These different emphases point to distinct policy prescriptions. The "vulnerability" view suggests a key role for targeted international development assistance in helping the rural poor to adapt to climate change (6, 14, 15), whereas "resilience" research reminds us that conventional development assistance before and after shocks can exacerbate vulnerabilities (16–19), and points instead to more bottom-up forms of assistance that allow adaptive capacities and flexible governance structures to emerge (20–22).

In this paper, we report on a natural experiment, a case study of pre/post conditions that offers a much-needed opportunity to empirically assess these divergent perspectives (23). Our study examined indigenous households in a rural Tawahka community in northeastern Honduras over a period (1994–2002) that was punctuated by major flooding from Hurricane Mitch in 1998. We find a surprising scenario: the indigenous community was able to use the window of opportunity (see refs. 24–26) created by the disaster to correct for a major cause of differential vulnerability and uneven well being, and to increase (over a period of 4 y) intergenerational equity and ecological sustainability. Changes made after Mitch also seem to have increased the community's social and ecological resilience to two subsequent tropical storms in 2008, which brought comparable flooding regionally (27) but had only a limited impact on livelihoods. Our results challenge common ways of thinking about how traditional communities respond to climate-related shocks and offer process insights for research and policy meant to enhance the resilience of rural communities in the face of climate change.

Study Setting

Hurricane Mitch struck Central America in late October 1998. Torrential rains and mudslides devastated hilly Honduras (population 6 million in 1998), causing more than 5,500 deaths and damaging much of the country's productive capacity (28, 29). Honduras' acute vulnerability to the storm was widely viewed as resulting from a development trajectory characterized by export-oriented agriculture and entrenched socioeconomic inequalities (30–32). Not surprisingly, the urban poor and rural land-poor were particularly hard hit (29); according to one analyst, "the story of Hurricane Mitch in Honduras serves as a parable about uneven vulnerability to global climate change" (32, p 343). Subsequent relief and reconstruction remain partial and incomplete (33); ultimately, the predisaster status quo was reasserted (28, 31, 33, 34), making the story of Hurricane Mitch in Honduras a classic case of ineffectual response and missed opportunity in the face of a catastrophic shock (e.g., refs. 11 and 30).

In northeastern Honduras, indigenous communities were no less vulnerable to the storm; indeed, flooding along the Patuca River (Honduras' longest river) was extensive and devastating. Over 3 d, Hurricane Mitch delivered >300 mm of rain/d to the already saturated and partially deforested basin; water in the middle Patuca rose 15–25 m above usual high-water levels (35). In Tawahka territory (in the mid-Patuca region between Miskito lands to the north and an expanding colonization frontier of nonindigenous mestizo farmers to the south), two of five communities were destroyed by the flood (35, 36), and the subsistence base was crippled. More than 80% of the rice harvest was lost, as were all plantings of banana/plantain and manioc (37). After a year of food aid, hunger became acute during the lull between the last donated food and the maturation of replanted staples (38, 39). During this period, Tawahka (population 1,200) attributed a dozen deaths and a high incidence of illness to Mitch-induced conditions (35, 36, 40).

Our study focuses on the largest Tawahka community of Krausirpi, near 15°N, 85°W, 100 km due south of Honduras' Caribbean coast (Fig. S1). Founded in the 1950s, Krausirpi comprises kin-based household clusters, reflecting Tawahka's

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nonhierarchical social structure (41). In 1998, its ~600 habitants lived in 78 households with an average size of 8 members, of which 23% were headed by single women (Table S1). The population was expanding rapidly, with 75% under age 24 y (42). Local livelihoods have been well studied, particularly before Mitch (see, e.g., refs. 43–45). Krausirpi sits on a cutbank of the Patuca River backed by low hills drained by several streams, where manioc and rice are grown in swidden fallow systems. In 1998 (before Mitch), beans were grown on the terraced meander opposite the community, often in agroforestry systems including cacao, peach palm, and other fruit and timber trees (Table S2). Land was held by usufruct, acquired by forest clearing and planting, and could not be sold to outsiders. Village households held a mean of 14.4 ha, 45% on the floodplain and 55% in the uplands. Residents traded labor, agricultural produce (cacao, rice, and beans) and forest products via dugout canoe in downriver and upriver markets. Households earned on average 1,230 US$/y in cash income, of which about 38% was derived from agriculture and 11% from forest products (46). In 1999, the Tawahka succeeded in having their homeland and its biodiverse forests declared the 2,300-sq-km Tawahka Asangni Biosphere Reserve (RBTA). State enforcement of reserve boundaries against mestizo incursion has been tepid; more common are prohibitions on Tawahka harvesting of forest products, including timber (40, 47).

Results

Impacts of Mitch on Tawahka Livelihoods. At Krausirpi, floodwaters deposited a 0.5- to 5-m cap of sand and gravel over the floodplain and first river terrace (35–37). Ninety-five percent of the floodplain's 125 ha of cacao orchards were buried or washed away, and with them all income from cacao sales. Study households (n = 43) lost a mean of 4.8 ha of floodplain land (~45% of their total land holdings) and an average of 422 mature cacao trees (median, 250; n = 44). In the uplands, manioc and banana/plantain were ruined by soil water saturation, and wind and rain heavily damaged the rice crop (37, 39). Impacts were uneven, however. The formerly land-richest one-third of households lost the greatest total amount of land: 8 ha of floodplain, or 36% of their former holdings (n = 15), compared with the mean loss of 4.8 ha. However, the formerly land-poorest third of households—almost half of which were headed by single women—were particularly hard hit, because they had little land to begin with (only 3.4 ha total) and lost a greater share of it (59%; n = 15) (Fig. 1).

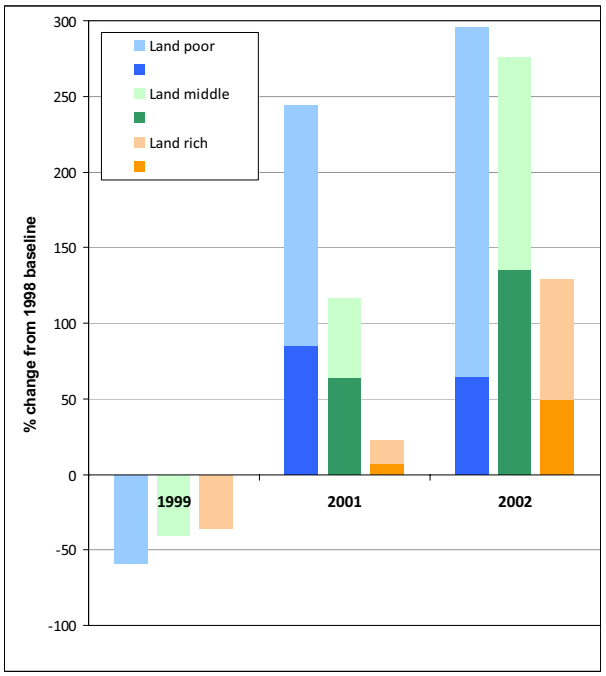

Fig. 1. Percentage change in total landholdings in Krausirpi from the 1998 baseline to immediately after Mitch (1999), 3 y after Mitch (2001), and 4 y after Mitch (2002), by tercile of 1998 household land wealth. Darker sections indicate the share of land gained by claiming primary forest.

Sources of Vulnerability. Krausirpi's social and economic vulnerability to Hurricane Mitch developed from the convergence of three inter-related processes: market specialization, land concentration, and forest conservation initiatives.

Market specialization. Like most forest peoples, Tawahka practice diverse economic strategies to meet their subsistence and cash needs (46, 48). During the 1990s, however, a regional development nongovernmental organization (NGO) promoted specialization in cacao production as a land-intensive, ecologically friendly approach to raising incomes. The initiative was arguably successful; between 1994 and 1997, cacao's contribution to the community's aggregate cash income more than doubled, the number of households participating in the sector grew, and average earnings from cacao per household increased 13-fold, even as the selling price held constant (46). Cacao benefits were unevenly spread, however; cacao income was distributed significantly less equitably than overall cash income (Gini coefficients of 0.58 and 0.33, respectively; n = 65). Furthermore, the spatial concentration of cacao orchards along the banks of the Patuca made the entire enterprise highly vulnerable to floods (39).

Land concentration. Vulnerability was exacerbated by the growing inequality in land distribution. By 1998, the most land-rich one-third of households owned ninefold more floodplain land and eightfold more uplands than the poorest third, had twice the bean production, and held significantly more cacao trees and peach palms (Table S2). This inequality was due to uneven returns from cacao production and also, importantly, because of the traditional usufruct-based system of land holding and transfer (37). Over time, the usufruct system encouraged forest clearing by households with the labor and/or money to extend their holdings (37, 40, 49), and strongly favored older households—such as community founders—with the time to accumulate land. In contrast, newcomers and younger households found themselves grasping for small, distant, and scattered plots, ideal conditions for a "land-poverty trap" (Table S3, regression model). Rapid demographic expansion intensified the problem, because land gifting and inheritance were slowed by low adult mortality rates, large families, and short intergenerational periods (42). Many young families perceived that the scarcity of floodplain land blocked their access to lucrative income streams (particularly cacao). They also found it impractical to open new plots in distant uplands, and many shortened fallow periods on existing plots rather than clear new forest, thus stalling land accumulation and lowering yields (37). Ultimately, land-poor households found it harder to diversify production, cope with illness, and invest in cattle and/or education (40, 47, 50). Increasing land inequality begat conflicts that eroded communal networks of support (e.g., food sharing, labor exchange), making all households—particularly the poor—more vulnerable to Mitch (38).

Forest conservation. NGO and state efforts to limit the Tawahka's impacts on forests indirectly heightened their reliance on cacao income. Increased state surveillance of Tawahka extractive activities following RBTA ratification increased the cost and risk of forest product sales, a formerly important off-farm income option (40, 47). NGO-run development projects also effectively discouraged the Tawahka from raising cattle (seen as environmentally unfriendly), despite its importance as a source of savings and insurance for local households (40, 51).

Responses and Resilience. Mitch's impact on livelihoods in Krausirpi demonstrated considerable collective and individual vul-

nerability. However, 4 y after the storm, the economic circumstances of households—especially the poorest—had improved significantly.

Accelerated land accumulation. By 2002, households had not only recouped their Mitch-induced losses, but tripled their average holdings, from 13 ha to 42 ha (Table S2). Not surprisingly, households that owned the most land before Mitch had also gained the most land by 2002 (33 ha on average). However, households that were the land-poorest before Mitch, as a group, posted the greatest *relative* gains: a 296% increase in land held from 1998 to 2002 (Fig. 1). As a result, the household-level factors that predicted land wealth changed; after Mitch, ownership of cultivated land became more associated with newcomers and newer households rather than concentrated among community founders and older households (Table S3). As such, the path-dependency in land ownership evident before Mitch was essentially interrupted by the storm shock. By 2001, the share of total land held by the formerly most land-poor had doubled, to 16%, and those who gained the most total land relative to their pre-Mitch holdings tended to be younger and labor-poor households, newcomers to the community, and single women (Table S4). As a result, land in the community became more equally and equitably distributed.

Re-establishment of agricultural production. Initial increases in landholdings were central to the reestablishment of the agricultural subsistence base (38). Most notably, the unprecedented spike in primary forest clearance for rice cultivation immediately after Mitch (early 1999) helped offset households' floodplain losses. Noted with concern by outsiders (37), this extensification was short-lived (Fig. S2). By 2002, upland plots, both new and old, were producing pre-Mitch levels of rice (~1,000 kg/household) as well as manioc and banana/plantain (Table S2). Along stream courses and on higher floodplain terraces (previously rarely cultivated but now favored as being safe from "another Mitch"), households replanted an average of nine peach palms each, sowed beans with some success, and reestablished cacao orchards (38). By 2002, almost half of households had established a cacao nursery and/or planted cacao saplings (Table S2).

Income rediversification. With the reestablishment of agriculture came reorganization of other productive activities, as reflected in changes in cash income sources between 1998 and 2001–2002 (Table S2). The loss of cacao and post-Mitch restrictions on forest harvests resulted in significantly decreased earnings from crops and forest products, from a combined total of 46% to only 10%. Local wage earnings in agriculture remained high (>20%) because despite low returns, a greater share of households entered the sector (from 11% to 25% of households). The marked increase in the share of earnings from local salaried/waged work (from 8% to 29%) was due to new positions with the forestry service, NGOs, and/or other organizations involved in post-Mitch reconstruction or management of the RBTA. Two new sectors, "distant wage work" and "remittances," reflect an increase in the formerly rare practice of sending a household member to find work along the coast or in urban areas (40).

Although incomes diversified, the aggregate cash earnings of study households fell by more than half, from $1,104/y to $460/y, between 1998 and 2002 (Table S2). Surprisingly, however, cash earnings among the formerly land-poorest households held steady between 1998 and 2001 (thus increasing their share of the community's aggregate income from 18% to 41%), because land-poor households were relatively successful at filling waged/salaried positions with state and/or development organizations. Informants indicated that the same attributes that had formerly begotten their relative land poverty—youth (and with it, higher rates of education and Spanish fluency) and smaller families—positioned them well for such jobs.

Local Institutional Innovation in Land Tenure. Central to the dynamics of livelihood recovery was the conjoined increase in landholdings and decrease in land inequality. This unexpected outcome was achieved primarily by the collective adoption of a new form of land tenure that facilitated acquisition of new land without requiring the clearing of forest. After Mitch, households began to blaze trails through the understory around parcels of forest land destined for future use (Fig. 1). By 2002, 54% of study households claimed to own forest that they had not yet cleared, and 40% of aggregate landholdings were in primary forest. This represented a radical departure from the usufruct system and a regionally distinct innovation that borrowed elements of the mestizo land-claiming system. Thus, whereas blazing a forest parcel secured households' transferable use rights to the land (as in the mestizo system), the parcel's resources (nontimber forest products, game) retained communal rights of access (absent in the mestizo system); non-Tawahka outsiders continued to be excluded. This new system facilitated a substantial redistribution of land within the community.

Households also added to their land portfolios by more conventional means, both of which were facilitated by Mitch. Salaries from newfound jobs with conservation, development, and aid agencies (see above) financed primary forest clearing by young households (including those headed by single women). Mitch-related deaths, and Mitch-inspired collective stock-taking of family holdings, accelerated land inheritance and gifting (adding a mean of 3 ha per household).

The new land-holding system brought social and economic benefits. Labor efficiencies increased due to more contiguous plots and the decline in speculative forest clearing. Adopters appreciated the relative ease with which the new system allowed them to set aside land for their children. Jealousy and other social problems were lessened as farmers spaced themselves out over the landscape (38). The new system also yielded ecological benefits; as enrollment grew, clearing of primary forest for rice dropped (Fig. S2).

How did this institutional change arise and spread? The movement clearly began among younger households, emboldened by the idea of family forest ownership being discussed in community meetings regarding both RBTA management planning and Krausirpi's incorporation into a new municipality (40). Innovators also may have tapped into collective social memories of the previously more egalitarian land structure. Most striking was the bottom-up, almost "viral" way in which the new tenure system spread. No leader emerged to champion the new system, and no meetings were held to discuss it; even by 2002, some interviewees remained unaware of its existence. Instead, the process spread from neighbor to neighbor, through individual negotiation of parcel boundaries (see also refs. 36 and 40). By 2009, all households had reportedly adopted the system.

Resilience to Subsequent Storms. The experience of Hurricane Mitch appears to have enhanced the community's long-term resilience to similar extreme events. When Tropical Depressions 16 and 43 hit in October 2008, floodwaters reached heights comparable to those of Mitch (27); rain again devastated the rice crop (52). However, agricultural, infrastructural, and health impacts were negligible compared with a decade earlier. Although it is difficult to establish direct cause and effect from available reports (27, 52, 53), the experience of Mitch would seem to have contributed to this outcome, for several reasons. First, because cultivators continued to avoid the first floodplain terrace, no agroforests were lost. Second, the Mitch-inspired emigration of wage-seeking youth from the community ensured that many households had ex situ sources of cash to cope with crop losses. Third, health impacts of the 2008 storms were minimized by a new system to deliver clean water from a remote reservoir to individual homes. This improvement is traceable to both post-

Mitch land reorganization (which inspired local adherence to no-clear forest zones in the headwaters of key local streams), and to enhanced community cohesion post-Mitch that enabled the volunteer erection of the small reservoir dam.

Discussion and Conclusion

This longitudinal study of a rural indigenous community's response to Hurricane Mitch reveals how unexpected local institutional change triggered by the hurricane served to enhance social-ecological resilience and improve livelihoods. Specifically, resilience was increased when autonomous agricultural reorganization relocated production away from risky floodplains, renewed social cohesion through reviving a more equitable intracommunity distribution of land, and contributed to the restoration of more diverse income-generation strategies; in turn, the new landholding system removed incentives for speculative clearing of primary forest. All of these factors buffered the community from comparable flooding 10 y later. Our findings offer four process insights and challenge prevailing orthodoxies about rural peoples' response to climate change.

In the Face of Climate Shocks, the Fate of the Poorest Is Not Sealed. Much empirical evidence suggests that poverty begets vulnerability; that covariate shocks tend to deepen the poverty of the poorest (54), as found elsewhere in post-Mitch Honduras (29, 31); and that the process of disaster recovery ultimately reestablishes former social inequalities (7, 8, 55). The experience of Krausirpi suggests that alternate outcomes are at least possible. There the pre-Mitch status quo was in fact undermined when the hurricane provided an opportunity for the community to reorganize its subsistence base and effectively rewrite its landholding rules. This helped the land-poor to escape the trap that had constrained their livelihood options. Notably, single women were among those differentially enriched by this process. But this hopeful process became apparent only some years into post-Mitch reconstruction, supporting calls for greater attention to longer-term trajectories of recovery following disasters (7, 16, 56).

Endogenous Institutional Change Is Crucial to the Poor's Ability to Cope with Climate Change. Much of the current literature on the rural poor's potential to adapt to climate change focuses on household-level adjustments to investments and productive activities. Many analysts seem pessimistic about the poor's capacity to effect sustained change in the institutions that mediate these activities (1, 57; but see ref. 58). Indeed, in the rare postdisaster contexts in which rules *are* rewritten, including elsewhere in post-Mitch Honduras, their effects tend to be short-lived (26, 28, 31, 55, 59). External support and/or facilitation, typically delivered top-down via traditional governance structures, is thus often considered vital to the engineering of transformative institutional change that will enable poor communities to better cope with climate shocks (see ref. 21). Again, our study offers an alternative experience.

The emergence of a new, hybrid land-holding system in the wake of Hurricane Mitch was an endogenous outcome, requiring none of the external subsidization important for institutional change in other indigenous communities (17, 60). The innovation spread through a quiet process of cumulative decision making by individual households and appeared as an emergent property of the system—one that tapped into a reservoir of social memory (of a more egalitarian and livelihood-diverse past) and a support area of ecological memory (the community's reserve of primary forest largely unaffected by the hurricane) (13, 24, 61, 62). The viral nature of the process allowed land-poor families to establish claims in the new system, minimizing potential distortion by community founders or other elites (cf. ref. 7). Thus here change did not proceed, as it did elsewhere in post-Mitch Honduras, in the heated context of "crisis politics" (28, 31, 59). Furthermore, it did not entail the transaction costs typically associated with land-related rule making (7, 60), and it did not rely on the specific forms of governance (e.g., explicit consensus building, participation) that are typically promoted by governance-development programs (63).

Nonetheless, the institutional change did reflect Krausirpi's indigenous character, entirely consistent with the Tawahka's diffuse forms of governance, in which new norms are built through individual action that is subsequently sanctioned (41). Long-term cultural commitment to place also fosters the trust, shared values, and mutual understanding (i.e., social capital) long known to be essential for institutional flexibility in the face of environmental change (9, 21, 63, 64). Also importantly, community members had the time and the institutional space to sort out and slowly enact a new, locally meaningful postdisaster order, because no external reconstruction initiatives specifically targeted local land ownership dynamics. This suggests that development priority should be given to ensuring a favorable context for the emergence of the informal networks and endogenous solutions most likely to turn a crisis into an opportunity (see also refs. 12, 22, and 24).

Latent Adaptive Capacity in Rural Communities Can Lie in Sources of Apparent Vulnerability. Local people's institutional innovation in the wake of disaster exemplifies adaptive capacity, in that members demonstrated the ability to learn, to tap into social-ecological memory, and to make use of crisis, with clear ecological benefits (9, 13, 24, 25); adaptive capacity begets resilience (10). At the same time, this study joins other reported cases in which, paradoxically, sources of vulnerability at one point in time are sources of resilience in another (10). In Krausirpi, for example, the Tawahka's traditionally diffuse governance structure was considered, before Mitch, to increase vulnerability by hindering development because collective action was seen to be constrained by the lack of designated leaders within a decision making hierarchy (37, 38). After Mitch, however, this feature accommodated the bottom-up mode of institutional transformation—that is, it proved to be an important source of long-term resilience. The programmatic tradeoffs implied by this paradox (i.e., having to choose between vulnerability reduction and resilience support) are not inevitable, however. Among the latent resilience resources triggered by Mitch in Krausirpi, some—such as experimentation in agriculture (44)—had also been instrumental in mitigating quotidian stressors previously. Consequently, those who seek to help rural communities cope with climate change might investigate what appears to have been working well and for a long time, which may reveal social-ecological attributes that deserve both short-term and long-term support.

Development Assistance Can Increase Vulnerability to Climate Shocks. As others have found previously, our study shows how economic development interventions (i.e., cacao promotion) before Hurricane Mitch increased the community's vulnerability to climatic shock by accelerating socioeconomic stratification, focusing incomes on a single crop, and concentrating production in a floodplain. In contrast, the study also shows that post-Mitch employment by state and nonstate organizations did enable residents—particularly young women and men—to reestablish their agriculture fields and to improve their lot overall. This experience suggests that future income-generation programs in rural communities should simultaneously support a mix of activities with differing system requirements, such as timing of labor demands and spatial requirements (see also refs. 4 and 19). Although costly relative to more focused programs (65), such initiatives also will enhance subsistence security and decrease the risk of losing years of development effort to a single catastrophic event.

Finally, the Tawahka case makes clear that land tenure security and access to natural capital are critical elements of collective

and household resilience to covariate, climate-induced shocks in rural areas (see also refs. 18 and 65). The Tawahka's long-term political commitment to resist outsider settlement of their homeland ensured that land/forest was available in Krausirpi's hinterland to buffer the shock of Mitch (see also refs. 40 and 50). Development assistance that aims to build rural peoples' resilience to climate change must therefore reach beyond conventional income generation, capacity building, and governance reform to include support for local peoples' struggles for land and resource access, as well as, in the case of indigenous people, territorial autonomy and self-determination.

Materials and Methods

Fieldwork was conducted episodically over 8 y. Data for 1994–1995 were generated under the umbrella of the Honduras Forests Project, run by the Harvard Institute for International Development, led by R. Godoy (see ref. 43); data from that project became publicly available in 1998. K.M. was part of that research team from 1994 to 1996, and her residence in Krausirpi during those years informed subsequent independent research in the community in 1998 (before Mitch), 2001, and 2002. K.M.'s research was approved by the Research Ethics Review Committee, Department of Geography, McGill University and by Ohio State University's Institutional Review Board (Protocol 01E0333). Informed consent was obtained verbally from all informants. During each visit, data were derived through household surveys combined with in-depth interviews, focus groups, and participant observation (in Spanish and Miskitu, the lingua franca). Visits to agricultural fields helped to reconcile reported and actual landholdings by type and location, which was particularly important after Mitch rendered former systems of land classification inoperable.

Household questionnaires assessed household demographics and education levels, wealth measures including landholdings by size and type, and income amounts and sources (for the previous 4 mo only, from which annual incomes were imputed and cash income was distinguished from in-kind and total income). The number of households surveyed during each trip varied. From the 87 total households in Krausirpi in 1998, 68 were interviewed in that year; 45 were interviewed in 2001 (spanning the spectrum of age and wealth based on 1998 data), and 70 were interviewed in 2002. The final panel for 1998–2002 comprised 43 households, which in 2001 included 373 individuals, or 58% of Krausirpi's population and 34% of the total Tawahka population of the RBTA. Data were analyzed using Stata (StataCorp). Because not all households responded to all questions, *n* values vary depending on the analysis. Since 2002, K.M. has been in communication with Tawahka leaders and Krausirpi residents via e-mail and telephone to discuss and corroborate the processes described here; she also discussed findings with Tawahka leaders in Tegucigalpa in 2010.

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