Evaluating the Role of Certification in the Sustainable Harvest of *Chamaedorea* Leaves

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Summary

Commercialization of non-timber forest products (NTFPs) has been promoted as a strategy to reconcile conservation objectives and the livelihood needs of forest-based people. Ostensibly, commercialized NTFPs have the potential to integrate these objectives by increasing the economic value of intact forest to local inhabitants, thereby providing an incentive for conservation. However, proponents of extraction-based conservation approaches such as NTFP harvest have been cautioned that, though time, the harvest of naturally-occurring populations is generally replaced by cultivation and/or substitution with less expensive alternatives. Chamaedorea palms (*Chamaedorea* species) are used in the floral industry and are generally regarded as a commercially successful wild-harvested NTFP, but palm extraction is beginning to show the above dynamic: a transition from forest to plantation.

As palm production transitions from forest to farm, the integrated livelihood and conservation benefits associated with wild palm harvest will diminish. Palm certification has been promoted as a counter-measure to this trend and a means to retain livelihood benefits for communities committed to forest conservation. Neither sustainability standards nor price premiums will be of much importance to forest communities if overall demand for extracted forest products declines precipitously in the wake of increased production in external plantations. Moreover, under current certification guidelines, external plantations can be FSC certified, and the price premium they receive through certification could subsidize the further expansion of plantation operations to the detriment of wild-harvest systems. The reduction of wild-harvest production systems in and adjacent to native ecosystems will not only hurt marginalized forest workers economically, but it may also result in further conservation problems as local people seek other livelihood activities that may be more ecologically damaging (e.g. cattle ranching, logging, etc.). Thus, we consider the fundamental question: *how might certification ensure that NTFP extraction remains an ecologically sustainable*

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and economically viable source of income for communities living within or adjacent to areas of conservation importance?

We envision three elements of certification necessary to achieve sustained, integrated conservation and development benefits from NTFP harvest: (1) certification should guarantee that forest products are harvested by individuals or groups living within the forest or by those responsible for the stewardship of forest resources, (2) certification should guarantee that forest product management and extraction is sustainable, and not detrimental to forest structure and ecological integrity, and (3) certification should guarantee that products originate from forests/regions that are classified as working forests, or that are part of an integrated conservation and development program. A 'Working Forests' certification comprised of the above three elements should help to help ensure competitive advantage for sustainably-managed extractive production systems.

NTFP commercialization: reconciliation of conservation and development objectives

A complete discussion of the myriad of issues and challenges related to natural product commercialization is beyond the scope of this report, but it is important to highlight the contours of the discourse. Four general concerns tend to be found in the NTFP commercialization literature (Browder 1992 a, b; Richards 1993; Dove 1994; Ros-Tonen et al. 1995; Crook and Clapp 1998; Neumann and Hirsch 2000; Arnold and Ruiz-Perez 2001; Shanley et al 2002; Ticktin 2004): *(1) Ecological concerns* related to the potential negative consequences of commercialization with respect to NTFP populations, the broader biotic community, and the greater ecosystem; *(2) Economic concerns* related to the potential failures of commercialization strategies stemming from factors such as supply and demand, calculated value versus net benefits, and economies of scale; *(3) Socio-political concerns* focused on the contextual elements of NTFP harvester groups and regions such as resource tenure and rights, effects on gender roles and on the broader contribution of NTFPs to rural livelihoods (i.e. unintended and disruptive effects of NTFP commercialization), and; *(4) Concerns about the incompatibility of existing forest management* and potential obstacles to the changes that may be necessary in order for commercialization to succeed. In practice, many of the issues presented within these distinct classifications are interconnected.

In addition to these four main concerns, the "causal" factors for failure of commercialization tend to be of three types (Neumann and Hirsch 2000). First, market-related factors may create conditions favorable to particular types of resource exploitation, namely over-exploitation. Second, the institutional conditions associated with commercial harvest may differ significantly from existing conditions and customs. Third, the biological attributes of commercialized NTFPs play an important role in the potential outcomes of commercial harvest.

Critics of commercialization as a means to integrate conservation and development objectives assert that commercial resource extraction represents an unstable base due to the many possible combinations of the reasons mentioned above (Browder 1992 a, b; Dove 1994; Homma 1996; Belcher and Schreckenberg 2003). The challenge of NTFP commercialization efforts has been to identify conditions for successful extraction that contribute to the conservation of forests and increased incomes for forest people (Ros-Tonen et al. 1995). Certification, in the broadest sense, represents a

commercialization adaptation intended to address the socio-political, ecological, and economic failings that have been empirically observed in ongoing NTFP commercialization efforts.

NTFP certification

Certification is a process through which transnational networks comprised of diverse actors set and enforce standards for products and production processes (Dankers 2003; Mendinger 2003). The certification process includes two important public roles (Mendinger 2003): defining acceptable or appropriate behavior and establishing mechanisms to enforce product or process standards. Certification programs are 'market-based' in that they "seek to achieve their goals by restructuring producers' relationships to consumers through markets" (Mendinger 2003: 266). The use of certification as a forest policy tool is relatively new (Viana et al. 1996; Shanley et al. 2005; Overdevest and Rikenbach, in press). NTFP certification has emerged as a prospective solution to the numerous ecological, economic, and social challenges associated with commercialization (Viana et al. 1996; Shanley et al. 2002; Shanley et al. 2005), but support has waxed and waned due, in part, to the significant challenge of creating broadly applicable certification guidelines for an extremely diverse set of products and production systems. Moreover, early efforts suggest that certification represents a viable strategy for only a limited subset of "charismatic" NTFPs with high profiles and international markets (Laird and Guillén 2002). Although certification was described nearly 15 years ago as "key" to the integration of conservation and development through extractivism (Clay 1992), NTFP certification remains in its infancy (Shanley et al. 2005).

Numerous opportunities and challenges have been identified with NTFP certification in general (Viana et al. 1996; Pierce 1999; Mallet and Karman 2001; Anderson and Putz 2002; Pierce et al 2003). As a form of commercialization, efforts are likely to encounter most, if not all of the ecological, economic, and social challenges described above. New and different benefits and costs (opportunities and challenges) also emerge that relate to the increased transparency and formality of the terms of production and/or trade. Price premiums, improved market access, environmental sustainability, and social justice are perhaps the most frequently cited benefits of certification (Simula 1996; Viana et al. 1996; Shanley et al. 2002; Walter 2002). Other benefits include increased efficiency, organization, transparency, accountability, safety, and education (Shanley et al 2005; Overdevest and Rickenbach, in press). Foremost among the challenges posed by certification is the paucity of biological information for the multitude of NTFPs as well as the numerous and significant costs to producers in an uncertain demand environment (Simula 1996; Kiker and Putz 2002; Shanley et al. 2002). Nevertheless, some argue that the key challenge facing rural forest communities is not whether to participate in global processes (i.e. commercialization), but how to do so in ways that provide for sustainable growth (Fitter and Kaplinsky 2002). The evolving concept of NTFP certification represents one important issue in this ongoing dialogue.

Chamaedorea: a successful NTFP?

Chamaedorea palms are generally regarded as a commercially successful NTFP. Since the mid-twentieth century, North American and European florists have imported the leaves of various species of palms of the genus *Chamaedorea*, to be used as decorative foliage in floral arrangements and for use

in Palm Sunday church services (CEC 2002). *Chamaedorea* palms occur in the forest understory in Mexico, Central America, and northern South America, and are often a dominant component. At least seven species (*C. elegans, C. ernesti-augusti, C. oblongata, C. radicalis, C. seifrizii, C. tepijilote,* and *C. quetzalteca*) are utilized by the cut-greens industry, the vast majority of leaves having historically been harvested from naturally-occurring populations in Mexico, Guatemala and, to a lesser extent, Belize. Several of these species are listed as threatened or vulnerable (FAO 1997). *Chamaedorea* leaves are an important part of the cut-greens industry (14% of US market), and are second in commercial value among NTFP in Mexico, with millions of leaves exported each year (CEC 2002). Although the profitability of palm leaf imports peaked during the 1960s, Chamaedorea greens remain an important commercial product and a source of income for forest dwellers.

Chamaedorea harvesting contributes to forest livelihoods in several regions of Mexico (CEC 2002; Endress et al. 2004; Santos et al. 2006; Lopez-Feldman 2006), the Petén region of Guatemala (Nations 1992; Litow 2001; CEC 2002; IRG 2006; Dugelby n.d.), and Belize (Pickles 2005; Bridgewater et al.2007). Palm harvest is an important source of cash income, particularly for poor and indigenous peoples. Moreover leaf harvesting is an important livelihood activity for people living within biodiversity 'hotspots', such as Biosphere Reserves. *Chamaedorea* harvest has been reported in many protected areas including El Cielo, Maya, Montes Azules, El Ocote, La Sepultura, and El Triunfo Biosphere Reserves. Because the harvest of *Chamaedorea* leaves has minor ecological impacts compared with many other land use activities (cattle ranching, logging, mining, etc.), leaf harvest, if economically viable for local communities, it should promote overall forest conservation and sustainable resource management objectives. The emergence of external large-scale plantation production of *Chamaedorea* threatens the livelihoods of these communities and may result in increased forest degradation as people find alternative sources of income, many of which are likely to be more destructive than *Chamaedorea* harvest.

Sustainability of *Chamaedorea* extraction

Although leaf-cutting does not directly kill individual plants, high harvest intensities coupled with slow growth rates and sensitive reproduction may threaten the long-term viability of individuals and wild populations (Porter Morgan 2004). Recent studies of *C. radicalis* show that harvest increased plant mortality and reduced growth and fruit production (Endress et al. 2004, Endress et al. 2006). However, even regularly harvested areas are projected to maintain stable populations. Modest conservation activities, such as not completely defoliating individuals and protecting large female individuals, may offset many of the negative impacts of leaf harvest. The effects of harvest on other *Chamaedorea* species are less well known (but see Porter Morgan 2004).

Although *Chamaedorea* populations appear resilient to harvest, low prices and scarcity of market quality leaves make it difficult for harvesters to meet livelihood needs. Low prices and sales based on quantity (versus quality) promote over-harvesting. The percentage of leaves that are harvested and subsequently discarded can be extremely high, up to 76% in some instances (Radachowsky and Ramos 2004). The loss associated with quantity-driven harvesting is unnecessary, but is perpetuated by the current procurement system. Contractors pay for quantity, rather than quality – losses being factored into the price - and thus create an incentive for harvesters to cut indiscriminately in the shortest time possible. Moreover, since prices are low, harvesters have little option but to harvest leaves they know will never make it to market in order to meet quotas. The combination of lacking incentives for harvesters to be more selective in leaf collection and low prices results in a wasteful and inefficient system.

Chamaedorea certification

Support for certification of Chamaedorea is based, in part, upon a recent survey of consumers that indicated a strong interest in a certified product (Current et al. 2003), though there is debate on the matter (see Pickles 2004). Interest was strongest among church-based consumers, those who use palms for Palm Sunday services once a year and who may represent an additional source of demand throughout the year via the purchase of floral arrangements featuring certified palms. Formal standards for Chamaedorea certification do not yet exist and the feasibility of a full-scale specialty market has only been superficially tested via two regional pilot sales (CEC 2005, 2006). Moreover, it is not prudent to assume that expressed interests will necessarily translate into actual market demand (Kiker and Putz 1997; Forsyth et al. 1999). Nevertheless, the promising results of these two sales have been interpreted by some as evidence that palm certification represents an appropriate and viable intervention for the sustained integration of conservation and development objectives. Given the nature and dynamics of extraction-based NTFP production systems, such a conclusion may be premature. Staking local forest conservation and development efforts on certified extraction may well lead to unintended conservation and development outcomes in the targeted regions.

Despite the many challenges associated with NTFP certification, several factors suggest that it may be a timely intervention worthy of further consideration. First, for all the past commercial success, present markets for Chamaedorea palm fronds appear to be stable, if not in the early stages of a gradual decline (personal communication, Jim Everett – Continental Floral Greens). This is supported by a recent survey of American wholesalers and retailers, which demonstrated that many perceive the use of *Chamaedorea* greens to be passé (CEC 2002). Moreover, with donor efforts directed toward the development of plantation-based *Chamaedorea* production, existing and emerging producers may soon find themselves in the position occupied by coffee producers in the 1990s: suffering record low prices resulting from an onslaught of surplus supply in the wake of donor-driven economic development projects (Fitter and Kaplinsky 2000; Fritsch 2002; Belcher and Schreckenberg 2003). Certification may represent a means by which producers can insulate themselves from the negative price pressures found in the commodity markets.

A second, related issue is that production systems based on extraction are likely to disproportionately bear the high costs of low prices. This is underscored by the fact that plantation-grown *Chamaedorea* leaves are likely to have higher quality and uniformity and lower production costs per unit than wild leaves. Cost differences relate to economies of scale, lower levels of waste, and reduced transportation costs. These comparative and competitive disadvantages are already a reality for the many frustrated communities that cannot find buyers (or reasonable prices) for their consistent, but relatively small offerings of high quality palms. As has been the case with other NTFPs, the combination of commercial success and amenability to cultivation may hasten the departure of commercial palm production from the forest. If premiums can be obtained for certified management, the cost burden borne by certified extractive systems could be mitigated.

Third, in regions where *Chamaedorea* production still depends on natural populations, reduced palm abundance and quality are symptoms of over-harvesting that have negatively impacted the

perceived economic benefits of palm extraction. Intensified harvesting pressure comes from two directions: suppliers act to ensure that demand can be fulfilled while harvesters strive to maintain or improve their livelihoods. As shortages of market quality leaves from natural populations increase, stakeholders are becoming concerned that the extractive production system is approaching a critical threshold, described by Wiersum (1997) as the critical passage from extraction to early stages of cultivation outside of the forest. If history offers a lesson, it is reasonable to expect that cultivation under structurally-modified forest or artificial-shade may soon be the norm. At least one importer, Continental Floral Greens, anticipated these changes as early as 1989, hedging wild supply with stock cultivated under natural forest cover. Certification may represent a means to bring forth the value in environmentally and socially sustainable production processes, thus eliminating the deleterious emphasis on high-volumes and low margins typically found in product-oriented commodity markets.

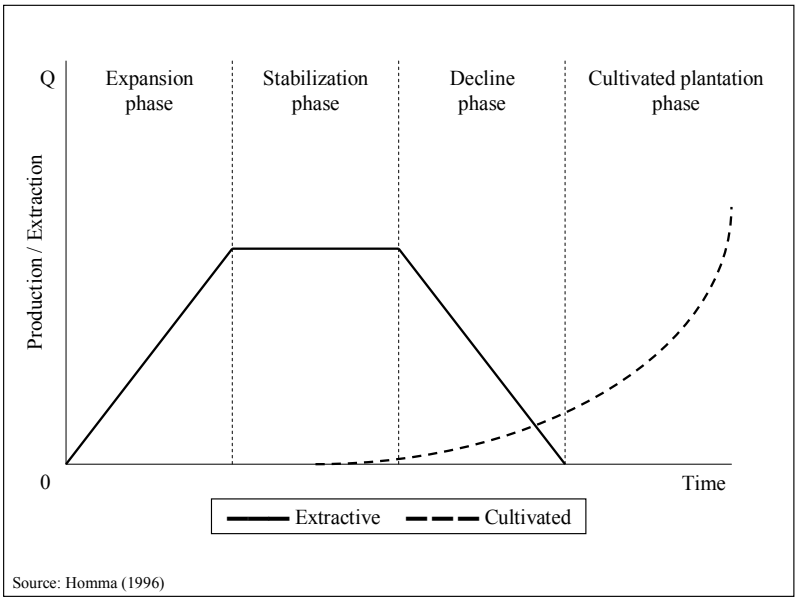
Chamaedorea production systems

Historically, most of the leaves entering the market have been harvested from wild populations– populations that are naturally-occurring, and regeneration is a natural process. However, there is a growing trend toward *Chamaedorea* cultivation and production system intensification. This trend is consistent with Homma's theoretical model of extractive production system dynamics (Homma 1996; Figure 1) as well as empirical observation that NTFP often transition from forest to cultivation (Michon & Foresta, 1998). It is also likely that the emergence of alternate production systems harbingers the beginning of the end for wild-harvest. Two reasons for this conclusion stand out.

First, agroforestry systems and artificial shade plantations are intensive production systems that generate predictable supply with consistent quality. An almost certain outcome of intensified *Chamaedorea* production will be an increase in the supply of high-quality palm leaves. Basic price theory suggests that an increase in supply precipitates a decrease in price, all else being equal. If intensive systems become more common, as present trends indicate, competition between wild-harvested stock and intensified production will increase. Homma's model of extractive system dynamics (1996) is itself a testament to the negative impacts on extractive systems as cultivated systems achieve economies of scale (Figure 1). Typically, producers in commodity markets characterized by excess supply and low prices rely on volume to offset low margins. However, a volume strategy is less than ideal for naturally-occurring and naturally-reproducing forest palms within a Biosphere Reserve, where conservation is an important goal.

A second reason that plantation production will replace wild-harvest is that if local conditions do, in fact, determine prevailing production systems (Belcher et al. 2005), communities living within and adjacent to protected areas, where much of *Chamaedorea* is harvested, will have a comparative *dis*advantage relative to locations unconstrained by conservation objectives. The dual conservation and development objectives of many protected areas translate into a comparative disadvantage for local communities in a commodity-based market where production is not bound by ecological constraints.

Figure 1. Homma's model of extractive production system dynamics (Homma 1996).



It is unlikely that current wild-harvesters would be able to transition to cultivation in a competitive manner. This is primarily due to the high volume needed to make a profit. For example, within the *El Cielo* Biosphere Reserve (Mexico), it is estimated that each family would need about a 3 hectare plantation to generate the same about of income they currently make from wild-harvest (Endress and Peterson, unpublished data). In many cases, harvesters do not own that much land. Moreover, because *Chamaedorea* harvest is common in protected areas, such as *El Cielo*, individuals and communities are unable, due to conservation policies, to clear that much land for *Chamaedorea* production.

In light of the above factors, it is likely that the dominant production system for *Chamaedorea* palms will shift away from the wild-harvest of natural populations toward intensified cultivation under natural forest cover or artificial shade by external producers. In fact this seems to be happening throughout the United States and Mexico. More than 23 *Chamaedorea* growers already work within the United States, and Continental Floral Greens, a primary importer of *Chamaedorea* leaves, is now operating an extensive plantation in Veracruz, Mexico (personal communication, Jim Everett, vice-president, Continental Floral Greens). Moreover, Continental Floral Greens believes that over the next decade, there will be an enormous shift from wild harvest to plantation production of *Chamaedorea* foliage. Thus, without intervention, *Chamaedorea* palm extraction will likely move into the disappearance phase of Homma's extractive cycle, as comparative advantage shifts from regions of low-cost production driven by natural abundance to particular producers with low-cost production driven by economies of scale. Moreover, the loss of income from *Chamaedorea* harvest in these biodiversity hotspots will hurt marginalized people economically; for example, in Frontera Corozal, Mexico, the number of poor will increase by as much as 4% without *Chamaedorea* income (Lopez-Feldman et al. 2006). Furthermore, this loss of economic activity may also result in further

conservation problems, as local people seek other livelihood activities that may be more ecologically damaging (e.g. cattle ranching, logging, etc.). Perhaps it is unrealistic to expect this process to be averted, considering experiences with the intensified cultivation of other NTFP. However, the negative livelihood and conservation impacts within and near conservation areas associated with shifting centers of *Chamaedorea* production may yet be mitigated through certification.

NTFP certification options

Four categories of certification programs have been suggested as most relevant for NTFP applications (Ervin and Mallet 2002; but also Walter 2002; Vantomme and Walter 2003): 1) forest management; 2) social justice; 3) organic; and 4) product quality. Because the motivation for certification of *Chamaedorea* relates to social and environmental processes, rather than product quality concerns, we will not address product quality certification. Single certification programs rarely address all three of the dimensions of sustainability (society, environment, economy), instead most tend to focus on a single dimension while incorporating some standards for others. The fact that the numerous certification programs operate through the use of different, but often overlapping, standards represents an additional challenge to NTFP certification, but also suggests potential synergies (Vantomme and Walter 2003).

Forest management certification

Forest management certification standards address the sustainable management of forests for timber harvesting and, to a lesser extent, other forest resources. Forest management standards prioritize management and ecological sustainability, but may include cursory standards or guidelines for social justice. Creating timber standards that are universally applicable for both temperate and tropical timber systems has been difficult; creating NTFP standards for many more species and multiple forest environments may prove to be even more so. Consequently, while numerous certification programs for timber management exist, few offer more than marginal consideration of NTFP. The Forest Stewardship Council's "Draft Principle 11" and "Generic Guidelines" (Box 1) have emerged as the most advanced and legitimate attempts at NTFP management standards (see Brown et al. 2002). Some examples of NTFP that have been certified under FSC standards include: maple syrup (USA), chicle resin (Mexico), Brazil nuts (Bolivia), and *açai* palm hearts (Brazil), cacao (Belize), and chocolate (Belize).

Box 1. Forest Management Certification – Rainforest Alliance / SmartWood's Generic Guidelines for NTFP (Shanley *et al.* 2002)**:**

1. Commitment to FSC Management Principles 1-10 and Legal Requirements;
2. Land tenure and use rights and responsibilities;
3. Forest management planning and monitoring;
4. Forest management practices;
5. Environmental impacts and biological conservation;
6. Social and cultural impacts;
7. Community and worker relations;
8. Benefits from the forest and economic viability;
9. Chain of custody in the forest,
10. Performance indicators and verifiers.

Forest management certification programs for timber have been extremely successful and continue to expand internationally. Noteworthy, however, is the limited representation of tropical forests relative to northern forests, the latter comprising 91% of certified forest area (UNECE, 2004). Forest management certification has been most attractive to private managers of monoculture forest plantations common in North America and Europe, and less so to public managers of natural, highly diverse tropical forests. It would be unfair to consider this as a failure of forest management certification, but it would be unwise to ignore the potential implications for certification of NTFP. It is reasonable to expect that analogous NTFP standards emphasizing best management practices and sustainable yields would be adopted by managers of NTFP production systems with characteristics similar to those of certified timber operations. *Chamaedorea* agroforestry systems such as the one in Veracruz, Mexico will be equally or better suited to capture the benefits of certification, leaving communities currently dependent on wild harvest with a comparative disadvantage similar to their present situation.

Social justice certification

Social justice certification is perhaps better recognized by the market label, Fair Trade. At its most progressive, fair trade attempts to extend certification efforts by changing the social relations of production and exchange and by making the production process visible at the point of exchange (Hudson and Hudson, 2003). Labor conditions and equitable benefit distribution are emphasized in fair trade certification. Environmental issues are included only as they relate to the worker environment, to the quality of the natural resource base as a component of the quality of life, and to economic sustainability. Examples of fair trade certified products include: coffees and teas (various), chicle resin (Mexico), devil's claw (Namibia), and shea butter (Ghana).

Seven important social criteria are encompassed by most fair trade certification programs (Box 2). Like forest management certification, the fair trade movement has grown considerably over the past two decades. Its success has been fueled in large part by the success of certified coffee and cacao. Like forest management, fair trade certification seems most amenable to intensified production (agroforestry) systems such as coffee, tea, and cacao. While fair trade standards would likely provide significant social and economic benefits to *Chamaedorea* harvesters and their communities, it is unlikely that the environmental criteria would be adequate to protect the forest ecosystem. In fact, the standards related to social security and worker benefits may actually favor the wage-labor environment of an agroforestry system or plantation over the intermittent labor patterns characteristic of wild-harvesting.

Box 2. Social criteria encompassed by fair trade certifications (Mallet 2001):

1. Resource tenure;
2. Adequate and equitable benefits;
3. Safe working environment;
4. Impacts on indigenous communities;
5. Economic viability;
6. Child labor;
7. Ethical marketing.

Organic certification

Organic certification refers to a holistic management system that promotes and enhances agro-ecosystem health (Walter, 2002). Although organic emerged as a certification for agricultural crops, it is applicable to managed and wild-harvested forest products as well. In the organic context, a wild crop is defined as "any plant or portion of a plant that is collected or harvested from a site that is not maintained under cultivation or other agricultural management" (AMS, 2002: 365). Some examples of organic certified products include coffee (various), berries (Finland), *açai* palm hearts (Brazil), and maple syrup (USA), among others.

Organic certification is perhaps the most recognized label among northern consumers. In an indirect tribute to the importance of organic standards, beginning in October 2002 the United States Department of Agriculture (USDA) assumed overarching responsibility for organic certification through its own National Organic Standards (AMS, 2002). Because various *Chamaedorea* species are wild-harvested from natural forest, organic certification would likely be the easiest (although not necessarily the least expensive) to obtain. However, one important factor suggests that organic certification would not improve the comparative advantage of the wild-harvest production system. Organic certification emerged as a certification for agricultural systems and the standards are readily adopted by agroforestry operations. In fact, *La Flor de Catemaco* in Veracruz, Mexico already advertises their intensively cultivated palms as organic on the company's web page. As is the case with sustainable management and fair trade, an organic label would not likely be able to confer a comparative advantage on the wild-harvest production system.

Towards a new "Working Forests" certification

Homma's model of extractive production system dynamics highlights the tenuous role of NTFP in the forest household livelihood systems; foreshadowing the eventual loss of extraction-based income resulting from shifting comparative advantage. Certification is often suggested as a means to protect environmental commodities from unsustainable exploitation or to obtain a higher price for disadvantaged producers. Certification of *Chamaedorea* is presently being considered as a strategy for accomplishing both of these objectives in several contexts (e.g. Maya Biosphere Reserve, El Cielo Biosphere Reserve). The use of certification to achieve these ends, however, merely treats symptoms of a larger problem. Over-harvesting and low prices are by-products of production system dynamics. In the long run, neither sustainability standards nor price premiums will be of much importance should demand for extracted forest products decline precipitously in response to increased offerings from plantations. Those of us considering the appropriate role for NTFP certification as a component of an integrated conservation and development strategy would do better to ask, how can certification help to ensure that *NTFP extraction remains an ecologically sustainable and economically viable source of income in the forest we are trying to conserve?*

The adoption of existing certification options may mitigate overharvesting or facilitate price premiums for particular producers, but they are unlikely to prevent the outward migration of NTFP production from the forest. This is true for the simple reason that certification standards were not designed to keep production in a particular place. Instead, each program has been designed to capture the value of a single production process, be it sustainable management, social justice, or organic

production. Forest conservation and livelihood improvement, in contrast, are site-specific. Having considered the dynamics of extractive production systems, the certification options presently available, and recognizing the site-specificity of conservation and development, we conclude that a new type of certification is required for NTFP that are components of integrated conservation and development programs. This new certification, which we are terming "Working Forest Certification", must capture the value of integrated conservation and development efforts, while at the same time recognizing the value of keeping production in a particular place. We envision three components of Working Forest Certification necessary to achieve sustained, integrated conservation and development benefits from NTFP.

First, Working Forest Certification will guarantee that forest products were harvested by individuals or groups living within the forest or by those directly responsible for the stewardship of the forest resources. Integrated conservation and development represents a partnership between those who wish to conserve forest ecosystems and those who wish to benefit from forest resources. Sometimes these objectives are synergistic (win-win) and lead naturally to conservation and development (Wunder, 2001). More often, trade-offs are required. Using certification to ensure that those who act as stewards of the resource are the ones who benefit from its products is a logical extension to ongoing integrated conservation and development strategies.

Second, Working Forest Certification will guarantee that forest product management and extraction is sustainable, and not detrimental to forest structure and ecological integrity. Michon and de Foresta (1998) discuss "domestication" of ecosystems as an alternative to the domestication and intensified cultivation of individual forest products. Over the long-term, managed natural populations and enrichment plantings may serve forest conservation objectives while facilitating commercialization of NTFP. Certification should play a role in highlighting the conservation and livelihood value of these lesser yielding, but also less intensive management options.

Third, Working Forest Certification will guarantee that products originate from forests that are classified as working forests, or another integrated conservation and development classification. Breaking from Homma's model requires that comparative advantage be conferred upon extractive production systems, even if they only represent a small fraction of total production. Using certification to help ensure a comparative advantage for sustainably-managed extractive systems by promoting markets for sustainably managed resources from working forests makes sense, and has the potential to yield additional synergies.

Box 3. Suggested general criteria for Working Forest Certification

1a. Harvesters live within or are proximal to forests of conservation significance and/or;

1b. Harvesters are formally / contractually responsible for forest stewardship.

2. Harvest sustainability must be demonstrated and certified harvest must be restricted to naturally occurring and/or enriched populations.

3. Harvest occurs within demarcated areas that are formal components of a broader integrated conservation and development strategy.

Demand already exists for "environmentally-friendly, socially-just" *Chamaedorea* palms (Current et al. 2003; CEC 2005, 2006): palms for which the price premium paid by consumers promotes forest conservation and rural livelihoods. Although sustainable management, fair trade, and organic certifications seem unlikely to be able to connect the value of production processes with the value of place-based conservation, they have played an important role in "removing the veil" (Hudson and Hudson 2003) to bring production and management processes into product valuation, at least amongst certain consumers. Following the model of product quality standards, these programs represent a second generation of third-party certification. The emergence of a Working Forest certification may signify the beginning of a third generation of certifications; one able to capture the value of a multiple-objective production environment such as integrated conservation-development initiatives.

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