Uses of *Vara Casha* – a Neotropical Liana Palm, *Desmoncus polyacanthos* – in Iquitos, Peru

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1. Tangle of *vara casha*, near Iquitos, Peru ready for extraction.

Desmoncus polyacanthos **or** ***vara casha*** **(Fig. 1) is commonly used for weaving baskets and seats in Iquitos in Amazonian Peru. Furniture with vara casha weaving is found all over the town, in restaurants and public buildings and in private homes. The abundance of artisans that harvest vara casha from wild stands and weave products from them is a testimony to the local importance of this climbing palm, but paradoxically only few vara casha products are available at the town markets and in commercial centers.**

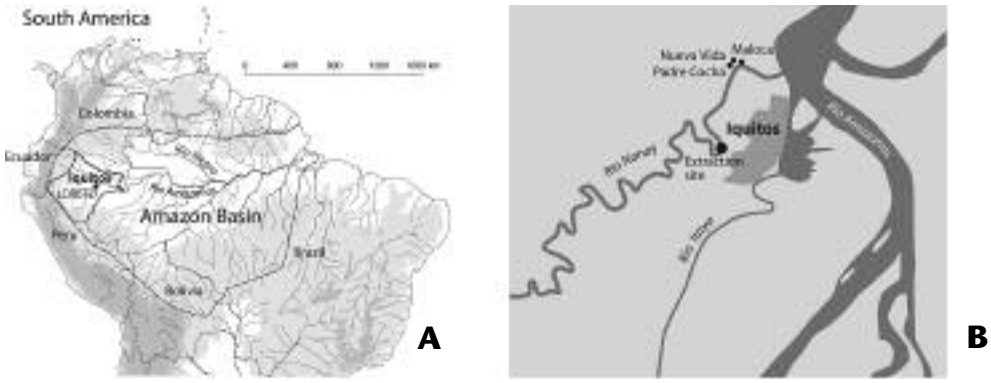
Desmoncus, the only American palm genus with the liana life form, occurs from Mexico to Brazil and Bolivia and is quite common in many parts of that area (Henderson et al. 1995). The genus is recognized by its long, slender stems with equidistant and distichous leaves along the upper part and the spiny, closed leaf sheaths that form a several layered tube around the climbing stem. The sheath terminates in an ocrea that forms a tubular extension above the insertion of the petiole. The blades are pinnate and extended into a cirrus in which the leaflets are reduced to rigid hooks that point towards the base of the blade. The cirrus hooks attach the palm to the surrounding vegetation and permit it to reach 20–30 m up into the canopy. *Desmoncus polyacanthos* is most easily distinguished from the widespread species *D. orthacanthos* by its spines. The spines on the petiole and rachis are strongly recurved and short (to 0.5 cm) in *D. polyacanthos*, whereas they are more or less straight and long (to 5.5 cm) in *Desmoncus orthacanthos* (Henderson 1995). Although 90 "species" have been described in *Desmoncus*, many of the names deserve synonymy status only and the genus may have as few as seven morphologically recognizable species (Henderson 1995). Tremendous morphological variation within the taxa, depending on age and habitat, has confused their circumscription (Wessels Boer 1965) and consequently, the present taxonomic resolution of the genus remains uncertain (Henderson et al. 1995).

Desmoncus may be seen as the American equivalent of the Old World liana palms, the rattans (subfamily Calamoideae in part; Henderson et al. 1995), and the two groups share features of both ecology and uses. *Desmoncus,* however, has never had any noteworthy economic importance outside regional markets (Balslev & Barfod 1987, Henderson & Chávez 1993). *Desmoncus* stems have many of the same physical properties that rattans have, with great tensile strength as the most remarkable one, but the stems are not particularly resistant when bent (Isnard et al. 2005).

The first reports of *Desmoncus* uses were from upper Rio Negro, in the northern part of the Amazon basin, where A.R. Wallace (1853) described how indigenous tribes used plaited cylinders made from its "rind" or "bark" for processing *farinha*, a flour made from the root tubers of the manioc plant – *Manihot esculenta*. Other uses, reported from most corners of its area, include a wide range of local products such as traps, hats, baskets and furniture (Schultes 1940, Pinheiro & Balick 1987, Gentry 1988, Henderson & Chávez 1993, Belsky & Siebert 1997). Although *Desmoncus* species are commonly used, these economic aspects of its biology are only scantily documented (Henderson & Chávez 1993).

Iquitos, the capital of the province of Loreto in the middle of the Peruvian Amazon rain forest (Fig. 1), has about 350,000 inhabitants and is only accessible by aeroplane or boat. For the last thirty years, Iquitos has had an economic boom due to its strategic position for providing supplies to the extensive oil explorations in the Peruvian Amazon. Despite, or maybe because of its economic growth the social stratification of its population is immense. The poor are always on the lookout for any kind of work that can contribute to their modest household incomes. The many cottage industries in Iquitos are a sign of how the poorer inhabitants use locally available natural products to make a living. It was a short note in *Principes* by Henderson and Chávez (1993), mentioning the *vara casha*

2. Map of our study area (B) in and around Iquitos in Amazonian Peru and its location on the continent (A).



cottage industry in Iquitos, that made us curious about this Non Timber Forest Product (NTFP). From that note it was obvious that many questions were still unanswered and much remained to be learnt. Consequently we decided to conduct a more detailed study based on interviews with extractors, weavers, re-sellers and consumers. In this way we hoped to document the craftsmanship and the uses of *vara casha* in more detail, and to gain some insight into its economic importance in the Iquitos area. Although we were told of many uses of *vara casha* for such items as bed-heads, wardrobes, room separators, indoor windows, bakery grates, small carpets and counters, we here report only on the use of stems and skeins for baskets and furniture production.

Fieldwork

We conducted two series of interviews in Iquitos in July of 2005. The first series included 25 artisans who practiced *vara casha* extraction or weaving, or sold furniture to consumers. The second series of interviews involved 102 consumers or potential consumers. These interviews were done by knocking on the doors of 52 houses along two streets in a poor neighborhood, 25 houses along one street in a middle class neighborhood, and finally 25 houses along one street in a wealthy neighborhood of Iquitos. The interviews were structured and we used pre-printed questionnaires. The artisans were asked about methods and amounts of harvest, types of products made from *vara casha*, manufacturing techniques, tools used, prices and income from selling the products. The consumers were asked about their knowledge of *vara casha* and their preferences for using that product compared to alternative products. In addition to making the interviews we accompanied one extractor on a collecting trip to make direct observations and ask additional questions that were not covered by the prepared questionnaires. We also made direct observations of the weaving of the various products and of the use of the products in the consumers' homes. All price equivalents between the local currency Soles and US dollars given below correspond to the exchange rate in July 2005, when the field work was carried out.

Extraction of *vara casha* stems from the wild

People who extracted *vara casha* were easy to find in Iquitos. After the first informant was located, the word spread and almost every informant could lead us to a new one. *Vara casha* stems were extracted either for use in the extractor's own cottage industry or they were sold as stems or skeins to people who used them for weaving. All extractors we encountered lived in Iquitos and no weaver could tell about suppliers of stems from out of town in spite of previous reports that stems were collected by country people and brought to town (Henderson & Chávez 1993).

Extraction of stems of *vara casha* was done in the flood plain rain forest around Iquitos within a distance of one half to several hours of paddling in a canoe from the town. *Vara casha* clones were abundant on the riverbanks in both open and closed forest. The visited extraction site was on the bank of Río Nanay, a tributary of the Amazon River with its mouth on the eastern outskirts of Iquitos (Fig. 2). At this site, in the vicinity of Iquitos, clones of *Desmoncus* grew within a few steps from each other, and on the same trip other suitable places for extraction were identified. One large-scale supplier told us that he extracted *Desmoncus* near Río Itaya, another tributary running into the Amazon River within the city limits of Iquitos. The extractors all said that it was easy to find the plants in the forest, even though some suggested that they had to travel farther now than ten years ago to get to the sites. Most extractors had certain favorite sites where the palm was particularly abundant and suitable for extraction, i.e. where it had long slender stems with a diameter up to 10 mm after removal of leaf sheathes.

The practice of extraction appeared sustainable. All mature (usable) stems of a clone were cut down, and the juvenile stems were left behind for later extraction. A few of the extractors we interviewed cut all stems in the clone and then picked the suitable ones, leaving others behind, but this way of semi-destructive extraction method did not appear to be a common practice. The stems were cut with machetes and leaf sheaths were immediately removed with the bare hands (Fig. 3). Clones were not cultivated or tended in any way, and stems were extracted exclusively from the wild. Tending would indeed be fruitless, require a lot of work, and it would take many years before extraction would be possible. The land tenure system in the area does not promote such practices because the land is not owned by the extractor and he cannot protect the clones, which would therefore be accessible to anyone passing by. Two extractors did however spread seeds to increase the abundance of clones. This requires

3–5. *Vara casha* (*Desmoncus polyacanthos*) extraction near Iquitos, Peru. 3. Extraction of *Desmoncus* stems at a river bank reached after 30 minutes of paddling from Iquitos. 4. Bundle of fresh stems coiled up one by one, ready for preparation. 5. Bundle of skeins, each weighing 500 grams, ready for selling.

little effort because the seeds are often a by-product of the extraction. A single harvest incident usually yielded 10–25 kg of fresh stems (Fig. 4). After cutting, stems had to be processed within a few days although one of the most important extractors said that the stems could be processed as much as one week after harvesting. The previous reports were that the stems should be processed within two days (Henderson & Chávez 1993). If left for too long without processing the stems would dry up and become rigid and useless.

Three of the 10 extractors interviewed harvested stems every week, some of them 2 or 3 times a week. Four of them extracted every month, and the three remaining extracted on intervals of more than one month. The fact that the palm can be extracted close to Iquitos is crucial both to the necessity for fast preparation of the skeins and to the ease of getting stems. Anyone with access to a canoe and a machete, which both appear to be common goods in Iquitos, can extract *vara casha* stems from the wild. Although informants from Iquitos now and then had to paddle for hours to reach their extraction sites, people we interviewed in Padre Cocha, Maloca and Nueva Vida, three villages located about one hour of paddling from Iquitos, did not harvest *vara casha* stems regularly or deliver products of it to the town, even if one of the informants was closely related to a weaver in Iquitos and had clones growing at her doorstep. At first this seemed peculiar, but informants from these villages were all occupied with other activities, such as production of clay pots and trinkets and performing indigenous dance shows to visiting tourists and possibly they found these activities more attractive than handling the hostile *Desmoncus* stems with the great many spines and hooks. In the village Nuevo Porvenir on Río Corrientes, 500 km by river W of Iquitos, uses of vara casha were known but not practiced, and nobody knew of anyone using *Desmoncus* stems.

Skeining of the stems

The uses of *Desmoncus* stems reported here were exclusively based on split stems called skeins. Skeins could be either coarse skeins that consisted of half stems with the pith remaining and used for baskets, or fine skeins with the pith removed and used for seats and other finer weaving. The properties and manufacturing of the coarse and fine skeins were distinctively different. The coarse skeins were made immediately before making the basket in order to retain flexibility. Leaving the pith in these coarse skeins made them curl longitudinally but this was seen as an asset because it supposedly gave strength to the baskets. The waste when skeining for basketry was very limited, because stems with major defects had been rejected at the time of harvest. Skeining for finer weaving was done by splitting stems longitudinally in halves using a knife to initiate the splitting (Figs. 6, 10). Each half stem was then split in two and a part of the pith was subsequently removed using a knife. This is slightly different from the previous report that the pith was removed after the stems were split in half (Henderson & Chávez 1993); removing the pith from a stem split in half would require more work and a rounded instrument, and we did not observe such instruments. Each quarter-stem was once again split into halves and the rest of the pith was removed, and the frayed edges

were trimmed thus providing eight skeins per stem. By removing the vast part of the pith, breaking and longitudinal bending of the fine skeins was avoided. This was necessary to produce durable skeins for fine weaving. The fine skeins with the pith removed were bundled in coils of roughly 500 g each, ready for use or sale (Fig. 5). These skeins could have a length of up to eight meters each, with an estimated average length of 5.6 m which agrees well with the previous report that stems were cut into six meters long sections (Henderson & Chávez 1993) although we did not see that the artisans aimed at any particular length of the skeins. These skeins could dry up without damage or lowering the quality. If skeins eventually became too dry for weaving, they could be soaked in a bowl of water prior to use. The price per kg skeins was 30 Soles (=US$ 9.3). Estimates of waste per cent of skeining for weaving were very scattered, but up to 90–95 pct. were mentioned which agrees with the previous report that 10 kg of raw stems are needed to produce 1 kg of "prepared strips" (= skeins in our terminology)(Henderson & Chávez 1993).

Weaving and basket making

The actual weaving and basket making were all done in cottage industries, in private homes, back yards, garages, etc. The previous report by Henderson and Chávez (1993) used the terms "factories" and "workshops" for the *vara casha* production places, but in our experience none of the production places was especially erected for this purpose, so we here use the term "cottage industries" to imply that the production was done in the houses of people and not in any special buildings or rooms. As for the extractors it was quite easy to locate these cottage industries in Iquitos, and again one producer interviewed could easily lead us to the next. The most common *vara casha* products in Iquitos were seats and backs for dining-room chairs, but seats and backs for whole living-room suites with armchairs, rocking chairs and sofas were also common (Fig. 9). Among the consumers in Iquitos, *vara casha* was the over all preferred natural product for weaving furniture (Table 1) due to its comfort, elegance and durability.

By the time of weaving, stems were further selected by color, with white shades being the preferred quality. The weaving was done on a wooden frame with holes through which skeins were pulled in a certain pattern involving six layers of which four were perpendicular to the frame and two were diagonal. We found only this one weaving pattern, which was used by all 16 weavers visited (Fig. 14). This pattern is identical to the one shown in the previous report (Fig. 3 in Henderson & Chávez 1993), and this appears to be the same pattern as the one used in the manufacturing of rattan chairs. The wooden frame with holes bored all through permitted the weaver to use the full length skein without cutting (Fig. 8). The end of the skein was fastened by tying a knot on the back of the frame. Another method for weaving the seats was to bore holes half way through the frame, and then cutting the skeins in suitable length so both ends of the skein could be attached in the appropriate hole with glue (Fig. 7). This method seemed to be more difficult and time consuming, but resulted in a more elegant chair. This tedious gluing method we observed only once.

Rough skeins made by halving stems were used for all sizes of baskets, from bread baskets to large baskets with handles, lid and bases. The price of breadbaskets were 4 Soles (=US$1.2) and the large baskets cost 10 Soles (=US$3.1). Time consumed producing a 55 cm high basket was about two hours and it consumed 15–20 stems each of five meters length (Fig. 11). Baskets made from *vara casha* were not common, even though they were considered to be very durable, but the trouble of procuring the stems seemed to counterbalance the advantages. Although *vara casha* was used for basketry, other materials such as *huambé* (*Philodendron* sp., Araceae) and *tamshi* (*Heteropsis* sp., Araceae) were preferred for such products because they were cheaper and easier to obtain.

The weavers we interviewed were 22–80 years old, suggesting that weaving is a work suitable for a wide age range. Actually, the youngest person that we heard of who had taken part in the *vara casha* trade was five years old. This agrees well with the general cottage industry concept, which is a concept in which all members of a family participate in the production, whenever there is spare time from other duties. It also agreed with the cottage industry principle, that the trade was mainly learned from family and friends. The time it took to weave a seat was said to be from one hour to a whole day. The price of the woven piece depended on its final size. Typically the price of a chair seat was 20 Soles (= US$6.2). The amount of skeins needed for a chair seat was calculated to be ca. 85 grams and to this

6–11. Manufacturing and some products of *vara casha* (*Desmoncus polyacanthos*) in Iquitos, Peru. 6. Splitting of fresh stem. 7. Chair seat with each cross skein cut to measure and fastened by glue. 8. A weaver, 75 years old. 9. Armchair with seat woven of *vara casha*; part of a 25–30 years old living room suite. 10. Splitting of stem into halves. 11. A weaver using half stem skeins with pith to produce a basket; a labor of about two hours.

should be added an estimated waste during weaving which is 30 percent. In all about 110 grams of skeins, which have a cost of 3.3 Soles (approx. US$ 1) is needed to weave a chair seat. The wooden frame was usually supplied by the customer. Two weavers sold products from a market stand, and one from a shop. The remaining weavers all sold their products from their home. Only one weaver sold his products to a shop, but he also sold from his home. Some weavers mixed *vara casha* with synthetic materials in their weaving. One weaver showed an interest in improving the assortment of furniture. He could show a large collection of books and press cuttings with pictures of woven furniture in many designs.

Tools

As far as the tools used in *vara casha* weaving are concerned (Fig. 12–17), it appears that only a few simple tools are needed, and most of them can easily be made by the weaver and they are therefore cheap and easy to obtain. A machete was used for extracting. The basket makers tools consisted of a hand knife used for cleaving the stems and a large wooden bodkin used to make gaps in the weave when adding rods. A hand knife was needed for skeining and the same instrument was used both for cleaving, removing the pith and for trimming the edges. The knives were ordinary hand knives or a piece of ground hacksaw blade in which one extreme was covered with a piece of cloth to serve as a handle. Weavers also used a small wedge, made from a piece of hardwood, to keep the skeins from slipping back when weaving. A steel awl was used to widen the holes in the frame, when skeins took up more and more space in the holes as the work proceeded. One extractor, supplying several weavers with skeins, had improved his tools and reduced his working effort

12–17. Tools used in the manufacture of *Desmoncus polyacanthos* (*vara casha*) products in Iquitos, Peru. 12. Knives made from hacksaw blades, awls and a wooden wedge. 13. Stand with tools for planning backside and edges of skeins; some unbundled skeins are seen behind the stand. 14. The prevalent vara casha weaving pattern for chair seats. 15. Stand for splitting half stems into quarter stems. The stand is made of a few pieces of wood, a broken hand knife blade and two nails as guides. 16. Two knives made of hack saw blades positioned in a certain angle, with two nails as guides; used for trimming edges of skeins (detail of 13). 17. Reversed spoke shave used for removing pith of the skeins (detail of 13).

considerably. He had made two stands that he could use after the preliminary halving of stems. One stand was used for skeining half stems into quarter stems (Fig. 15), and the other was used for making smooth the backside and edges of the skeins (Figs. 13, 16, 17). The basic production materials for the stands were wood, ground hacksaw blades, nails and for the plane stand also a spoke shave with straight bottom.

The chain of *vara casha* artisans

The *vara casha* products are sold either by the weavers themselves or by carpenters who manufacture furniture on order. Not surprisingly the number of re-sellers was limited, which agrees with the usual principle of cottage industries, i.e. that the manufacturers sell their products directly to the consumers. Consequently the chain from harvest of *vara casha* in the wild to end user involves at the most four and often only two steps (extractor – weaver – re-seller – end user; or extractor/weaver – end user). None of our informants, regardless of the position in the chain of *vara casha* artisans, knew of any other intermediaries and had never heard of such ones. The step involving re-sellers is uncommon. The only two re-sellers of *vara casha* products that we heard about in our interviews were two carpenters. The furniture dealer shops did not sell *vara casha* products. Typically new chairs were ordered at a carpenter who would either weave the seats and chair backs himself or use a sub-contractor to do the weaving. The social status of the artisans working with *vara casha* was clearly reflected in their position along the chain of *vara casha* artisans. The extractors appeared to be the poorest, and they lived mostly in palm cottages on poles close to the river. Weavers typically lived in brick houses or better quality

palm houses, directly on the ground and further away from the river. The re-seller shops and carpenter workshops were brick houses located at the commercial centers.

The *vara casha* consumers

Almost every one of the 102 people we interviewed in our door-to-door consumer survey knew of *vara casha* products (Table 1) and half of them found that *vara casha* was a superior weaving material. Only one of them preferred *tamshi* (*Heteropsis* sp., Araceae), and two of them found plastic superior. It was more common to have *vara casha* products among the wealthy and middle class consumers than among the poor ones. The average number of furniture owned varied from 0.1 pieces per household in poor neighborhoods to 1.52 per household in wealthy neighborhoods (Table 1). The majority of both the middle class and wealthy consumers clearly preferred this type of furniture over other types (Table 1). Among the poor only a few owned *vara casha* products, but one third of them preferred this type of furniture (Table 1). One of the reasons for preferring *vara casha* furniture was the coolness when used, a reason which makes good sense in the humid and hot environment of Iquitos. Another reason for the popularity was the durability of *vara casha* furniture which may outlast almost any other products, including plastic. Several of the consumers interviewed could tell about 25–30 years old *vara casha* dining room chairs and living room suites, which despite of having patina were not worn to the extent that their usefulness had been reduced (Fig. 9). Fifteen percent of the consumers interviewed, half of them belonging to the wealthy category, stated that the reason they did not have *vara casha* now, was because they could not find the products at the local markets, and did not know where to purchase them (Table 1). This all points to a considerable local demand for *vara casha* products, even though the previous report which inspired our study suggested the opposite (Henderson & Chávez 1993). It is a paradox that the consumers in one part of Iquitos, who want *vara casha* products and have the economic power to buy the products, cannot find the artisans in the other end of the town who manufacture these products.

Conclusion

It appears that *vara casha* is an important NTFP in Iquitos, and it could be an even more important commodity if some improvements were made in publicity, production and sale. It was peculiar, however, that Iquitos, as a center of jungle ecotourism, could not provide any *vara casha* products for tourists. A NTFP jungle product like this would undoubtedly fit the taste of many a tourist. In addition almost two thirds of the wealthy social group of local Iquitos inhabitants preferred *vara casha* furniture over furniture made from other products, but nearly one half of these potential costumers did not know where to buy the products. In this perspective, manufacturing of *vara casha* products could be one of many possible ways to increase poor peoples' income considerably. Like the abundant shops in the center of Iquitos that sell wooden souvenirs, a shop selling *vara casha* basketry and weavings, might thrive serving both locals and tourists. A shop, located at the commercial centers, could be the link connecting artisans and local consumers in town and with some

Table 1. Consumer preferences and ownership of *vara casha* (*Desmoncus polyacanthos*) furniture distributed among social classes in Iquitos, Peru.

Social class	Lower	Middle	Upper	Total
Number of informants	52	25	25	102
Percentage knowing *vara casha*	96	100	100	98
Percentage preferring *vara casha* furniture	35	72	64	51
Percentage not knowing where to buy *vara casha* furniture	13	4	28	15
Percentage owning *vara casha* furniture	4	20	44	18
Average number of *vara casha* furniture owned per household	0.1	0.96	1.52	0.66

product development the range of goods could be widened with even more tourist friendly (i.e., light and small) products. The shop could be a working shop with the artisans serving costumers – locals and tourists – with a quality product.

Extraction of NTFP's, sometimes referred to as Non-Wood Forest Product, (Sastry 2002), has often been suggested as an important alternative to logging (Salick *et al*. 1995, Logback *et al*. 2002, Balmford *et al*. 2002, Sheil & Wunder 2002). With almost 40% the Peruvians living below the $2 poverty line (Watkins 2005) very simple development projects could enhance the manufacturing of *vara casha* products. Production of just one single chair seat a day could raise a persons income from zero to above the $2 poverty line. The raw materials can apparently be extracted in a sustainable manner from the wild, and the needed tools are cheap and can be made by the manufacturer himself.

This makes research on *vara casha* particularly interesting, because it is an easily obtainable, and sustainable NTFP with abundant natural stands. These stands are available to many local artisans who can use it for manufacturing a product with a seemingly unsaturated regional market. It is therefore an alternative way of earning an income to the household without felling any timber.

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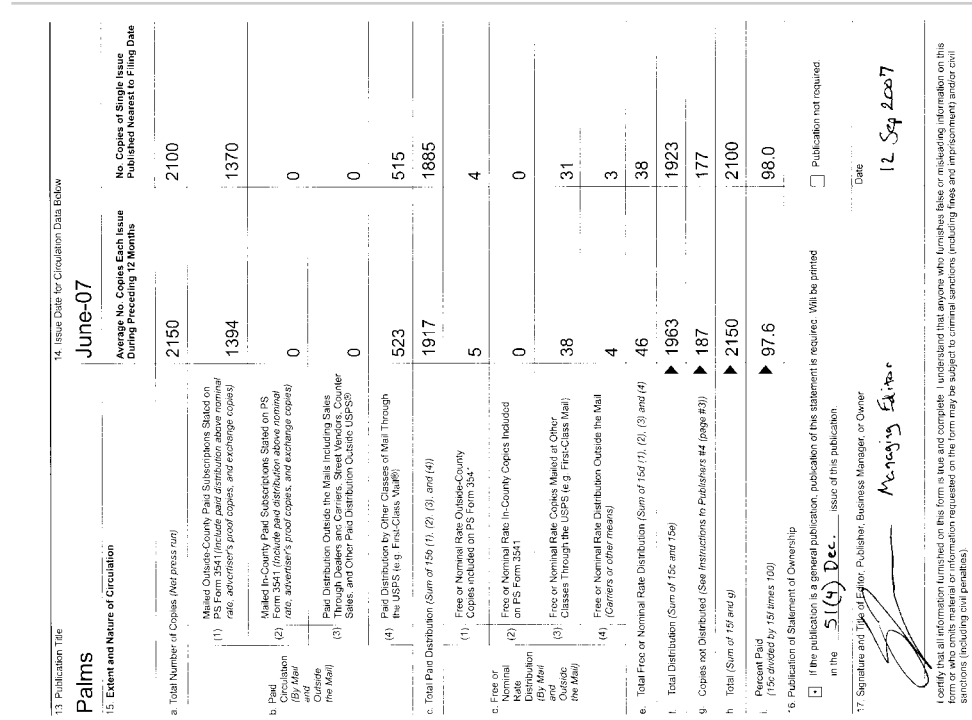

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Publisher (Name and complete mailing address): International Palm Society, P. O. Box 1897, 810 East 10th St., Lawrence, KS 66044-1897
Editor (Name and complete mailing address): John Dransfield, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, United Kingdom
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13. Publication Title: Palms
14. Issue Date for Circulation Data Below: June-07

15. Extent and Nature of Circulation	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total Number of Copies (Net press run)	2150	2100
b. Paid Circulation (By Mail and Outside the Mail) (1) Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	1394	1370
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e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3) and (4)	46	38
f. Total Distribution (Sum of 15c and 15e)	▶ 1963	1923
g. Copies not Distributed (See Instructions to Publishers #4 (page #3))	▶ 187	177
h. Total (Sum of 15f and g)	▶ 2150	2100
i. Percent Paid (15c divided by 15f times 100)	▶ 97.6	98.0

16. Publication of Statement of Ownership
☒ If the publication is a general publication, publication of this statement is required. Will be printed in the 51(4) Dec. issue of this publication. ☐ Publication not required.
17. Signature and Title of Editor, Publisher, Business Manager, or Owner: Managing Editor
Date: 12 Sep 2007

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