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Où vivre sans boire revisited:

Water and political-economic change among Mikea hunter-gatherers of southwestern Madagascar

In this article, I present a political-ecological history of the Mikea Forest of southwestern Madagascar, and of Mikea people, anchored four water-themed moments: 1966, with the publication of one of the first ethnographic descriptions of Mikea, *Où vivre sans boire*, "where they live without drinking" (Molet 1966); 1998, when Mikea combined foraging with swidden maize agriculture and traveled long distances to get their water; 2003, when a Joint Commission of organizations, working to halt deforestation, considered plans for canals to irrigate potential farmland; and 2018, when Mikea living on the edge of a new national park desperately waited for rain. I offer "hydrosocial moments" as a way to extend Boelens and colleagues' (2016) "hydrosocial territories" through time. Water facts and truths change through a dialectical process of truth-assertion and contradiction. In the Mikea case, one changing truth was who Mikea are: exotic desert hunter-gatherers, victimized indigenous peoples losing forest to rapacious farmers, or poor people in need of development. Interveners borrowed truths from neighboring hydrosocial territories. The concepts of hydrosocial territories and moments are significant because they have real effects; in this case, poverty.

Keywords: Water; hydrosocial territories; hunter-gatherers; Madagascar

Introduction

The first moment: 1966

In 1966, only six years after Madagascar gained its independence from France, Canadian scholar Louis Molet published one of the first ethnographic descriptions of Mikea people, entitled, *Où vivre sans boire*, "where one lives without drinking" (Molet 1966). In this paper, he makes the extraordinary claim that Mikea hunter-gatherers of Madagascar's dry southwestern forests live almost entirely without drinking water. He describes the forest where Mikea live, called the Mikea Forest or *Agnalamikea*, as a thorn forest without shade, on a sand-covered limestone shelf entirely lacking in surface water, with no rivers, springs, wells, or ponds. According to Molet, Mikea quench their thirst with the water-engorged *babo* tuber (*Dioscorea bemandry*), and rainwater collected in trees. Without other access to water, Mikea rarely bathe and cannot boil foods. Molet claims that this prevents Mikea from consuming agricultural staples, limiting their diet to roasted wild tubers, small mammals, and birds.

The second moment: 1998

In 1998, as I settled into long-term dissertation fieldwork at the Mikea camp of Belò, I asked my Mikea "dad" Solo what subject he thought should be the focus of my research. Without hesitation he replied, "water." Water was clearly a key resource at the time. In the 1990s, most Mikea lived in small forest camps where they combined hunting and gathering with swidden maize agriculture, selling much of their maize to exporters. Most of these camps were far from water; people traveled up to 12 kilometers to access water for drinking, cooking, washing, and

livestock, from wells and ponds that Molet had not known about. Contrary to Molet's account, the Mikea I knew ate almost entirely boiled food, increasing their water needs.

The third moment: 2003

The swidden maize boom of the 1990s resulted in large-scale clearing of the Mikea Forest. In the first decade of the new millennium, a Joint Commission consisting of 12 separate governmental and non-governmental conservation and development organizations worked to halt deforestation, and to encourage Mikea and their neighbors to pursue alternatives to chopping and burning the forest. Among the more ambitious of these plans were two schemes to dig "Mikea canals" to irrigate dry lands on the eastern edge of the Mikea Forest, to permit wet-rice agriculture. These plans were probably not practical, and indeed, the canals were never built. Gray literature documents calling for the construction of canals explained Mikea poverty as resulting from their lack of irrigable rice land, which was also why, supposedly, Mikea practiced destructive swidden. Water was thus the cause, and the solution, to Mikea poverty.

The fourth moment: 2018

In January 2018, my Malagasy research colleagues from the Université de Toliara and I were collecting data in the village of Bevondrorano, home to many Mikea who were displaced by the new Mikea Forest National Park, founded in 2012. National Park rules permit Mikea to forage within the park, and to live in "controlled occupation zones" in the park, but they are not permitted to clear new land for agriculture. Mikea have the choice to either live in the park primarily by hunting and gathering, or live an agrarian life outside of the forest (or to move between places and subsistence modes). Bevondrorano was home to many Mikea who chose to

agrarian path. As farmers, these Mikea were highly dependent on rain. December through February is supposed to be the rainy season, but by mid-January, the region had received almost no rain. Everyone prepared for the worst, a year without much food.

Thesis

I argue that these four episodes constitute "hydrosocial moments" that trace a zigzagging trajectory of how outsiders define, classify, and approach the peoples and landscapes of Madagascar's semi-arid southwest, with real political and economic outcomes. In doing so, I extend Boelens and colleagues' (2016) concept "hydrosocial territories" through time.

Boelens and coathors' hydrosocial territories are bounded conglomerations of hydraulic, natural, and social facts and discourses that define what is real about water, so that these facts and truths may be used by political actors to maintain and contest power relationships (Boelens et al. 2016:1). The concept of hydrosocial territories emerge from social critiques of hydrological science. The hydro*logical* cycle taught to generations of schoolchildren, involving evaporation, condensation, precipitation, and infiltration, in a closed, geomechanical system, frames water problems as technical and material. Political ecologists offer a counter "hydro*social* cycle," which considers societal uses of water, and norms and institutions that govern water meanings, water access, and water knowledge, supporting both water flows and political hierarchies (Budds et al. 2014). Boelens and coauthors' (2016) "hydrosocial territories" expands this "cycle" to cover social-natural systems at different scales. Their concept is big: hydrosocial territories are multi-scalar, networked, contested, involve materials, bureaucratic structures, finances, and cultural practices, and they influence knowledge systems, political hierarchies, and concepts of reality (Boelens et al. 2016:2). Here, I use "hydrosocial moments,"

snapshots in the "cycle," to glimpse changes in hydrosocial territories over time.

I offer four contributions to the hydrosocial territories concept. First, that the invented truths that support hydrosocial territories change through time through a dialectical process of assertion and contradiction. Here I focus most on the invented truths of powerful outsiders, but I also show that vulnerable peoples adopt and adapt water truths to suit their political purposes. Thus, my second point is that changing water truths almost inevitably result in new classifications for people and the landscapes they inhabit, carving difference along lines of the purported water needs, uses, and preferences. Third, meaning-makers often misapply truths from one hydrosocial territory to another. These truths may fit their new application rather poorly, but they appear truthful to outsiders to the degree that they fit broader, regional explanations. Finally, I argue that, when constructing a history of hydrosocial territories through a series of moments, the choice of which water moments to cover may significantly influence the resulting historical narrative.

In the first moment, the asserted truths are that the Mikea Forest is a dry, uninhabitable scrub, sparsely populated by extraordinary beings (hunter-gatherers) who can "live without drinking." The Mikea hydrosocial territory is defined in contrast to the neighboring savanna corridor, which is domesticated and agricultural, with peasants eagerly awaiting development. In the second moment, these previous truths are contradicted by new facts, that Mikea are tethered to distant water sources, and the forest is vulnerable to destruction for agriculture. Mikea (or at least some Mikea) are now indigenous and vulnerable, and conservation organizations must save Mikea people and their forest from the destruction wrought by migrant invaders. In the third moment, organizations find that Mikea are among the deforesters, allegedly because of poverty, allegedly due to lack water. Meaning makers borrow truths from the hydrosocial territory of

Imerina, near Madagascar's capital city, where Merina folklore credits their civilization on irrigated rice land. In the final moment, as a consequence of schemes to preserve their forest, Mikea are actually impoverished, due to their increased dependence on scarce rainwater.

Moment 1: The Mikea Forest as Desert, 1950s-80s

Early ethnographic descriptions of Mikea

The first generation of ethnographers to describe Mikea people portrayed the Mikea Forest (*Alamikea*) using what I call "desert narratives," descriptions that rendered the landscape wild, exotic, and undesirable.[1] They contrasted the desert landscape of the Mikea Forest to the comparatively well-watered and populous savanna corridor to the east, home to Mikea's neighbors, the Masikoro people (see map, Figure 1). This savanna zone, often called the Befandrea-Manombo corridor after the major villages at its northern and southern extent, was portrayed as fertile, tamed, and productive.[2] I show that the ethnographers' descriptions matched development agendas to avoid the Mikea Forest and develop the Befandrea-Manombo corridor, and that these agendas co-occurred with the construction of Mikea as hunter-gatherers and Masikoro as peasant farmers.

Desert narrative descriptions of the Mikea Forest consist of three assertions: that the Mikea Forest is devoid of surface water; that the forest is primarily thorny or spiny (*épineuse*), or xerophytic rather than deciduous; and that the dry Mikea Forest stands in contrast to the well-watered, fertile, savanna Befandrea-Manombo Corridor to the east. Fanony's (1986) description of the Mikea Forest region exemplifies all three of these assertions:

"Naturally, the vegetation is of the bush type, largely xerophytic, dominated by

> didierdaceae and euphorbiaceae, without forgetting trees left over from the dense forests of the interior, like tamarind and savanna grasses that result from degradation of the primary vegetation. In short, the natural conditions are rather unfavorable to human life; this statement takes on even more value when we try to understand the contrast between this forested land and the neighboring regions. To the north, the Mangoky River with its large valley, to the east, the depressions of Befandrea, Antanimieva, and Ankililoake at the feet of the mountains of Mikoboke, to the south the valley of the Manombo river, and even to the west, the coast with its springs, all of this offers land that is welcoming and varied (Fanony 1986:136, translation mine).

Two species among Fanony's xerophytic didierdaceae and euphorbiaceae occur frequently in desert narratives: the "octopus tree" that Mikea call *sogno* (*Didiera madagascariensis*), and *famata* (*Euphorbia stenoclada*) (Figure 2a,b).

In a work by Molet (1958) that predates his *Où Vivre Sans Boire* by a decade, he describes the Mikea Forest as a "Forêt épineuse" without shade or large trees, where bushes have thin leaves to reduce water loss to evaporation in what Molet calls "furnace"-like temperatures up to 45º C (113º F). Molet's initial research trip was limited to just a few days, because, he admits, he had run out of water. Koechlin (1975:51) describes the Mikea Forest as xerophytic forest on sand that does not hold water, where dietary water comes primarily from *babo* tubers.

Maps of the Mikea Forest depict a relatively uniform thorn forest. Dandoy's (1972:90) atlas of southwestern Madagascar describes the entirety of the Mikea Forest as "forêt épineuse." Dina and Hoerner's (1976:273) map labels most of the forest as "forêt épineuse (bush)" with only a small part labeled as dry forest (*forêt sèche*). Salomon (1978:36) depicts the Mikea Forest

as a mixture of "xerophytic bush" (*bourré xérophile*) and "wooded bush" (*bois bourré*) with a small portion in the south labeled "dry forest" (*forêt sèche*). All of these authors contrast the sandy soil of the Mikea Forest, through which rainwater drains away, to the rich alluvial and fluvial soils of the Befandrea-Manombo corridor east of the forest.

The first long-term fieldwork with Mikea was conducted by Dina and Hoerner (1976), over six months in the mid 1970s. The first author of this work is herself Masikoro from Befandrea, and this may explain the overall greater accuracy of this work contrasted with previous and subsequent descriptions. Like the other authors cited here, Dina and Hoerner contrast the "certain richness" of the Befandrea-Manombo corridor, with its natural water courses and various hand-dug wells, with the Mikea Forest, which they describe as "almost completely without water" (Dina and Hoerner 1976:274). They claim:

> The Mikea Forest… appears frankly hostile to human occupation. The soils are mediocre and the rain is insufficient…. Yet, a few tens of kilometers from this repulsive environment (*milieu répulsif*), there stretches a relatively well-watered, fertile region, where the problems of water do not present themselves" (Dina and Hoerner 1976:275; translation mine).

Many recent publications continue to refer to the Mikea Forest as a thorny or spiny forest (Fauroux and Rabedimy 1985:1; Fenn and Rabara 2003; Kelly et al. 1999:215).

These desert narratives inaccurately describe the Mikea Forest. In a more recent description based on remotely sensed data, Dufils (2003:89) portrays the Mikea region as mosaic of "western deciduous dry forest" and "southern deciduous dry forest," reserving the label

"southern spiny thicket" for the coastal fringe of the Mikea Forest, and the regions south of Manombo. Dufils' classification matches the informal ground truthing that my colleagues and I have performed over countless hikes through the northern half of the Mikea Forest. Thorny didierdaceae and eurphorbiaceae are common only on the forest's coastal fringe and a few other exceptionally sandy spots. Throughout most of the forest, didierdaceae and eurphorbiaceae are rare contrasted with leafy deciduous hardwoods, including *Dalbergia* (rosewood)*, Cedrelopsis, Poupartia,* and *Commiphora* species (Figure 2c). The shade of the deciduous leaf cover is often cool and welcoming.

In contrast to the desert narratives, there is accessible surface water in the Mikea Forest, although the quantity and quality varies by season and year. Several limestone sinkholes drop to near, or below, the water table. The Mikea Forest also contains a chain of lakebeds composing the Namonte Basin. Annual rainfall in the region is among the most unpredictable in the world (Dewar and Richard 2007), varying from 100 to 1500 mm per year (mean 700mm, Tucker 2001; Dandoy 1972).[3] During exceptionally dry periods, such as 1997-1998, when parts of the Mikea Forest received 100 mm of rain (Tucker 2001), the sinkholes form natural wells, and the lakebeds of Namonte, are largely dry and grassy. During exceptionally rainy periods, such as 1999-2002, when more than 1.5 meters of rain fell per year over successive years, the sinkholes become ponds, and the lakebeds overflow into the surrounding forest (Figure 3).

Wild desert foragers and domesticated savanna peasants

Why have so many scholars mischaracterized the Mikea Forest as a desert? One reason could be sampling error: Molet, Koechlin, Fanony, and their colleagues made few, brief visits to particular sites. Koechlin and Molet describe entering the forest from the coast, where the forest is more

thorny than is typical further inland. The period of 1954 to 1963, when much of this fieldwork occurred, was somewhat dryer on average (741 mm) than the preceding 10 years (861mm, Dandoy 1972:98). If Molet's visit was in October or November, he may well have experienced "furnace" temperatures of 45° C (113° F). Had he visited in June or July, he may have described cooler temperatures (17-29° C).

But if we look deeper, we must ask: what kind of people would—or even could—live in a "hostile… repulsive environment" (Dina and Hoerner 1976:275), with furnace-like temperatures, with thorns instead of shade, "without drinking" water (Molet 1966)? The answer must be, a different kind of human than you or me. An exotic person. A hunter-gatherer.

Throughout the world, hunter-gatherer identities are shrouded with exoticism, as neighboring peoples ascribe to them super-human and sub-human qualities. In the Congolese Basin, farmers think of their "pygmy" forager neighbors as magically powerful and conversant with dangerous forest spirits, yet simultaneously, unclean, unintelligent, and not quite human (Grinker 1990). The farmers and herders of northern Tanzania think of their Hadza foraging neighbors as honest people unable to steal or do witchcraft, and yet they also liken them baboons (Berbesque, personal communication; Marlowe, personal communication; Woodburn 1964:16). When I have discussed Mikea with urban Malagasy, common claims include both that Mikea have powerful magicians, but also that they are dwarves who sleep in burrows in the ground and eat raw food (see Poyer and Kelly 2000 for more urban misconceptions of Mikea). In parallel fashion, Western social theory and popular discourse paints foragers as peaceful, noble, idyllic, and wise, yet also as backward, nasty, and brutish (Bernard 1999; Schrire 1984).

What puts a population into the category of "hunter-gatherer" is, of course, partially what they do for a living. However, many of those whom anthropologists do not habitually label

"hunter-gatherer" also forage, and many of those we call "hunter-gatherer" have long histories of herding and farming (Layton et al. 1991; Solway and Lee 1990; Wilmsen and Denbow 1990). The other part of what qualifies a population as hunter-gatherer is the social process of exoticism (Huff 2012). In southwestern Madagascar, desert narratives accomplish the superhumanizing and dehumanizing that make Mikea into hunter-gatherers.

Just as "living without drinking" was part of the discursive process that made Mikea into foragers, so did desert narratives turn the Mikea Forest into a wilderness. The purpose of this newly created wilderness was neither conquest, as Neumann (1995, 1998) describes for East African reserves and parks, nor to make a leisure reserve for the bourgeois, as Cronon (1996) argues for U.S. National Parks. Rather, the functional outcome of this discursive creation of wilderness was to set it aside as a no-man's land, not worthy of exploitation. This, by contrast, defined the comparatively well-watered Befandrea-Manombo corridor as a domesticated, productive landscape, ripe for intervention and development, particularly in the form of cash crops. This process transformed the Masikoro inhabitants of the Befandrea-Manombo corridor into peasant cash croppers of butterbeans and cotton (Hoerner 1987; Ottino 1963).

It is doubtful that the early Mikea ethnographers themselves invented these narratives of wild desert and fruitful savanna, considering that their academic audience; and, as I explain momentarily, the Mikea Forest already had a long history of mystification. The Befandrea-Manombo Corridor was already heavily developed for export agriculture during the colonial period (1898-1960). Rather, the early ethnographers were bending their descriptions to match already popular water truths.

Hints to a former moment: Mikea and Masikoro ethnogenesis

It is significant that most of the early Mikea ethnographers accurately described a fundamental fact about Mikea people: that Mikea are the same as their Masikoro neighbors, sharing history, language, and social and genetic kin ties, differing primarily by lifestyle (Dina and Hoerner 1976:277-279; Fanony 1986:138; Molet 1958:242, 1966:14). This is in contrast to previous speculation by Berkeli (1926) that Mikea were the descendants of Madagascar's original, pre-Austronesian population.

The classification of Mikea as hunter-gatherers and Masikoro as farmers predates European colonization, and Mikea and Masikoro themselves were active participants in this. According to Mikea and Masikoro oral historians interviewed by myself and my colleague Dr. Tsiazonera of the Université de Toliara, Mikea and Masikoro identities were formed in the 17th – 18th centuries in reaction to the rise of the Andrevola kingdom (Tucker 2003; Yount et al. 2001). The term Masikoro became associated with the kings' vassals, who paid tribute of cattle and agricultural staples. Masikoro are symbolically farmers and herders, even though accounts such as Drury's (1876[1729]:88) indicate that Masikoro also dug wild tubers, hunted tenrecs, and collected wild honey.

Mikea were those who fled royal domination by hiding in the Mikea Forest. Mikea defined themselves (and continue to do so) as hunter-gatherers (*mpitindroke*), both because they do depend heavily on wild tubers, honey, and small game, and because of their political relationship with their forest refuge. Mikea themselves popularized the primitive stereotype in part to conceal their agropastoral wealth from royal (and later, colonial) appropriation.

Moment 2: Forest cultivators and invaders, 1990s

Walking to water

Part of the rhythm of fieldwork during my dissertation research was the 2 km walk from the Mikea camp of Belò to the natural well at Ambovosay. Ambovosay is a conical basin eroded through the limestone substrate. The nadir of the basin approaches the water table, which was accessed by a meter-deep hand-dug shaft. We, like our Mikea hosts, carried all of our water for drinking, cooking and washing with us on foot, in jerry cans and buckets. We had it easy. Other Mikea camps were up to 12 kilometers from the nearest water source, as mapped in Figure 4. With water scarce, people adapted by watering their livestock with wild melons, bathing seldomly, transporting water by oxcart, and harvesting the water-engorged *babo* tuber. Interestingly, most still boiled their food.

At the beginning of my dissertation research, I assumed that the Mikea camps that I visited represented traditional forms of Mikea settlements, and that the long walk to water was a perennial part of Mikea life. The camps consisted of collections of rather expedient-looking huts thatched with bark or grass, which matched my prior expectation for how hunter-gatherer settlements should look.

But I learned that the camps, and the long walk to water, were, for the most part, recent phenomena, related to the market boom for maize (1980s-2002), which Mikea cultivated in swidden fields in the forest. Mikea transformed memories of ancestors' foraging and pasturing territories in the forest into claims on land for swidden cultivation. The new swidden territories were rarely near water.

Through oral history research that I conducted with my colleague Dr. Tsiazonera, I learned that, prior to the maize boom (before 1980), many Mikea in the northern half of the Mikea Forest had their primary residence in large villages in the Namonte Basin, a region of lakes and lakebeds in the heart of the Mikea Forest. Here they lived close to water, in handsome,

solid, reed homes, the kind that many Malagasy people live in throughout rural and urban southern and western Madagascar. From the Namonte villages, Mikea would go on multi-day foraging excursions, sleeping in the forest (doing *mihemotse*), and on these trips they would get water from the natural wells. In the Namonte Basin, close to water, they grew manioc and other crops in lakebed gardens, and kept livestock.

Interestingly, Blanc-Pamard (2009) reports very different oral histories for Mikea in the *southern* half of the forest. Her oral histories start in the 1920s, and tell the story of successive waves of migrants to the edge of the forest in search of natural resources: first timber, then pasture, and then land for swidden maize cultivation. The first immigrants were Masikoro, followed thereafter by Tandroy and Mahafale from southern Madagascar. As they began to live in the forest, they called themselves "Mikea." Using remotely-sensed data, Blanc-Pamard traces a retreating forest frontier over the course of the 20th century, as trees were cleared for pasture and agriculture at an increasing rate.

New truths: Indigenous and invaders

Deforestation for maize cultivation attracted the attention of a new generation of researchers working for the French *Institut de Recherche pour le Développement* (IRD; see footnote 1; Razanaka et al. 2001), and conservation organizations including the Worldwide Fund for Nature (WWF) and Conservation International (CI). These researchers were faced with facts that contradicted previous truths. The Mikea Forest was clearly not a desert, as evidenced by its gradual transformation into farmland. Mikea were not exotic beings capable of "living without drinking," but were instead tethered to distant wells and ponds. The new truths that emerged were that Mikea are vulnerable indigenous peoples victimized by migrant outsiders who

threatened to destroy their traditional way of life.

Some researchers divided the Mikea population itself into categories of victims and invaders. Fauroux and Rabedimy (1985) contrasted what they call "traditional Mikea," those whose ancestors have lived in the forest for centuries, and who were primarily foragers; and the "pseudo Mikea," who are actually Masikoro or Vezo, but who cultivate maize in the forest. Conservation and development agents whom I met during fieldwork in the 1990s often spoke of "true" and "false" Mikea.

Fenn and Rebara (2003:123) extend "native" status to Mikea and Masikoro, in contrast to Tandroy and Mahafale people from southern Madagascar, who are "recently arrived" practitioners of slash-and-burn agriculture, "eaters of the forest" (Fenn and Rebara 2003:123). They claim that the Mikea Forest does not regenerate but becomes savanna, and that the loss of the forest threatens Mikea cultural survival. Réau (1996, 2002) makes parallel arguments, arguing that among the root causes of deforestation are the Tandroy people's insatiable desire to expand their cattle herds.

A document prepared by the WWF for the World Bank and the Government of Madagascar's environmental bureau (the *Organisation Nationale pour l'Environnement*, or ONE), asserts that Mikea fit the World Bank's criteria for "indigenous" under operational directive 4.20. The document claims that Mikea were primarily foragers until they learned slash-and-burn techniques, with the "massive arrival of migrant maize cultivators" in the 1980s (WWF 2003:9).

Journalistic accounts from the time portray Mikea as living in harmony with nature. In a WWF magazine targeted to Malagasy children, Rarojo (1999) writes, "If you observed the Mikea lifestyle, you would remark that there is a communion between them and the environment

in which they live" (translation mine, Rarojo 1999:4). In an article in the popular Malagasy newspaper *L'Express,* Mouyon and Francelle (1999) write, "They live in groups of four or five, in the forest the carries their name…. but, anarchic deforestation is transforming it little by little from an ancient green island to a laterite desert, of white cinders and asphyxiating fumes…" "…is it necessary to continue this enumeration to explain that to burn the forest is to kill the Mikea" (translation mine, Mouyon and Francelle (1999:1-2)?

These narratives echo invented truths that accompany accounts of deforestation throughout the world. In the Amazon, the distinction between the vulnerable "indigenous" and the rapacious "settlers" is often ambiguous, but in southwestern Madagascar, this distinction is even more unclear. Mikea and their neighbors share intertwined histories and genealogical relationships, with many calling themselves Mikea in some social contexts and Masikoro or Vezo in others (Poyer and Kelly 2000), and most identifying primarily as Malagasy (*olo Gasy*).

The accounts by these conservation and development-minded writers commit many of the persistent misunderstandings about forest clearing in Madagascar identified by Kull (2000) and Scales (2012): assuming that fire's effects are necessarily destructive, assuming that deforestation is driven by poverty and environmental and agronomic ignorance rather than a rational strategy to improve livelihoods, scapegoating migrant populations, and conflating events in different places. Migrant Tandroy and Mahafale "invaders" primarily cultivated maize in the southern half of the forest (Blanc-Pamard 2009). In the north, Mikea, Masikoro, and Vezo participated equally, and indeed, the close kin relations spanning these identities confuses any effort to sort out who is what.

Moment 3: Water as the cause and solution to Mikea poverty, 2000s

Mikea canals

On a hot day in August 2003, while conducting research in the Mikea village of Vorehe, I heard the rumble of an unfamiliar diesel engine. A truck arrived beneath the shade of the tamarinds in the Vorehe marketplace, with the United Nations Development Programme (UNDP) logo on the door. Inside the truck were representatives of the WWF, CI, and several heavily armed gendarmes, Madagascar's federal rural police force. They were heading into the Mikea Forest to stop people from clearing trees for maize agriculture.

This was near the end of a Joint Commission's successful efforts to halt forest clearing for agriculture (WWF 2003). The commission consisted of multiple national and non-governmental organizations, including the organizations I have already mentioned (ONE, UNDP, WWF, CI, the Gendarmerie Nationale), plus the *Direction Inter-Régionale des Eaux et Forêts* (DIREF), and *Service Appui sur la Gestion de l'Environnement* (SAGE), the Malagasy military, police, and tribunal system, with some funding from the World Bank. A final partner in the commission, said to represent the interests of Mikea people, was the *Fikambanana Miaro ny Ala Mikea* (FiMaMi), a union of all the elected mayors of the rural communes that include the Mikea Forest, none of whom were themselves Mikea.

The commission was, at least on paper, committed to participatory development: "[A] Plan for the Development of the Mikea Population (PDPM) must be elaborated by Mikea, for Mikea, to define the program and activities that Mikea think would benefit them for social, economic, and cultural development" (WWF 2003: 5, translation mine). The commission started with a series of community meetings in villages throughout the region. The different organizations sought to convince Mikea to stop forest clearing the forest, and to discuss alternatives.

Among the more ambitious of these alternatives were plans for two "Mikea canals." One would have linked irrigation schemes in the Masikoro village of Ampasikibo with the Mikea village of Agnalabo; the other would have linked a small lake called Mandevy, east of Vorehe, with forest clearings around the large Mikea camp of Bedò. In both cases the canals would traverse nearly 14 km.

Water, power, and civilization

The previous truths that non-Mikea invaders were to blame for deforestation were contradicted by new facts that Mikea were also clearing the forest for agriculture. Within the discourses of the Joint Commission, Mikea identity slid into a new category, that of rural poor, whose destructive practices stem from need. Documents calling for the creation of Mikea canals cited Mikea's lack of access to irrigated rice fields as the cause of their poverty.

To put these canal projects into perspective, it is important to zoom out from the semiarid southwest and consider development narratives throughout Madagascar. To many Malagasy, irrigated rice is civilization; cultivating and consuming rice marks one as civilized.

Madagascar's capital is the city of Antananarivo, located in the country's High Plateau, in the region called Imerina, home to the Merina ethnic group. The agricultural economy of Imerina is focused on irrigated rice cultivation; the mountainous landscape is laced with intricate terraced wet rice fields.

Accounts from the 19th century, from Merina oral historians (Berg 1981) and the French explorer Grandidier (discussed in Kent 1970), credit the rise of the Merina State and Merina political dominance on irrigated rice production, paralleling Wittfogel's (1957) hypothesis that "oriental states" developed out of the control of water for irrigation. Grandidier, applying

Victorian hierarchical racial schemes, popularized the idea that Merina people descended from 14th century Javanese castaways who were racially distinct from other (African) Malagasy, and that these Javanese castaways were intensive rice farmers.

In contrast, Berg (1981) argues that these oral histories are post-hoc justifications for Merina superiority, popular among Merina royality, rather than explanations for their rise. He provides ethnohistoric and oral history evidence that widespread irrigation began a century *after* the Merina rise to power.

In southwestern Madagascar, anyone looking for evidence that irrigation for rice brings civilization and affluence may find it in the village of Ankililoake, the largest village in the Befandrea-Manombo corridor. During French colonization, a mandatory public labor project resulted in a canal, and today, Ankililoake is the rice capital of the region (south of, and excluding, the rice fields of the Mangoky River). In the past 20 years, the village has grown to be a small city, with its own electrical grid, two story houses, a hospital, a school, traffic jams, and enclosed neighborhoods of stone houses that look somewhat like Western suburbs. This was presumably the outcome that the champions of the Mikea canals had in mind.

Moment 4, waiting for rain, 2018

Mikea farmers of Bevondrorano

During the months immediately prior to my writing the first draft of this manuscript, my Malagasy colleagues and I were collecting data among Mikea people living in scattered camps at Bevondrorano, on the edge of a small lake. It was the rainy season, but there had been no rain since New Year's Day. Daily conversations focused on the signs that rain might fall, such as changes in the wind and the appearance of flying ants and dung beetles. People speculated about

the will of God and the ancestors, and guessed at the human failings for which they have been punished.

Many Mikea had settled in Bevondrorano, on the forest/savanna edge, during the past decade, as a result of policies associated with the new Mikea Forest National Park, founded in 2012. These Mikea were primarily farmers, whose crops of maize, manioc, and legumes were dependent on rainfall.

The documents associated with the founding of the park do not mandate displacing Mikea people from the forest, but this happened anyway.[4] Because of their status as indigenous peoples (Repoblikan'i Madagasikara 2010), Mikea were reserved special access and use rights to the Park. These rights appear in the documents as rights to self-determination and self-representation, to practice their customs and continue their way of life (Repoblikan'i Madagasikara 2010:19-20).

Park policies permit Mikea to forage anywhere within the Park, but in the Park, they are only permitted to live within limited "controlled occupation zones." Mikea are permitted to farm in previously cleared fields, but not to clear new fields for agriculture. Non-Mikea are excluded from most of the park, unless they obtained a permit.

The challenge facing the nascent park was how to tell who is Mikea with special access rights, and who is a non-Mikea. Their solution was to put patrolling the forest in the hands of the local *Comité de Surveillance*, under the watch of the local mayors, staffed with unpaid Mikea park gaurds (called *mpitsikilo*). Mikea themselves cannot necessarily tell who is Mikea and who is not, nor were the *mpitsikilo* trained in how to enforce park policies. The *mpitsikilo* are positioned to profit from harassing their fellow Mikea, by demanding payment of fake fines for invented infractions.

Mikea faced a choice. They could live in the park, and, presumably, live mostly by foraging (given park's rules limiting the clearing of new agricultural land), and risk conflicts with *mpitsikilo* and with park policies and the Malagasy state. Or, they could leave the forest, avoid conflicts with the park, and join neighboring Masikoro farmers in their way of life. Bevondrorano was settled by people choosing the second path. And now we see the impacts of this discursive history on people's lives. Mikea who followed the first path and stayed in the forest finally became the pure hunter-gatherers that they were imagined to be in the first moment, but which they never were in actual history. Mikea who chose the second path became actually poor, being dependent on factors beyond their control: exploitative sharecropping and wage labor opportunities among their neighbors, and of course, rain.

Finally, on 9 February 2018, it rained in Bevondrorano. A few people left their dry houses and danced and shouted in the rain with joy. It rained constantly for three days. Agriculture would not be a total loss. They would have something to eat come harvest time.

Poverty discourses

Economists traditionally define "poverty" as a material lack, as low income, or as insufficient income to meet some standard or basic requirement (Atkinson 1970; Townsend 1954). To economists, wealth grows as one converts money and other resources into more money through investment and exchange (Vásquez 2001). Marxian social scientists, on the other hand, define poverty as a disempowered status within a social structure or mode of production (Graeber 2006).

Through the economists' lens, Mikea at Bevondrorano could be viewed as less poor than their forest neighbors or foraging ancestors, because of their improved access to cash and

markets. From this perspective, one may imagine Mikea investing cash in material and human capital, to generate wealth. But through a Marxist lens, Mikea at Bevondrorano were considerably poorer than previously. They had left (or been pushed out of) their previously-independent Mikea society, where they were (mostly) free to piece together their livelihoods through a bricolage of foraging, farming, herding, and marketing activities. They were pushed *into* the class of rural poor, being mostly landless sharecroppers and agricultural wage laborers. As one Mikea woman told us in 2006 (before the Park came into existence), Mikea living in the forest are essentially rich, because they live off diverse and abundant natural resources that only God (*Ndragnahare*) controls. But, she added, Mikea become poor whenever they encounter non-Mikea, who exploit their landlessness, illiteracy, and apparent ignorance (Tucker et al. 2011).

In survey of food insecurity that we conducted among 50 Mikea households living in the forest in 2008 (before the park), 14% said that they "often" go a day without eating, and 22% owned at least one goat. In a similar survey in Bevondrorano in June 2017 (after the founding of the park), 27% said that they "often" go a day without eating, and only 6% owned at least one goat (N=48 households).

Conclusions

I have offered one possible version of a political-ecological history of the Mikea Forest through the lens of water. I have shown that hydrosocial territories change through a dialectical process of assertion, contradiction, and reassertion. The Mikea Forest *was* a "repulsive" desert "unfavorable to human life," until people began converting it into farmland. I have shown that water truths define and redefine group identities. The people of the Mikea Forest *were* exotic

beings capable of incredible feats (living without drinking), until they became threatened indigenous people, and then, rural poor. The transforming truths I trace are from the writings and plans of academic researchers and conservation and development workers; but whereas the truths are discursive, the outcomes were real. The Mikea Forest National Park restricted the activities of those who remained in the forest, creating the foragers that outsiders had always imagined; and, park policies impoverished those who left the forest to farm.

My account demonstrates that water truths are often borrowed from neighboring hydrosocial territories, so the goodness of their fit to the new local situations to which they are applied matter less than their fit with national-level or regional level discourses. In the second moment, IRD researchers applied oral histories from the southern half of the Mikea Forest, where the forest was menaced by "invaders," to the northern half of the forest, where the forest residents themselves were clearing trees for maize. In the third moment, with plans for Mikea canals, water truths about hydraulic states were borrowed from Madagascar's High Plateau, and from wealthy Masikoro villages like Ankililoake.

The water-themed history that I have offered here is similar to fire-themed political ecological histories presented by other scholars of Madagascar (e.g., Kull 2000; Scales 2012). Future research may explore the relationships among hydrosocial territories and incendio-social territories, among other spatial resource contexts.

An obvious challenge in the concept of hydrosocial moments is that different authors might choose dissimilar moments, generating disparate histories. For the most part, this article has dealt with the water truths produced by outsiders: academic researchers, and conservation and development agents. But what of Mikea water truths?

I have not systematically asked my Mikea informants to tell their history through a series

of water moments, nor have I interrogated their water truths. However, Mikea historical narratives from the northern half of the forest consistently emphasize themes of political and social independence, from the Andrevola kings, from Masikoro, and from French colonial agents (Tucker 2003). These themes are intimately associated with water. Throughout their history, Mikea have, themselves, promoted the illusion that they can "live without drinking," in a waterless forest, to protect their lakeside livelihoods in the Namonte Basin from Masikoro cattle raiders, royal domination, and French taxation and mandatory labor.

Boelens and colleagues' (2014) description of the contested water truths associated with an Andean canal-building agenda differs from the Mikea hydrosocial territory that I have described here in at least one significant way. In Boelens et al.'s Andean case, local landlords, governmental and non-governmental hydrologists, and Andean farmers drew water problems and solutions from dissimilar "truth domains," of hydrological science, modernist rationality, and indigenous cosmology. By contrast, in the early moments of the Mikea hydrosocial territory, Mikea people and a heterogenous group of outsiders (Masikoro, researchers, etc.) found mutual benefit in accepting the same truth, "living without drinking," which gave independence to Mikea, social superiority to Masikoro, and a fertile cash-cropping territory to colonial and post-colonial economic developers. This truth served Mikea until the interventions of conservationists, at which point their mystic reputation increased their vulnerability.

Acknowledgements and dedication

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Figure captions

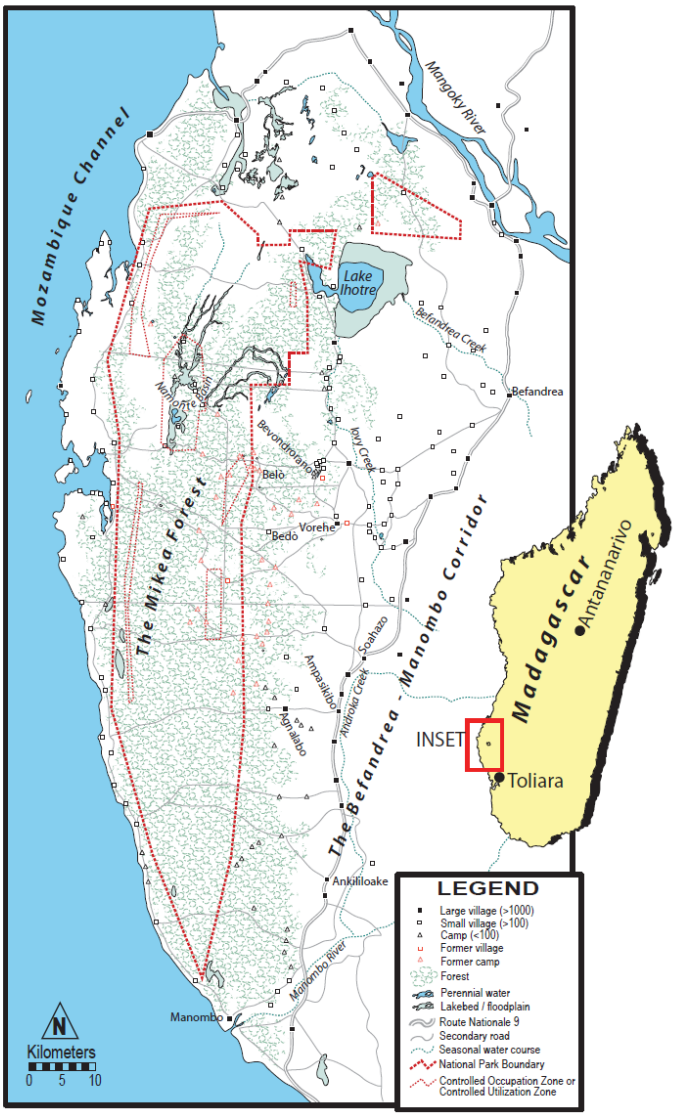

Figure 1: Map of southwestern Madagascar in 2018, showing the location of the Mikea Forest, the Mikea Forest National Park, the Befandrea-Manombo Corridor, and placenames mentioned in this text. Forest extent based on Seddon et al. 2000:292.

Figure 2. Charismatic species of Madagascar's spiny forests, (a) *sogno* (*Didiera madagascariensis*), and (b) *famata* (*Euphorbia stenoclada*). By contrast, most of the Mikea

Forest is (c) dry deciduous woodland.

Figure 3: The natural sinkhole well of Ambovosay, (a) in 1997, after several consecutive dry years, and (b) in 2007, after several consecutive rainy years.

Figure 4: Map of swidden maize camps in the northern half of the Mikea Forest during the 1990s, showing water sources and travel routes to water.

References

Atkinson, Anthony. 1970. On the Measurement of Inequality. *Journal of Economic Theory* 2(3):244–263.

Berg, Gerald M. 1981. "Riziculture and the founding of the monarchy in Imerina." *The Journal of African History* 22(3): 289-308.

Berkeli, Emil. 1926. *Marques des Boeufs et Traditions de Races: Document sur l'Ethnographie de la Côte Occidentale de Madagascar*. Oslo: Bulletin of the Oslo Etnografiske Museum, 2.

Barnard, Alan, 1999. "Images of hunter-gatherers in European thought." In *The Cambridge Encyclopedia of Hunters and Gatherers,* ed. Richard B. Lee and Richard Daly, 375-383. Cambridge: Cambridge University Press.

Blanc-Pamard, Chantal, 2009. "The Mikea Forest under threat (southwestern Madagascar): How public policy leads to conflicting territories." *Field Actions Science Report*. www.factsreports.org.

Boelens, Rutgerd, Jaime Hoogesteger, Erik Swyngedouw, Jeroen Vos and Philippus Wester, 2016. Hydrosocial territories: a political ecology perspective. *Water International* 41(1): 1–14.

Cronon, William. 1996. *Uncommon Ground: Rethinking the Human Place in Nature*. New York: W.W. Norton & Company.

Budds, Jessica, Jamie Linton, and Rachael McDonnell, 2014. The hydrosocial cycle. *Geoforum* 57: 167–169.

Dandoy, G. 1972. "Atlas de la Région de Manombo-Befandriana Sud." In *Contributions à l'Etude Géographique de l'Ouest Malgache,* eds. G. Dandoy and J.-Y. Marchal, 85-163. Paris: ORSTOM.

Dewar, Robert E, and Allison F.Richard. 2007. "Evolution in the hypervariable environment of Madagascar." *Proceedings of the National Academy of Science* 104: 13723-13727.

Dina, Jeanne, and Jean-Michel Hoerner. 1976. "Etude sur les Populations Mikea du Sud-Ouest de Madagascar." *Omaly sy Anio* 3-4: 269-286.

Drury, Robert. 1826[1729]. *The Pleasant and Surprising Adventures of Robert Drury During his Fifteen Years' Captivity on the Island of Madagascar*. London: Hunt and Clarke.

Dufils, Jean-Michel. 2003. "Forest ecology: Remaining forest cover." In *The Natural History of Madagascar,* eds. Steven M. Goodman and Jonathan B. Benstead, 88-95. Chicago: University of Chicago Press.

Fanony, Fulgence. 1986. "A propos des Mikea." In *Madagascar: Society and History* Conrad Phillip Kottak, Jean-Aimé Rakotoarisoa, Aidan Southall, and Pierre Vérin (eds.), pp. 133-142. Durham, NC: Carolina Academic Press.

Fauroux, Emmanuel, and Jean-François Rabedimy. 1985. *Note sur un groupe "Mikea" de la region de Salara.* Toliara: ORSTOM.

Fenn, Mark, and Flavien Rebara. 2003. "Present migration tendencies and their impacts in Madagascar's spiny forest ecoregion." *Nomadic Peoples* 7(1): 123-138.

Graeber, David. 2006. Turning Modes of Production Inside Out, or Why Capitalism Is a Transformation of Slavery. *Critique of Anthropology* 26(1):61–85.

Grinker, Roy Richard. 1990. "Images of Denigration: Structuring Inequality between Foragers and Farmers in the Ituri Forest, Zaire." *American Ethnologist* 17(1): 111-130

Hoerner, Jean-Michel. 1986 Géographie Régionale du Sudouest de Madagascar. Anatananarivo, Madagascar: Imprimerie du FTM.

Huff, Amber R. 2012. "Exploring discourses of indigeneity and rurality in Mikea Forest environmental governance." *Madagascar Conservation and Development* 9(S2):58-69.

Kelly, Robert L., Jean-François Rabedimy, and Lin Poyer. 1999. "The Mikea of Madagascar." In *The Cambridge Encyclopedia of Hunters and Gatherers* Richard B. Lee and Richard Daly (eds). 2001., pp. 215-219. Cambridge: Cambridge University Press.

Kent, Raymond K. 1970. *Early Kingdoms in Madagascar 1500-1700*. New York: Holt, Rinehart and Winston.

Koechlin, Bernard. 1975. *Les Vezo du Sud-Ouest de Madagascar: Contributions à l'Etude de l'Eco-système de Semi-Nomades Marins.* Paris: Mouton.

Kull, Christian. 2000. "Deforestation, erosion, and fire: Degradation myths in the environmental history of Madagascar." *Environment and History* 6(4): 423-450.

Layton, Robert, Robert Foley, and Elizabeth Williams. 1991. "The transition between hunting and gathering and the specialized husbandry of resources: A socio-ecological approach." *Current Anthropology* 32(3): 255–274.

Molet, Louis. 1958. "Aperçu sur un groupe nomade de la forêt épineuse des Mikea." *Bulletin de l'Academie Malgache* 36: 241-243.

Molet, Louis. 1966. "Les Mikea de Madagascar: Où vivre sans boire." *Revue de Madagascar* 36: 11-16.

Mouyon, Jean-Claude and Patrice Francelle. 1999. Feu Mikea. *L'Express* (Antananarivo), 29 Jun.

Neumann, Roderick P. 1995. "Ways of seeing Africa: Colonial recasting of African society and landscape in Serengeti National Park." *Ecumene* 2(2): 149-169.

Neumann, Roderick P. 1998. *Imposing Wilderness: Struggles over Livelihood and Nature Preservation in Africa.* Berkeley: University of California Press.

Ottino, Paul. 1963. *Les Economies Paysannes Malgaches du Bas Mangoky*. Paris: Berger-Levrault.

Poyer, Lin, and Robert L. Kelly. 2000. "Mystification of the Mikea: constructions of foraging identity in southwest Madagascar." *Journal of Anthropological Research* 56: 163-185.

Rarojo, Jeannot 1999. "Ny Mikea: tsy lolo ... Les gens de la forêt." *Vintsy* 26: 4-7.

Razanaka, Samuel, Michel Grouzis, Pierre Milleville, Bérnard Moizo and Chantal Aubry (eds.) 2001. *Sociétés Paysannes, Transitions Agraires et Dynamiques Ecologiques dans le Sud-Ouest de Madagascar*. IRD/CNRE Editions, Antananarivo.

Réau, Bertrand. 1996. *Dégradation de l'Environnement Forestier et Réactions Paysannes: Les Migrants Tandroy sur la Côte Ouest de Madagascar*. Ph.D. Disertation, Université Michel de Montaigne, Bordeaux.

Réau, Bertrand. 2002. Burning for zebu: the complexity of deforestation issues in western Madagascar. *Norwegian Journal of Geography* 56: 219–229.

Repoblikan'i Madagasikara. 2010a. *Plan de Développement de la Population Autochtone Mikea*. Antananarivo: Ministère de l'Environnement, des Eaux et Forêts & Madagascar National Parks.

Salomon, J. N. 1978. "Fourres et forêts sèches du sud-ouest Malgache." *Madagascar: Revue de Géographie* 32: 19-39.

Scales, Ivan R. 2012. "Lost in translation: Conflicting views of deforestation, land use and identity in Western Madagascar." *The Geographic Journal* 178(1): 67-79.

Schrire, Carmel. 1984. "Wild surmises on savage thoughts." In *Past and Present in Hunter-Gatherer Studies* Carmel Schrire (ed.), pp. 1-26. San Diego: Academic Press.

Seddon, Nathalie; Joe Tobias, James W. Yount, Julien Rémi Ramanampamonjy, Stuart Butchart, and Hairinirina Randrianizahana. 2000. "Conservation issues and priorities in the Mikea Forest of south-west Madagascar." *Oryx* 34(4): 287-304.

Solway, Jacqueline S. and Richard B. Lee, 1990. Foragers, genuine or spurious? Situating the Kalahari San in history. *Current Anthropology* 31: 109-46.

Townsend, Peter. 1954. Measuring Poverty. *British Journal of Sociology* 5(2): 130–137.

Tucker, Bram. 2003. "Mikea Origins: Relicts or Refugees?" *Michigan Discussions in Anthropology* 14: 193-215.

Tucker, Bram, Amber Huff, (no first name) Tsiazonera, Jaovola Tombo, Patricia Hajasoa, and Charlotte Nagnisaha. (2011). When the wealthy are poor: Poverty explanations and local perspectives in southwestern Madagascar. *American Anthropologist* 113(2):291-305.

Vásquez, Ian. 2001. *Individual Liberty, Free Markets, and Peace: Ending Mass Poverty*. Washington, DC: Cato Institute.

Wilmsen, Edwin N. and James R. Denbow. 1990. "Paradigmatic history of San-speaking peoples and current attempts at revision." *Current Anthropology* 31: 489-524.

Wittfogel, Karl A. 1957. *Oriental Despotism A Comparative Study of Total Power*. New Haven: Yale University Press.

Woodburn, James C. 1964. *The Social Organisation of the Hadza of North Tanganyika*. PhD dissertation, Cambridge University.

World Bank. 1991. *Operational Directive 4.20: Indigenous Peoples*. Geneva: World Bank.

WWF. 2003. *Cadre Stratégique pour le Développement des Populations Autochtones Mikea. World Bank and République de Madagascar*. Antananarivo: WWF.

Yount, James W., (no first name) Tsiazonera, and Bram Tucker. (2001). "Constructing Mikea identity: Past and present links to forest and foraging." *Ethnohistory* 48: 257-291.

Notes

[1] Most of the early wave of scholars who described the Mikea Forest and Mikea people were social scientists affiliated with the French development organization ORSTOM, working with Malagasy scholars at the Université de Toliara. ORSTOM was the French governmental organization *Office de la Recherche Scientifique et Technique Outre-Mer;* it is now known as IRD, *Institut de Recherche pour le Développement.*

[2] The large village of Befandrea appears on government maps as "Befandriana-Sud." But like many names on maps of Madagascar, this Merina-ized spelling is foreign to the village's inhabitants, who refer to their village as "Befandrea." I follow their lead.

[3] Dewar and Richard (2007) calculate Colwell's *P*, a measure of predictability, using annual rainfall data from 15 weather stations throughout Madagascar paired with 15 stations in continental Africa of similar average precipitation. They conclude that Madagascar's climate is considerably more unpredictable than that of mainland Africa. Of the 30 sites sampled, the most variable were in Madagascar's south (Behara, P=0.270) and southwest (Toliara, P=0.281).

[4] One way that Mikea were excluded from the park was that the Park planners undercounted them in the first place. The Park planners counted only 923 Mikea individuals in three villages (Repoblikan'i Madagasikara 2010: 20); my maps (Figures 1 and 2) show many more settlements.