

## CHAPTER SIX

*In Pursuit of the Individual*Recent Economic Opportunities and the Persistence  
of Traditional Forager-Farmer Relationships in  
the Southwestern Central African Republic

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**Introduction**

Throughout forested portions of central Africa, foragers (historically called pygmies) are characterized as forest specialists who have long-standing and well-established interethnic relationships with settled farming populations. The interrelationships between these populations are quite complex and have important political, social, and religious dimensions (Hewlett 1990). The most highly visible aspect of these interactions is the economic exchange of forager-procured forest products (especially meat) for village products (usually manioc [*Manihot utilissima*]). For decades the link between forager and farmer was so complete in anthropological thought that questions about why foragers foraged were narrowly focused on the idea that the economic exchange of domesticated crops for meat from wild animals was a functional response to rainforest resource insufficiency, especially the availability of wild starches (Bailey et al. 1989; Bailey and Headland 1991). This view cast forest forager and farmer interrelationships around the world as functionally mutualistic. Forest foragers hunted prey and procured meat to trade for starches produced by settled farmers, who were unable to obtain sufficient meat on their own. This view implied that full-time independent foragers could not have existed in the forest before the advent of domesticated crops and always existed as part of a dyad with Bantu-speaking farmers.

Although this view had popular appeal, archaeological, biomolecular, and historical linguistic studies (which I will summarize) show that foragers occupied forested regions before the advent of domesticated foods (Lupo et al. 2014;

Mercader 2002). Ethnobotanical surveys conducted in forested portions of west-central and central Africa identified high densities of wild edible starches in the form of yams (*Dioscorea* spp.) that were utilized by foragers (Bahuchet et al. 1991; Caudell 2011; Dounais 2001; Hladik et al. 1984; Hladik and Dounais 1993; Sato 2001). Ethnographic studies showed that some forest foragers survived for long periods of time without access to domesticated starches (Ichikawa 2012; Kitanishi 1995; Yasouka 2006a, 2006b, 2009a, 2009b). Furthermore, from the early to middle part of the twentieth century, forest foragers throughout western and central Africa increasingly turned to growing their own crops in response to governmental mandates and policies, local economic changes, and habitat constriction (Bahuchet 1985; Ichikawa 1991; Kitanishi 2003, 2006). Even though some foragers can produce sufficient crops to meet their own demands, many continue to forage for wild resources and maintain traditional ties with farmers. Studies suggest that while forager-farmer dyads may serve mutual needs, the emergence, nature, or persistence of these interactions cannot be explained by an appeal to functional nutritional requirements (e.g., Bahuchet et al. 1991; Hladik and Dounais 1993).

In this chapter I argue that the resiliency of forager-farmer dyads is linked to the social benefits derived from these relationships. Forest foragers continue to forage because of a shared identity deeply rooted in the forest, an established place in an ancient system that involves multidimensional relationships with neighboring farmers and has economic and social value (also see Blurton Jones, chapter 6, this volume). However, the persistence of forager-farmer dyads throughout forested regions of western and central Africa cannot be viewed as a homogenous response to ecological or socioeconomic conditions. These relationships differ in scale, scope, and intensity because the costs and benefits of sustaining these relationships vary as a function of different historical processes and ecological and socioeconomic contexts.

I present data showing that despite the relatively recent emergence of forager-farmer dyads in prehistory, these relationships have been maintained over time, albeit in modified forms. Data spanning the historical period, through 2003 CE, show that the nature of these relationships is dynamic and responsive to change yet sustained by both populations through large-scale sociopolitical, economic, and ecological shifts. I also present quantitative data showing the dynamic nature of forager-farmer relationships in the village of Grima in the southwestern Central African Republic from 1999 to 2003. In the study discussed here, reductions in the availability of key prey (e.g., blue duikers

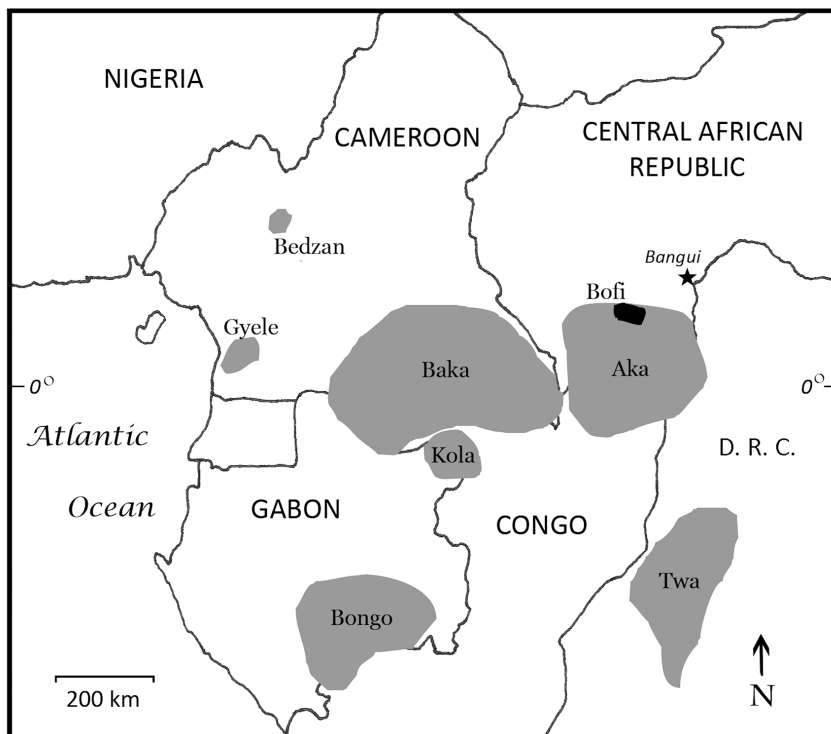


6.1. A Bofi man making a net. Photograph by Karen Lupo.

[*Cephalophus monticola*]) increased market opportunities, and random demographic changes had the cumulative effect of changing how forest meat was procured. Specifically, the frequency of cooperative net-hunts decreased (figure 6.1), and the use of individual hunting strategies (especially the use of snares) increased among foragers. The development of a road allowed for greater and more regularized access of commercial koko (*Gnetum africanum*) vendors to the village and increased the sales of koko by foragers to vendors. If forager-farmer relationships were solely based on economic or nutritional need, then an emphasis on individualized production in concert with increased access to commercial markets should decrease the interrelationship, as foragers could directly purchase comestible and utilitarian items. However, data presented here (and elsewhere) suggest that although prey depression and changes in hunting technology reduced the amount of meat available for exchange, these processes did not have an appreciable impact on forager-farmer exchanges. In this village, relationships were maintained with plant foods replacing meat as the basis of exchange.

### Forest Foragers in the Congo Basin

Groups of forest foragers currently occupy regions spanning thirteen different countries in central and western Africa with a total population estimated to be between three hundred thousand and six hundred thousand individuals (figure 6.2). These groups are ethnolinguistically diverse but share a distinctive cultural identity, a long-standing connection to the forest (Bahuchet 1993), and a common, albeit complicated, genetic heritage (Batini et al. 2007; Batini et al. 2011a; Batini et al. 2011b; Patin et al. 2009; Verdu et al. 2009). Many are closely associated with settlements inhabited by ethnically distinct farming populations who speak Bantu, Obanguian, or Central Sudanic languages. The forest foragers who neighbor these villages speak the same languages as the farmer populations and retain limited vocabulary from their indigenous languages,



6.2. A map showing the distribution of forest foragers in the western and central Central African Forest. Map by Karen Lupo.

suggesting a long span of interactions between these populations (Bahuchet 1993), perhaps reaching back some two thousand to four thousand years.

Ethnographically, interrelationships of foragers and farmers were often described as patron-client-type arrangements with forager clients providing forest resources (meat and honey) and labor to their farmer patrons in exchange for village products such as domesticated foods, cloth, salt, and oil (Bahuchet 1985). Nevertheless, foragers retain their ethnic distinctiveness in material culture, social and political organization, ritual beliefs, and economic organization.

Forest forager lifeways continue to undergo rapid transformation in response to government policies mandating settling and farming, habitat restriction and destruction, industrialization, and especially the commoditization of forest products (i.e., the bushmeat trade). The impacts of and foragers' responses to these processes are, however, highly diverse and vary according to local historical, ecological, and sociopolitical circumstances. For instance some groups, such as the Babongo in Gabon, are integrated with their farmer neighbors through high rates of intermarriage (also see Knight 2003; Verdu et al. 2009). Other groups, such as the Baka in Cameroon (Kitanishi 2003; Köhler 2005; Yasouka 2006a, 2006b), Mbendjele Yaka in northern Congo (Lewis 2005), and Bakoya in Gabon (Soengas 2009), have undergone significant economic transformation and practice a mixed economy by growing their own domesticated crops and hunting part time yet still maintain barter-based relations with settled farmers.

#### BEFORE AND AFTER FARMING:

##### A LONGITUDINAL CONTEXT FOR FOREST SPECIALISTS

Archaeological, linguistic, and biomolecular data suggest that forest foragers occupied the forest for long stretches of time punctuated by periods of isolation, population migration, and contact among groups. Dispersed and small populations of indigenous foragers likely occupied at least some portions of the Congo Basin as early as eight hundred thousand to nine hundred thousand years ago (Gotilogue 2000; Mercader 2002), with the earliest specialized technological adaptations to the rain forest in evidence some three hundred thousand years ago (Barham 2001; Taylor 2011). Biomolecular studies of contemporary forest peoples show that foragers shared a common ancestor with Bantu farming populations seventy-one thousand to ninety thousand years ago (Batini et al. 2007; Batini et al. 2011a; Batini et al. 2011b; Patin et al. 2009) and that the groups diverged approximately thirty thousand to seventy thousand years ago, when

daughter populations become isolated from one another by adapting to separate ecological habitats (e.g., rain forest versus grasslands) and via sociocultural barriers. Forager populations subsequently separated further, possibly in response to a climate-driven reduction in rain-forest habitat (Bahuchet 1993), giving rise to two subpopulations that occupied the eastern and western parts of the Congo Basin after forty thousand years ago (Batini et al. 2011a; Batini et al. 2011b).

Biomolecular studies identify major demographic changes and establish temporal intervals for the origins of contemporary forest populations but reveal very little about the nature of forager lifeways prior to the advent of farming (Lupo et al. 2014). Bahuchet's (1993) historical linguistic analysis, in contrast, identified the common vocabulary of the protolanguage (Baakaa) of forest foragers that predates the Bantu expansion by as much as forty thousand years and shows that their ancestors were always forest specialists. A shared vocabulary includes terms related to communal spear hunts, the use of bows and poisoned arrows, honey acquisition, and the hunting of elephants (*Loxodonta africana*). The number of common terms relating to the composition of elephant groups and the widespread and highly regarded position of elephant hunter (*tuma*) indicate that elephant hunting was an important prehistoric activity (Bahuchet 1993:42). Thus, we have evidence of rain-forest occupation over several millennia by mobile forest specialists who also pursued big-game and, in some areas, had long-standing contact with outlying forager populations well before the arrival of farming populations.

The emergence and nature of the relationship between forest foragers and agricultural populations are purportedly linked to the migration of Bantu-speaking peoples (the putative earliest farmers) and date to the last two thousand to five thousand years (Berniell-Lee et al. 2009; Eggert 2002; Holden 2002). Traditional archaeological reconstructions link Bantu migrations to the spread of ceramics, domesticated products, and sometimes metal objects, all of which are widely viewed as desirable trade items that solidified the economic interrelationships among forest populations (but see Lupo 2011–2012; Lupo et al. 2014). Nevertheless, we have little direct archaeological evidence of prehistoric exchange between Bantu immigrants and indigenous foragers (but see Barham and Mitchell 2008; Mercader et al. 2000a; Mercader et al. 2000b). Much stronger evidence of early interactions between Bantu immigrants and indigenous foragers comes from biomolecular studies that imply that Bantu populations with high levels of population growth pushed foragers into undesirable habitats, thus reducing gene flow and effective population size (Destro-Besol

et al. 2004). Among western forager groups evidence of genetic drift resulting from population contraction and isolation occurs approximately 2,625 and 2,900 years ago (Verdu et al. 2009). Several other biomolecular studies also reveal evidence of hypergyny—the mating pattern well known in ethnography whereby forager women marry or mate with farmer men—emerging within the last two thousand to five thousand years (Anagnostou et al. 2013; Destro-Bisol et al. 2004; Quintana-Murci et al. 2008).

The earliest written accounts of forest populations in central Africa date to the historical period (1610 to 1885 CE), which was punctuated by catastrophic demographic, economic, social, and political upheaval (Bahuchet 1985; table 6.1). Although historical sources are limited, most depict forest foragers as nomadic big-game hunters occupying independent camps in remote regions of the forest or living near villages associated with farmers, but engaged in external trade for goods (e.g., iron, millet, oil, and salt; see Quatrefages 1895).

The colonial period in the Central African Republic (CAR) began in 1885, when the Europeans arrived and established concessions to exploit ivory, rubber, copper, and other products (Bahuchet 1985). Bahuchet (1985; table 6.2) views the events associated with and stemming from the colonial period as the most pivotal for forager-farmer interactions and as creating the ethnographic pattern. Among these events, it was the establishment of rubber plantations around 1910 that most significantly altered the interrelationships of foragers and farmers. Farmers were forced to labor on the rubber plantations under brutal and harsh conditions, which limited their ability to obtain food, and they become reliant on the exchange of forest products, especially meat, with foragers. Between 1924 and 1945 many Bantu farmers moved to remote areas of the forest to escape colonial labor and taxation and came to live in close proximity to foragers (Guille-Escuret 1998). Some groups of Aka foragers in the Lobaye region of the southwestern CAR began growing their own crops in the 1930s, but many eventually abandoned their fields, and others failed to produce sufficient food to meet their needs (Guille-Escuret 1998). From 1918 through the 1950s, the exportation of duiker skins to Europe, where they were used to manufacture clothing and carriage rugs, increased the hunting of these animals (Christy 1924). To capitalize on this market, Bantu farmers gave hunting nets to foragers and compelled them to procure duikers for the farmers (Bahuchet 1985). During the postcolonial period (post-1960s–1970s), many farmers established coffee plantations, and because labor was in short supply, they employed foragers as laborers, who for the first time earned wages and were able to purchase goods



Table 6.1. Selected historic (1610–1885) descriptions of forest foragers.

Date	Group/Area	Description of Foragers	Source
1610	Mbaka	used poisoned arrows and bows, darts; hunted elephants and gorillas; paid tribute to Mani Kesoek in ivory and elephant tails; women carried bows and arrows and hunted with men elephant hunters in the interior of central Africa	Battell 1967[1625]
1686	Bakké-Bakkés	hunted elephants and generously traded big-game meat for grain; also hunted monkeys, baboons, wild hogs, and deer	Dapper 1686
1854	Sierra Leone	established relationships with Ashango but lived in separate villages (round huts); hunters used traps to capture monkeys and other small game; traded meat for cloth, cooking utensils, and iron; tolerated as skilled hunters but no intermarriage with farmers	Koelle 1854
1863	Babongo/Gabon	informant mentions nine tribes each with a chief or king, all hunters; men possessed a spear and bow and arrow	Du Chailu 1899
1871	Akka	lived in bands composed of families; houses made from reeds; lived in temporary camps in forest but usually within reach of villages; hunted elephants and buffalo and used meat, animal hides, and feathers to barter for grain, oil, native beer, and other necessities	Schweinfurth 1874
1886		first mention of dependent and independent foragers; some Batwa lived close to Bakuba villages; each village had a sub-chief and a Batwa village assigned to them, whose inhabitants supplied him with palm wine and meat; independent Batwa lived in the forest and bartered dried meat for manioc or maize at periodic markets on neutral ground	Pasha 1888
1885	Batwa/Lulua River	nomadic, lived in groups of up to eight or more families; hunted with dogs and used pit traps with stakes to hut big game; also used spears, bows and arrows	Wolf in Sun 1889
1886	Batwa/Sankura	traded meat for weapons, brass rings, beads, grain, and vegetables; purchased wives; ambushed large prey with spears; some intermarriage with Bakuba	Wissman in Sun 1889
1885–1886		two nomadic groups of Batwa, Batwa Bankonko and Batwa Basingi; described as good warriors but did not grow crops	Von Francois in Sun 1889
1889	Batwa	trapped small animals; collected honey and insects; hunted monkeys and birds with snares; used arrows; traded for iron with neighbors; lived in forest but did not practice agriculture or intermarry with Bantu	Bateman 1889
1902			Johnston 1902

<sup>a</sup>As reported by Bahuchet and Guillaume (1979:21).<sup>b</sup>As reported by Werner (1890). <comment>[! Note to AU: What do these footnote references refer to in the table? !]<sup>c</sup>As reported by Werner (1890).



**Table 6.2. Major colonial and postcolonial impacts on Bofi and Aka lifeways in the southwestern Central African Republic.**

Time Range	Description	Source
<b>CHANGES IN ECONOMICS</b>		
1910–1940s	establishment of rubber plantations and forced labor resulted in farmers becoming more reliant on foragers for forest products	Bahuchet 1985
1918–1950s	demand for duiker skins in Europe increased value of duikers; foragers intensified hunting efforts for those species	Bahuchet 1985
Post-1960	establishment of coffee plantations; foragers hired as labor and worked for cash wages  commercial demand for meat increased: by mid- to late 1970s 50% of all meat acquired in Lobaye being sold; by 2000 43% of the biomass taken sold to markets. Some foragers (Aka) in some areas begin to grow their own crops	Bahuchet and Guillaume 1982  Bahuchet 1985; Dethier and Ghiurghi 2000
<b>CHANGES IN HUNTING TECHNOLOGY</b>		
Colonial Period	crossbow replaced traditional bow and arrow	Bahuchet 1985
1918	increased use of cooperative hunting nets by foragers	
1950s	guns and snares came into common use among farmers but were less commonly used by foragers	
1970–1980s	elephants and other large game drastically declined due to uncontrolled hunting; reduced importance of the tuma, or great hunter, a traditional position of prestige	Maisels et al. 2013; Milner-Guiland and Beddington 1993
<b>CHANGES IN MOBILITY</b>		
Post-1960s	foragers became semi-sedentary and moved closer to villages	Bahuchet 1985

(Bahuchet and Guillaume 1982). This moment marked an important turning point in forager-farmer relationships because foragers moved to farming villages, became more sedentary, and began to view their own labor as generating money. Foragers also gained more autonomy and purchasing power than they had previously experienced.

More recently, habitat depletion from logging operations, industrialized and artisanal mining, and the commoditization of forest products continue to constrain the availability of resources. High levels of political upheaval and poverty and low infrastructural development have greatly increased the demands for forest resources such as bushmeat, koko, and dried caterpillars in villages and larger cities. Rural foragers and sometimes farmers collect these resources, which are sold to middlemen and then transported to the cities.

#### ECOLOGICAL CONTEXT: NGOTTO FOREST

Data reported here were collected between 1999 and 2003 from Bofi foragers and farmers occupying the study village of Grima as part of an ethnoarchaeological study of hunting and food sharing. The village is located on the northern border of the Ngotto Forest, a 3,250 km<sup>2</sup> triangular area in the Lobaye Prefecture that lies between the Lobaye and Mbaéré Rivers and is situated on the extreme northern edge of the Congo Basin. This part of the central African forest is classified as a dry Guinea-Congolian rain forest (F. White 1983) and is comprised of a complex, heterogeneous mosaic of tropical microenvironments (Bahuchet and Guillaume 1982). High average annual temperatures (around 77°F), humidity (70–90 percent), and precipitation (in excess of 1600 mm) characterize this area.

From 1998 until 2010, the Ngotto Forest was co-managed by ECOFAC (Ecosystèmes Forestiers d'Afrique Central) and logging companies with the goal of balancing preservation and sustainable harvests (Runge 2009). Although the ECOFAC project is finished, two large-scale logging companies continue to operate and harvest high-value timber such as *Entandrophragma cylindricum* and *E. utile* (Ngasse 2003; Runge 2009). The village of Grima, discussed here, is located in a managed zone where traditional hunting and agriculture activities are permitted (see Bahuchet 1985).

## THE STUDY VILLAGE OF GRIMA

At the time of this study, Grima was occupied by approximately 100–150 foragers and 200 farmers. The village had been in existence for at least the last sixty years according to village inhabitants and vintage topographic maps from the 1950s. According to oral tradition, Grima was settled by farmer families who migrated into the area approximately two hundred years ago. This tradition also relates that the ancient farmers brought the foragers with them as their slaves. During the study, the foragers occupied dome-shaped branch-and-leaf structures clustered into small subvillages that surrounded, but were on the outskirts of, Grima proper. Grima consisted of approximately fifty permanent rectangular mud-brick or mud, wood, and leaf structures that were occupied by farmer families. The village was bisected by a dirt road (which will be discussed further), and a few families occasionally offered a limited selection of durable goods (oil, salt, matches) for sale. Itinerant salesmen walked through the village at least once a week selling a variety of small transportable items (mostly clothing). Two large-sized towns, Bambio and Ngotto, were located 20 and 24 km, respectively, from Grima and could be reached via the road on foot or by bicycle.

Services such as medical care and educational opportunities were locally available. A small medical clinic operated in Grima and was manned by a trained nurse. Most of the services were offered free of charge or for a very nominal fee. Farmer families readily made use of the clinic, but most foragers did not go to the clinic or purchase medicines and relied instead on traditional medicines provided by local practitioners (*ngangas*). A small school was in operation from 1999 to 2002 in Grima, but the chance to attend was only offered to local farmer children. The school closed in 2002 because farmer families neglected to pay the school fees and salary of the teacher.

## ETHNOGRAPHIC CONTEXT: BOFI FOREST FORAGERS

Although the Bofi are an ethnolinguistically distinct group, they claim a close ancestry with Aka foragers who occupy the southern portion of the forest. The two groups share a large number of cultural beliefs and material traits (Hewlett 1990). At the time of this study, approximately half of the Bofi diet was composed of wild forest plants, insects, and meat from forest animals. The economic unit of production is the family with men, women, and children often foraging



6.3. Bofi children on their way to exchange koko. Photograph by Karen Lupo.

and hunting together, especially on cooperative net-hunts. Married couples frequently cooperate in the acquisition of collected resources, especially koko and insects.

Important edible wild plant resources include koko, wild yams, several varieties of mushrooms (Pleurotaceae), various fruits, and nuts, especially *Trecula africana*, *Irvingia robur*, and *Irvingia gabonensis* (figure 6.3). Insects including termites, caterpillars and butterfly pupa, and land snails, along with honey from several species of stinging and stingless bees, are important collected resources. The most common prey species are small game (<10 kg live weight; see Lupo and Schmitt 2004, 2005). Bofi hunters often commented on the rarity of larger game in the vicinity, and several reported that more large game was available only a generation ago. Although we have no quantitative data demonstrating a decline of big game in this area, one very gross measure of prey reductions can be extrapolated from the hunting descriptions of Aka foragers in the Lobaye forest as reported by Bahuchet (1985) in the mid-1970s. He detailed the exploitation of large-game (>25 kg) species such as elephant, chimpanzee (*Pan troglodytes*), bongo (*Tragelaphus eurycerus*), red buffalo (*Syncerus caffer nanus*),

gorilla (*Gorilla gorilla*), sitatunga (*Tragelaphus spekii*), and armadillo (*Oryzomys azer*), which are now very rarely encountered in this area and are no longer exploited by foragers in this part of the forest.

Unlike the Aka, very few Bofi foragers grow crops. Only a handful of foragers have fields, and no one produces enough food to be self-supporting. However, the lack of productivity of forager fields is clearly not explicable by a lack of knowledge or experience because most work as farm laborers for villagers. Low productivity of fields is largely due to a lack of time and labor investment. Of the fields we visited, most were very small (fewer than five manioc plants) and poorly tended and produced minimal amounts of food. Domesticated foods, especially manioc, are largely obtained via barter with local farmers and comprise at least half of the diet. None of the foragers keep domesticated animals, except dogs. On a handful of occasions we witnessed Bofi foragers attempting to keep chickens obtained via barter. These are always short-lived enterprises. The chickens are either very quickly sold or bartered or become victims of forest predators. The Bofi foragers do not eat chickens or their eggs.

*Hunting Technologies.* The Bofi use a range of hunting technologies including handmade fiber hunting nets, metal-tipped spears, metal-tipped poisoned arrows, unpoisoned wooden darts, crossbows, several types of traps, and wire snares as well as capturing prey by hand (Lupo and Schmitt 2005). While a few farmers own guns and often hire foragers to hunt for them, only one forager owned two guns but both were in disrepair. Some hunting equipment, such as nets, wire snares, guns, and crossbow, is relatively new and was introduced within the last one hundred years (see table 6.2). The only traditional equipment (i.e., precolonial) still in use includes spears, poisoned arrows and darts, and fiber traps.

The most widely used cooperative hunting technique today is the net-hunt. Net-hunts are well described in the literature (Harako 1976; Noss 1998; Putnam 1948; Schebesta 1936; Tanno 1976; Turnbull 1965) and consist of groups of up to thirty-five people, including men, women, and children, using nets placed end to end to encircle and capture prey (see Lupo and Schmitt 2002, 2005). This technique generally targets small duikers, especially blue duikers. A more diverse range of cooperative hunting activities was used in the recent past. Describing hunts by the Aka in the Lobaye region in 1976–1977, Bahuchet (1985) describes cooperative spear hunts targeting chimpanzees, six different types of net-hunts,

and the use of constructed wooden palisades to capture large fossorial insectivores (e.g., giant pangolins and armadillos). None of these techniques are used or even known by foragers in the area today.

Individual hunting can involve one to three people and includes the use of spears, traps, snares, crossbows, and hand capture. Foragers use snares made from metal cable despite its high cost, and these kinds of hunting activities target a wider range of prey than the nets (see Lupo and Schmitt 2005). Individualized hunts may take place as isolated bouts on specific days, but hunters on net-hunts sometimes abandon their nets and switch strategies to pursue certain kinds of prey using individualized strategies (Lupo et al. 2013).

Different carcass acquisition strategies are associated with different meat-sharing rules. Animals captured in nets during a communal hunt are subject to very specific cultural sharing rules. People receive specific shares based on their relationship to the hunter or tool owner and their role in acquiring, butchering, or transporting the animal. These sharing rules are extensive and can account for between 20 percent and 40 percent of the meat associated with a carcass (e.g., Bahuchet 1985, 1990; Ichikawa 2005; Kitanishi 1998; Lupo and Schmitt 2002, 2005). There are, however, no obligatory sharing rules associated with prey acquired by individuals. Carcasses acquired by individualized techniques are usually consumed by the hunter's family or sold to vendors or exchanged with farmers. Consequently, hunters using nets distribute meat more widely than hunters using individual techniques (also see Hewlett 1991; Lupo and Schmitt 2004).

*Money and Barter Exchange.* Bofi foragers have few opportunities to earn cash outside of selling forest products such as meat, koko, and, occasionally, honey. During our study interval, only two men earned wages as trackers for a primatologist, and this work was temporary. Women occasionally earn small amounts of cash by making and selling corn whiskey (*embacko*). The bushmeat trade in Grima is limited, and only a few farmers act as middlemen, selling meat procured by foragers. A handful of commercial meat vendors seasonally travel to Grima to purchase meat from farmers and the foragers. As will be discussed further, koko is a product in high demand, and commercial vendors from the surrounding area visit the town and purchase harvested leaves directly from the foragers.

Money earned from selling forest products is generally used for special purchases, such as tobacco and especially imported alcohol, and is rarely used for

utilitarian items such as tools and food (also see Kitanishi 2006; Köhler 2005). Nonlocal and commercial products such as clothing, soap, beads, cooking pots, cable for snares, and metal tools are available for purchase at local kiosks and from itinerant salesmen. Occasionally, foragers purchased utilitarian items with cash or by barter. However, most foragers obtain these items secondhand through exchange with or as gifts from farmers. Foragers rarely use money to purchase food. Barter is the traditional and main economic interaction with local neighboring farmers and the primary means for obtaining domesticated foods and utilitarian items.

*Population Mobility.* Bofi foragers are nomadic for at least six months of the year, when they use a series of temporary camps for procuring forest products. Temporary forest camps can be used throughout the year but are most often visited during the dry season, when hunters are more actively engaged in capturing prey. Permanent residential camps next to the farmers' village are maintained nearly year round by some individuals, although the population in these camps is highly variable and fluid. Residential groups usually consist of clusters of one to twelve families who are members of or affiliated with the same clan.

*Traditional and Nontraditional Positions in Bofi Society.* Bofi foragers have few recognized positions of social prestige. Although some men are reputedly good hunters, little prestige and no power are ascribed to these individuals. Bofi foragers do however recognize ngangas, people with great healing abilities (Hewlett 1991) who often possess other supernatural powers (e.g., the ability to see the future, identify sorcerers, or craft hunting charms). In the recent past, forest foragers recognized the position of tuma, elephant hunter or great hunter, but this position is no longer active due to reductions in large prey species. The Bofi foragers recently elected a chief who serves as a representative at village functions, but this position was only created at the behest of local and regional administrators and carries no real power or prestige.

#### ETHNOGRAPHIC CONTEXT: BOFI FARMING POPULATIONS

Most farmers make a subsistence living by growing crops. Some men earn wages working for local lumber companies or as ecoguards. Others supplement their income by producing specialized products for local sale, such as bricks or baskets, or by illegal activities such as hunting and diamond mining. Women



may add to the household income by producing and selling corn whiskey and selling prepared food, excess crops, or firewood. Both men and women occasionally work their neighbors' fields for wages.

Almost every farmer family maintains one or more fields of manioc that are usually identified as belonging to the women in the household. Many families also grow other crops for sale (i.e., cash crops), such as coffee (*Coffea* spp.), peanuts (*Arachis hypogaea*), maize (*Zea mays*), and tobacco (*Nicotiana* spp.). Manioc cultivation and processing dominate the daily activities of the farmers, particularly women, who work six days a week to produce a constant supply of manioc for their families and surpluses to exchange with foragers. Livestock is limited and consists of chickens and goats, which are rarely consumed, and dogs used for hunting (see Lupo 2011).

Even though farmers obtain forest produce via trade with foragers, many procure resources from the forest directly, especially meat through illegal hunting activities that involve metal cable snares. In fact, most farmers have one or more snare lines in close proximity to their fields. Hunting permits are available, but very few men are willing to pay the cost of the license. Because guns are difficult to obtain and the cartridges are very expensive, very few village men regularly hunt with guns. Those that do are considered specialists and hunt at night using a flashlight to dazzle animals. Only one man in Grima was a professional hunter who used guns and snares to regularly and illegally procure prey.

*Traditional Positions of Prestige.* Unlike foragers, farmers recognize important differences in social status based on kinship and the acquisition of material items (see Schmitt and Lupo 2008). The village chief is a traditional post of leadership and in the past was hereditary. Today chiefs are elected by popular vote, but elections in smaller villages are highly informal affairs and certain families often monopolize the position for long periods of time. A chief's tenure may last for a set period of time or until the incumbent dies. In the recent past the position of chief carried a great deal of power and prestige, but today the position is minimized. However, chiefs still act as local liaisons who dispense justice, grant land concessions, and settle disputes.

*Interethnic Relationships.* Bofi foragers maintain complex, multidimensional relationships with neighboring Bofi farmers. The populations are ethnically distinct, and despite the close nature of these relationships, social distances are maintained and reinforced by differences in material wealth, access to education,

societal beliefs, and residential segregation. Most farmers, for example, have the economic resources to purchase better-made clothing and material possessions and to send their children to school (see Schmitt and Lupo 2008). Farmers view foragers as uncultured primitives yet admire their sharing ethic, hunting skills, and magical abilities. Foragers defer to farmers in public settings but view them as aggressive and loud and often mock them in private. Farmer men may have liaisons with forager women, but intermarriage is uncommon. Forager woman who marry farmers are usually second wives, and the unions frequently end in divorce. Liaisons between farmer women and forager men are a social taboo and purportedly never happen.

Forest foragers have two types of interrelationships with settled farmers: dependent and so-called independent relationships. Dependent relationships are viewed as the common and purportedly traditional pattern among foragers and farmers. Independent relationships are often portrayed as uncommon and are believed to be a more recent phenomenon. However, dependent and independent forest foragers were reported as early as 1885 by Wolf (cited in Sun 1889; see table 6.1; see also Guille-Escuret 1998), and although the historical records are unclear on this point, it is entirely plausible that both kinds of arrangements have always existed. In the 1970s, Bahuchet (1985) reported that there were few independent foragers but that the numbers appeared to be increasing in the Ngotto Forest. Grima, for example, had an equal number of independent and dependent foragers.

In so-called dependent relationships, agriculturalists and foragers maintain a relationship that is passed from one generation to the next and share a fictive kinship by adopting the same clan name (Bahuchet 1985). Farmers hold recognized land-use rights that extend to the exploitation of specific forest tracts, while forager clans have recognized boundaries in the form of trails that criss-cross the forest. For farmers, use rights include permission to clear and cultivate land and extract resources (e.g., meat, plants, honey), and these rights extend to foragers who share the same clan name as the farmer. In addition to land-use rights, farmers have important social obligations to foragers and often provide assistance in obtaining the bride price or gifts for forager marriages (Bahuchet 1985; but see Lewis 2005:62). Farmers attend forager weddings and funerals and play important roles in rituals such as circumcision (Hewlett 1990). The inter-relationship also offers political advantages to foragers who are represented in village disputes by their farmer partners. Foragers who have traditional inter-relationships are obligated to exchange their products with and supply field

labor to their village “patrons.” Even so, foragers have considerable autonomy in habitation location, degree of mobility, and in the timing and duration of labor (Bahuchet 1985:550).

Independent foragers do not have hereditary relationships with patrons, are not obligated to sell to or exchange with any particular villager, and do not have clan affiliations. Nevertheless, they still exchange with local villagers and maintain social interactions through gift giving, visiting, and shared social events. Although independent foragers are under no obligation to work for specific farmers, they often maintain long-standing interactions with one or two people and are sometimes bound to a particular family by debts.

## Results

From the brief historical overview presented here, it is clear that forager-farmer interactions have been sustained throughout turbulent historical and more recent events and have been dynamic and responsive to a variety of different demographic, ecological, and social challenges (also see Kleinman 1999). Importantly, these interactions continue to be malleable and sensitive to local circumstances.

### CHANGING FOREST ENVIRONMENTS AND DYNAMIC INTERACTIONS

From 1999 to 2000, Grima was only accessible by a very poorly maintained jeep trail that often became impassible after the rains. Drivers rarely used the trail because it was a notorious sand trap, and from 1999 to 2000 we rarely observed more than one vehicle per week on the road. But in 2001 a local lumber company decided to improve the trail with a grader that plowed the substrate once a week. The number of vehicles that used the graded road greatly increased (to more than five per day) and even included public taxis that came through once a week. By 2003, road access allowed increased amounts of outside goods to reach the village, and several small shops opened. The road also facilitated access of commercial marketers, especially koko vendors, and permitted them to visit Grima with greater regularity and more readily transport forest goods to outside markets.

Road development in remote forested regions is widely recognized as a factor impacting territorial and migratory animal populations and can influence recruitment patterns, leading to decreasing abundances of selected species

(Laurance et al. 2006). Roads also facilitate increased access to remote areas by commercial and local hunters, resulting in increased hunting pressure or overexploitation (Wilkie et al. 2000; Wilkie et al. 1992; Wilkie et al. 2005). In addition to road development, random demographic changes in the forager population of Grima had the cascading effect of changing the productivity of different kinds of cooperative ventures and led to an increase in individualized hunting efforts and overall changes in how carcasses were acquired.<sup>1</sup>

#### CHANGES IN TARGET PREY: NETS VERSUS INDIVIDUALIZED TECHNIQUES

Data discussed here were collected over 119 days: 41 days during the dry season of 1999–2000, 25 days in the dry season of 2001–2002, and 53 days in the wet to early dry season in 2003. During these intervals we collected observational data on fifty-eight focal follows, conducted 137 interviews and forty-six tool-kit household inventories, and collected some thirty-eight hundred animal bones from individual and family meals. Although all of the foragers included in this study considered themselves to be independent, most, but not all, maintained economic and social interactions with neighboring farmers.

These data show that from 1999 to 2003, hunting patterns changed in part in response to declining availability of certain kinds of species. In 1999–2000, more animals of all kinds were taken in comparison to 2001–2002 and 2003 (mean = 5.88,  $s = 4.38$ ,  $n = 26$  hunts;  $t = 2.9947$ ,  $p = .0048$  and  $t = 2.68$ ,  $p = .0098$ , respectively). On average, fewer animals of any kind were taken between 2001 and 2002 (mean = 2.58,  $s = 1.37$ ,  $n = 17$  days) and in 2003 compared to 1999–2000 (mean = 3.1,  $s = 3.24$ ,  $n = 30$ ; table 6.3). Average encounter rates with blue duikers, a common prey species, as measured by the number of animals captured or seen per hour differed between 1999–2000 and post-2000 intervals (1999–2000 mean = 0.361,  $s = 0.544$ ; 2001–2003 mean = 0.253,  $s = 0.405$ ), but not significantly.

The declining availability of key prey especially changed the productivity and frequency of net hunting. Net hunting was among the least productive hunting technologies as measured by post-encounter return rates (table 6.3). However, the decreased use of nets after 2000 was partly a response to the declining efficacy of the technique as measured by the number of prey killed in nets (table 6.4). For example, in 1999–2000 there is no statistically significant difference between the number of prey killed in nets and those killed by individual

Table 6.3. The average post-encounter return rates for prey.

Technology	Target Prey <sup>a</sup>	N <sup>b</sup>	Post-encounter Return Rate <sup>c</sup>	Rules of Sharing <sup>d</sup>
Hand	giant pouched rat	30	561	No
Hand <sup>e</sup>	various	15	352–5543	No
Nets	small duikers	42	106	Yes
Snares	various	18	4909	No
Spears	medium duikers	15	6769	No
	small duikers	13	3044	No
	brush-tailed porcupine	8	2152	No
Traps	brush-tailed porcupine	10	1037	No

Source: Lupo and Schmitt 2005.

<sup>a</sup>The animal most often caught with this technology.

<sup>b</sup>Number of observations.

<sup>c</sup>Mean post-encounter return rate as measured by kcal per hour.

<sup>d</sup>Communal net-hunts are the only hunts with strict rules about who receives specific shares based on their relationship to the hunter and participation in hunt. Other hunting techniques mentioned here are considered individual. People may nevertheless share carcasses according to their own wishes.

<sup>e</sup>Includes small birds, tortoises, bats, civets, and pangolins.

hunting techniques, such as hand and spear capture, during net-hunts ( $t = 1.135$ ,  $df = 46$ ,  $p = .2621$ ). But after 2001, significantly more animals were taken by individual techniques than nets during net-hunts ( $t = 2.729$ ,  $df = 45$ ,  $p = .0089$ ). Part of this decline is linked to hunt frequencies. Fewer net-hunts were conducted in the dry season of 2001–2002 than 1999–2000 ( $n = 14$  and  $n = 24$ , respectively). The 2003 interval had even fewer net-hunts ( $n = 7$ ), but this period spanned the late wet season, when rains often prevented net hunting. However, the differences in prey taken by different kinds of techniques on net-hunts (outlined previously) suggest that the declines were not entirely due to hunt frequencies.

#### CHANGING HUNTING TECHNOLOGIES: FROM NETS TO SNARES

As net hunting declined, Bofi foragers increased their use of cable snares. This change in technology is reflected by tool-kit inventories collected from forty-six foragers (men and women) in 1999, with follow-up inventories collected in 2003 (table 6.5). Tool kits include the range of tools that individual foragers reported owning, and we collected the inventories by interview, with hunts followed by visual validations to ensure accuracy.

**Table 6.4.** The number of prey taken from 1999 to 2003.

Prey	1999– 2000	2001– 2002	2003
Bats	0	0	2
Birds	0	0	2
Blue Duiker	76	12	26 <sup>a</sup>
Civet	2	0	0
Giant Pouched Rats	35	24	42
Medium Duiker (Bay or Peters)	6	2	4
Monkey (unspecified)	1	1	8 <sup>a</sup>
Murid Mice	11	0	0
Porcupine	15	2	15
Snake	0	0	1
Tortoise	2	1	1
Tree Pangolin	5	1	0
Yellow-Backed Duiker	1	0	0
TOTAL <sup>b</sup>	154	43	101

<sup>a</sup>Four of the duikers and seven of the monkeys were killed with a gun by a forager hired by a farmer. The gun belonged to the farmer.

<sup>b</sup>These counts do not include prey killed by farmers during our study intervals. The following animals were shot or snared by farmers: two duikers, one monkey, seven medium-sized duikers, one hornbilled bird, three porcupines, one mongoose, ten giant pouched rats, and two snakes.

**Table 6.5.** A comparison of hunting inventories of Bofi foragers in Grima.

Item	1999	2003
Crossbow	2	1
Knife	21	15
Net	23	11
Other	1 <sup>a</sup>	6 <sup>b</sup>
Snare	7	247
Spear	17	24
Trap	59	72
TOTAL	130	376

<sup>a</sup>Axe.

<sup>b</sup>Two guns in disrepair, one fish trap, one fishhook, two slingshots.

Fewer foragers owned nets in 2003 than in 1999, but some of the decrease in net ownership was due to local demographic circumstances. For instance, of the people who owned nets in 1999, four had died and two moved away by 2001. By 2003, two additional people had sold their nets and several others had given their nets away to relatives in other villages. Furthermore, the average size (as measured by length) of nets significantly decreased between 1999 and 2003. In 1999 the average net length was 43.48 m ( $s = 11.17$ ,  $n = 14$ ), and although some people had or were making nets in 2003, the average length was significantly smaller at 14.00 m ( $s = 12.67$ ,  $n = 8$ ,  $t = 5.8005$ ,  $df = 20$ ,  $p < .0001$ ). The decline in the use and size of nets was offset by a rise in the use of individualized hunting technologies, especially the dramatic increase in the use of metal cable snares. In 1999 only one forager man possessed a few rusty cables that he found abandoned in the forest. Most forager men did not use snares because the cost of purchasing the metal cable was prohibitive.<sup>2</sup> By 2003, fourteen hunters were using cable snares, and many of them were men who had previously used nets. Many of these men possessed large numbers of individual cable snares (mean = 15). In general, tools classified as individualized technologies, such as spear, traps, and snares, increased in frequency from 1999 to 2003. The number of individualized hunting technologies represented in tool inventories in 2003 was significantly higher than the number recorded in 1999 ( $X^2 = 58.11$ ,  $p < .0001$ ), largely due to the rise in the number of snares.

Changes in the use of different hunting technologies in Grima from 1999 to 2003 are linked, in part, to the longitudinal effects of prey depression, road construction, and the influx of marketing opportunities. But random changes in demography, like the loss of hunting partners (through death or migration in 2001), also played a role in the ability of Bofi hunters to carry out cooperative hunts. By extension, these losses likely influenced the decision of other foragers who subsequently sold or gave away their nets. Ethnographic studies throughout the Congo Basin consistently report that net-hunts require at least ten nets and twenty participants to be successful (Terashima 1983) and that larger hunting groups are more successful than smaller ones (Harako 1976; Ichikawa 1983; Noss 1995; Tanno 1976). Furthermore, successful net-hunts are usually conducted by groups of related individuals, especially men, and changes in the number of male kin resources (Hewlett 1991) can have particularly disruptive effects on cooperative groups (Turnbull 1965). Male kin and other close relatives are preferred partners in group hunts because thick vegetation prevents visual contact among hunters, and familiarity with the techniques of neighboring



hunters allows for quick, coordinated, and effective responses to prey (Turnbull 1965). Thus, changes in the frequency of different kinds of hunts can also be related to changes in demography.

In 2001–2002 and 2003, Bofi foragers often complained about their inability to execute net-hunts because of the lack of nets in the village, and on several occasions Grima men went to neighboring villages to recruit additional hunters. This practice was unpopular because the recruited individuals were often unrelated to the Grima foragers, and on at least one occasion a fight broke out among the hunt participants over the disposition of the catch.

The increase in individualized hunting is not surprising given the reduction in cooperative net-hunting partners. Despite the high cost of the cable, snares offer several advantages over nets. Snares do not require the cooperation of close kin or a large labor force and only need to be checked once every two to three days after the snare is set. This kind of technology allows individuals to pursue other opportunities, such as harvesting koko to sell to itinerant vendors.

The overall productivity of cooperative net-hunts, as measured by post-encounter return rates (kcal/h), is significantly lower in comparison to most hunts executed with individualized technologies, especially snares (see table 6.3). Therefore, one might expect the use of snares to increase individual foraging efficiency. However, at least in 2003, Bofi foragers were phenomenally unsuccessful at snare hunting largely because they failed to check their snares at regular intervals and lost meat largely to putrefaction and scavenging carnivores (also see Noss 1995). Less commonly, some animals managed to escape from the snares. But snares can be productive when properly deployed. For instance, in 2003 we recorded only one animal taken by a forager snare, yet over the same time period farmers took twenty-four animals with the same technology. Given the short time span in which the Bofi have been using this technology, improvements in technological deployment may take several years to manifest.

#### RESOURCE DISTRIBUTION AND FORAGER-FARMER FOOD EXCHANGE

A shift from cooperative to individualized hunting can potentially have far-reaching consequences for forager-farmer exchange relationships. Hewlett (1991), for instance, found that Aka men who regularly participated in cooperative net-hunts maintained more traditional dependent relationships with farmers than men who pursued individualistic activities. Recall that individualistic hunters are

not bound by obligatory sharing rules and have flexibility in how meat is distributed. This flexibility may translate into greater opportunities to sell meat and use the cash to purchase items, in contrast to men who pursue cooperative ventures and are obligated to share meat. Given cultural sharing norms, we might expect that an increase in the use of individualistic technologies would lead to one or more of the following consequences: higher levels of meat consumption by individual families, lower frequencies of forager-farmer exchange, or higher frequencies of meat sales to commercialized vendors.

We monitored hunted and collected foods from the point of acquisition through distribution and tracked the distribution of 298 carcasses and all of the plants, insects, and nuts obtained by the foragers in our sample. After food is acquired it is immediately transported to a forest camp or the village, where it can be distributed in a variety of different ways. For example, carcasses or portions thereof can be consumed and shared, exchanged for food (usually manioc), given as gifts, used to pay debts, or sold for money.

Food consumption (excluding manioc) by foragers varied in response to the availability of prey (table 6.6). Overall, less meat was consumed by foragers after 2000 because fewer carcasses were taken by hunters. But we found no differences in the mean amount of meat consumed between 1999–2000 and 2001–2002 ( $t = 0.7140$ ,  $p = .4764$ ). Significantly, however, more meat was consumed in 1999–2000 compared to 2003 ( $t = 2.203$ ,  $p = .0285$ ). More plant foods were consumed in 2003, when meat was less available. Despite fluctuations in the availability of meat, exchanges with farmers were sustained. The mean amount of meat exchanged for manioc did not significantly vary during our study intervals (1999–2000 and 2001–2002,  $t = 0.4023$ ,  $p = .6879$ ; 2001–2002 and 2003,  $t = 1.0172$ ,  $p = .3108$ ; 1999–2000 and 2003,  $t = 0.3782$ ,  $p = .7056$ ). This trend is further reflected in the amount of vegetables and insects that were exchanged for manioc. The exception is 2001–2002, when few vegetable products were exchanged. The presence of vendors increased the amount of koko collected and sold, especially in 2003, but there was no difference in the amount of plants and insects exchanged for manioc in comparison to 1999–2000 ( $t = 1.4513$ ,  $p = .1475$ ).

Other kinds of food distributions (table 6.6) shed additional light on forager-farmer interactions. For instance, farmers often extend credit to foragers against future resource acquisition, resulting in debts. Although the total amount of food of any kind used to repay debts did not differ among the study intervals, a

Table 6.6. Distributions of forest food proportions by Bofi foragers.

Year/ Resources	Sold	Exchanged (Manioc)	Exchanged (Other Products)	Consumed	Gifted	Debt	Other	Total (Rounded to Nearest Whole Number)
1999–2000								
Meat	94,050.0	44,385.2	6,735.6	279,114.6	0	5,910.5	23,163.0	453,359
Plant/Insect	8,265.0	4,369.5	361.0	6,071.5	0	1,000.0	461.0	20,528
Total	102,315.0	48,754.7	7,096.6	285,186.1	0	6,910.5	23,624.0	473,887
2001–2002								
Meat	11,776.3	10,302.3	0.0	63,485.2	1,196	0.0	7,917.1	94,677
Plant/Insect	0.0	22,153.0	594.0	22,363.0	170	0.0	1,400.0	46,680
Total	11,776.3	32,455.3	594.0	85,848.2	1,366	0.0	9,317.1	141,357
2003								
Meat	29,165.0	33,853.9	2,909.5	119,315.2	0	1,195.2	45,628.5	232,067
Plant/Insect	118,035.0	65,820.0	5,740.0	146,103.0	3,426	26,765.0	0	365,889
TOTAL	147,200.0	99,673.9	8,649.5	265,418.2	3,426	27,960.2	45,628.5	597,956

Note: The values show the weight (g) of different foods acquired by the Bofi.

significantly higher number of forager-to-farmer debts were repaid with meat in 2001–2003 in comparison to 1999–2000. Meat is a more highly valued resource than plant products, and increases in debt payments of meat when prey was less available could reflect greater economic interactions between foragers and farmers. Table 6.6 also shows that foragers gave more food gifts (mostly plants) to farmers in 2001–2003.

Thus, exchanges between foragers and farmers were sustained even with an increase in the use of individualized hunting technologies and access to commercial vendors. This sustained interaction between foragers and farmers is even more apparent when one considers the underlying economics of the exchanges and value of different products. Over the last four decades, as shown in table 6.7, the cash value of meat has greatly increased, but the exchange value of meat in manioc has decreased. The increased cash value for meat reflects the reality of a competitive market for limited resources. Decreases in the manioc exchange values of meat could indicate that the surplus production of manioc by farmers has a lower threshold today than it did in the 1970s. But these values could also reflect the underlying reality that farmers today have the ability to obtain meat by hunting or purchasing it from neighbors. Illegally obtained meat was available in Grima throughout the year, and sometimes when foragers were not successful they actually purchased meat from farmers (also see Kitanishi 2006). In fact, foragers could actually purchase larger amounts of manioc with cash earned from selling different products, such as koko, than they could obtain through the exchange of meat with farmers (table 6.7). This means that the barter between foragers and farmers, while materialistic in nature, was not necessarily driven by traditional economic rationales.

#### FROM COOPERATIVE VENTURES TO INDIVIDUAL PURSUITS

Changes in the hunting technologies and modes of production explored in this chapter did not appreciable influence forager-farmer exchanges, although the overall reduction in the availability of prey resulting from long-term over-exploitation and recent road construction has impacted the kinds of forest products available for exchange, access to commercial vendors, and access to cash. The regular influx of vendors and sale of koko gave foragers sufficient amounts of cash to be able to purchase domesticated foods grown by farmers. Yet cash was rarely used in this fashion, and exchanges with farmers continued even though foragers could have purchased larger amounts of food with cash

**Table 6.7. Exchange values of different food commodities.**

Item	1999–2003		1976–1978	
	CFA Francs	Manioc (kg)	CFA Francs <sup>a</sup>	Manioc (kg) <sup>a</sup>
Blue Duiker (½)	750–1000	1.700–2.000	50–300	6.0
CFA (100)	—	0.500–1.000	—	—
CFA (200)	—	1.200	—	—
Day's Work (½)	2–500	1.200–1.500	—	—
Giant Pouched Rat	3–500	0.600–0.850	—	—
Koko (200–250 g)	25	0.450–0.500	—	—
Medium Duiker (¼)	1–1,500	3.000–3.400	50–600	10.0
Mushrooms (650 g)	100–150	0.750–1.000	—	—
Porcupine	1–1500	1.200–1.500	20–300	2.0–3.0

*Note:* The exchange values for manioc are approximate. Even though we measured amounts using a set of spring scales, village economic exchanges are often informal approximations.

<sup>a</sup>Data from Bahuchet 1985.

than they actually received through exchanges. The data presented here invite a reexamination of the question posed by this volume: why do foragers forage? In this case, commoditization of forest products and access to cash allow foragers to function as independent and autonomous entities.

Previous studies point to the ability of forest foragers to grow their own crops as an important factor in whether or not foragers continue to forage (Guille-Escuret 1998; Kitanishi 2003). It might be argued that the Bofi foragers discussed here grow insufficient quantities of foods and continue to forage to obtain domesticated foods from farmers. However, a number of forest-foraging groups in other portions of western and central Africa—such as the Baka, Bakoya, Aka, and Babongo (see Hewlett 1991; Kitanishi 2003; Knight 2003; Köhler 2005; Soengas 2009; Yasouka 2006a, 2006b)—grow sufficient quantities of domesticated plants and yet still collect forest products. In many of these cases, foragers sell forest products but also continue to maintain exchange relationships with farmers. The ability to produce sufficient quantities of crops does not explain why foragers continue to forage or why they maintain ties to farmers.

In past publications, I have argued that the use of hunting nets by foragers acted as a kind of costly signal of affiliation with farmer clans (Lupo and Schmitt 2002). If this inference is correct, the demise of net hunting undermined the

value of that signal but not the value of the affiliation. As I have discussed here, farmers fill many valuable sociopolitical and ritual roles in forager society, including acting as liaisons in village disputes. In the context described here and throughout the Congo Basin, foragers have no political leaders and a restricted ability to be economically and socially mobile, and they are viewed as an under-class. In contrast, farmer populations have a long history of hereditary leaders, status differences within their population, and control over desirable resources, which disenfranchises foragers in relation to specific items and in complex social interactions (see Lupo et al. 2014). One way foragers can accommodate this circumstance is to form ongoing partnerships with farmers. Foragers' bartering with farmers is one way they show and maintain affiliation even when the exchanges themselves are disadvantageous to the foragers. As I have shown, these exchanges do not maximize the amount of manioc that can be obtained for meat, and researchers in different parts of the Congo Basin have also noted the disparity in the amount of manioc (and other products) obtained by foragers via barter in comparison to the amount that can be directly purchased (e.g., Bahuchet and Guilleme 1982; Ichikawa 1991; Köhler 2005).

I argue that these systems are maintained because of the additional social currency gained by both parties, beyond the caloric and nutritional value of the food items involved. For farmers, widespread poverty and unemployment limit their ability to leave the villages. Farmers who leave villages and attempt to earn a living in the city often fall back to the countryside, especially in times of strife. In short, this society does not provide much opportunity for upward mobility, and traditional deference from foragers in economic and social interactions may provide farmers with incentives to maintain relationships, even on a minimal level (Schmitt and Lupo 2008). For foragers, having a local liaison or trading partner within the dominant and more controlling social group has obvious advantages as well.

Importantly, the nature and scope of forager-farmer relationships clearly vary throughout forested areas in central and western Africa, suggesting that the value relative to the costs of these relationships is not uniform and changes as a function of historical processes and ecological and sociopolitical contexts. Kitanishi (2003), for example, reports that the Baka in southwestern Cameroon do not have close economic relationships with farmers. The Baka in this area work for farmers for wages and material items but always expect payment. In southwestern Cameroon governmental policies forced Baka foragers to become sedentary agriculturalists as early as the 1950s. Most grow a sufficient quantity

of crops (in this case plantains) to meet their own needs and do not need to exchange forest products with farmers. Nevertheless, these foragers continue to collect wild foods that they consume or sell. It is not clear if or how this change in economic focus influences other social aspects of forager-farmer interactions. In fact, most ethnographic studies on forest foragers' transition to agriculture have focused almost exclusively on economic transactions with farmers and provide very little information on how economic changes impact the social, political, and ritual dimensions of forager-farmer dyads (Guille-Escuret 1998; Kitanishi 2003).

### Conclusions

Recent changes in forager hunting technologies in response to prey depletion can influence core social relationships among and between populations. Some of these changes have resulted in the demise of traditional features of forager society in this portion of the forest, such as cooperative hunting and meat-sharing patterns. Despite the changes, however, forager and farmer dyads that first emerged some two thousand years ago continue to persist. As described here (and elsewhere), these relationships have been maintained, albeit in modified forms, through economic, social, and political upheavals during the historical, colonial, and postcolonial periods. The fact that these interrelationships continue to survive throughout the Congo Basin suggests a resiliency in this bond that transcends nutritional need and specific historical events.

### Notes

1. By 2007, with the opening of the Quatième parallel road, the road's route had been changed to completely avoid Grima. This cutoff was developed by a logging concession to avoid sand traps and was located approximately 5 km from Grima. By 2010, the entire village had been abandoned, and most of the inhabitants had moved to a new location, "New Grima," located along the new road. In 2010 we were able interview many of the former residents who cited sorcery as the main reason for abandoning the old village.
2. Metal cable cost about XAF\$300 per yard. One yard of metal cable yields four or more two-strand snares or ten single strand snares that can last for up to two years (Noss 1995).