From Forest to Market:

The Rattan Commodity Chain in Moa, Sulawesi

*Calamus zollingeri* in a canopy gap near Moa.
The village of Moa is 25 km by rough foot path up the Lariang River from Gimpu where the dirt road ends. Moa is surrounded by primary and secondary forests and Lore Lindu N.P. borders the community on three sides.

All commercial rattan cane harvested for the international furniture industry in this region (Doda south) is floated down the Lariang River to Gimpu. At Gimpu canes are pulled from the river and loaded onto trucks for transport to Palu, the provincial capital, about five hours drive to the north. Palu is a regional cane processing center.

Reliance upon rivers for transport is common throughout the tropics (e.g., the Mahakam in Borneo and the Amazon in Brazil) and have been used to transport forest products to market for centuries.
Rice fields (sawah) in Moa looking north into Lore Lindu N.P. where most rattan cane harvesting occurs. Villagers have harvested rattan from these forest for centuries. Prior to the 1980s rattan harvesting served domestic, non-market purposes only, but growing market demand and over-exploitation of rattan canes elsewhere (i.e., Sumatra, Borneo and Peninsular Malaysia) stimulated commercial harvesting of large-diameter rattans throughout Sulawesi in the 1980s and 90s.
The majority (95%) of rattan used in the global cane furniture industry is harvested from wild populations in primary forests. Virtually no large-diameter canes are cultivated, but some small diameter species (e.g., *Calamus caesius*) were widely cultivated, especially in Kalimantan, Indonesia, in the past.

Attempts to manage cane harvesting (e.g., the amount, frequency, length, location, etc.) have been attempted by some collectors and communities, such as Moa and Au.

*Calamus manan*, the premier large-diameter rattan, in a canopy gap in Taman Negara N.P., Malaysia.
Prior to the late 1990s, rattan collectors from Moa gathered all commercial, large-diameter canes within 6 km of the village. This allowed collectors to return home every day. However, due to over-harvesting, particularly by non-resident contract laborers, collectors must now travel further into the forest where they remain for several days before returning home.

Arnol (on the right) and his younger brother War rest in their pondok (work hut) after a long day of cane collecting. The hut is constructed from poles, bamboo and rattan.
Non-resident collectors contracted by regional rattan traders harvest cane throughout the forests of Central Sulawesi. Uncontrolled harvesting has exhausted supplies of marketable rattan canes in the forests near Moa.
Collectors gather rattan by searching the forested slopes above Moa for marketable cane, that is species of economic value and harvestable length. Canes used for furniture framing must be at least 10 m in length. *Calamus zollingeri* (batang) is the principal large-diameter rattan harvested in Central Sulawesi.

Here, Arnol pulls a small diameter rattan, *C. leiocaulis*, down from the canopy after cutting the cane near the base. Small rattans can usually be pulled down. However, it is often necessary to climb into the canopy to free large canes or canes entangled in supporting trees and branches.
After cutting, rattan canes are bundled and dragged to the Lariang River or to roads (if available) for transport to processing facilities.
Furniture canes are cut to 4 m lengths and straightened for shipment down the Lariang River.
Rattan canes are lashed together into bundles weighing about 50 kg using split *Calamus leptostachys* rattan. The bundles are then color coded to identify collectors for payment by traders after the cane reaches Gimpu. Canes lost during transport are the responsibility of collectors; they receive payment only for canes that reach Gimpu.
Freshly cut rattan canes are heavier than water so must be tied to floater logs for transport by river. Six species of trees are used as floater logs in Moa. All are early successional, gap associated species that are harvested from fallowed swidden fields or periodically flooded and disturbed riparian forests. No floater log harvesting occurs in primary forests in Moa or Au.
Bundles of rattan cane are tied to floater logs using split *Calamus leptostachys* rattan and then floated down the Lariang River to Gimpu.
Rattan cane bundles are guided down the Lariang River by teenage boys. Typically, several boys steer and push cane bundles while a companion carries dry clothing, food and other supplies along the shore. Floating cane from forest collection sites to Gimpu takes anywhere from two days to two weeks and is a tiring and dangerous task.
At Gimpu the Lariang River takes a wide bend and the rattan and floater logs pulled ashore in an eddy. Floater logs are split and sold as firewood throughout the Gimpu valley.
Rattan canes are submerged in water at Gimpu to prevent spoilage by fungi and insects until transported by truck to processing facilities in Palu.
While harvesting and transporting rattan are performed exclusively by men, women are often involved in processing cane. This includes the removal of external silica sheaths which may be done mechanically or by hand. Female employment in rattan processing is important to household incomes and family well-being throughout Southeast Asia.
Rattan processing includes boiling cane in oil (diesel or palm oil) to prevent discoloration, insect and fungal damage, and to help preserve the cane.
After boiling, canes are stacked to dry before being shipped to rattan furniture manufacturers.
Rattan furniture making is labor intensive. The canes harvested in Moa and processed in Palu are shipped to Java where thousands of men and women produce furniture for the domestic Indonesian and international markets.
In the 1980s and 90s rattan furniture was widely used throughout Southeast Asia. However, in recent years, plastic furniture has largely replaced rattan. Here rattan chairs are being transported to a shop in Baybay, Leyte.
The variability of rattan furniture is limited only by the imagination of designers and the skill of artisans. Here rattan furniture awaits export to Japan and Europe in a Javanese warehouse.
Rattan canes harvested in Moa travel to destinations the world over, perhaps including this furniture seen through the window of a boutique in Rome.
Discussion topics:

1) Middlemen are frequently accused of garnering a disproportionate share of profits in the trade of tropical forest products. However, middlemen often provide the only access to and means of transporting forest products to market and are the only source of credit (see: Brondizio, 2008 and Peluso (1992).
   a) How and by what means might economic returns to cane collectors be increased?
   b) What alternative credit sources are available to rural villagers/cane collectors and how might their access to credit be improved (e.g., micro-credit financing)?

2) A critical factor in transporting forest products to markets is their value to weight ratio (e.g., it is economically viable to gather and transport high value products further distances than commodities of lower value or heavier weight). The maximum distance cane collectors would drag cane to the Lariang River in 2000 was approximately 6 km (Siebert, 2004).
   a) Consider the economic viability of harvesting and transporting rattan canes, coffee, cacao or other forest products based on their value (i.e. price paid to collectors) to weight ratios;
   b) What opportunities exist to improve the value:weight ratio of rattan through local processing, changes in marketing conditions/arrangements or other means?

3) Given the declining availability of large-diameter furniture rattan canes due to over-harvesting, how viable is commercial cane harvesting likely to be in the future? How might changes in design and processing affect this situation?
Discussion topics (cont.):

4) In one of the most frequently cited scientific papers ever written, Peters et al. (1989) argued that the sustainable harvesting of NTFPs (non-timber forest products) in an Amazonian rain forest was more valuable than timber harvesting or converting the forest to cattle pastures or more intensive agricultural uses.
   a) What conditions and assumptions underlie this analysis? Consider ecological, economic, marketing, land tenure and management factors.
   b) How do the specific forests, markets and products studied by Peters et al. compare to the commercial harvesting of rattan canes from SE Asian forests?

5) Whether and to what extent rural villagers gather rattan canes as a source of income are influenced by many factors.
   a) Identify important social, economic, political and ecological considerations in the use of and reliance upon rattan and other NTFPs by rural people (see: Belcher et al., 2004; Nepstad & Schwartzman, 1992; Siebert & Belsky, 1985).
Approximate area of rattan collecting in Lore-Lindu National Park in 2000

land within 6 km of rivers or roads = maximum transport distance @ 2000 cane market prices

approximately 197,000 ha, > 50% of LLNP

Siebert (2004)
References:


