

bamboo bulletin

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BAMBOO SOCIETY of AUSTRALIA inc.

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See story “Bamboo and Torres Straits Islanders of Northeast Australia.” Page 25. Paintings by Melville 1849.
Above Figure 1 Torres Strait canoe with bamboo outriggers and platform being prepared for a voyage. The third man from the right is loading a bamboo water container while another man standing on the vessel holds a bamboo bow. Note also the split bamboo fishing scoop basket, (lower left), and the bamboo reef pole beacons, (far right).
Below Figure 4 Torres Strait Islander village on Erub Island, 1840’s. Note bamboo windbreaks on sea side of huts.



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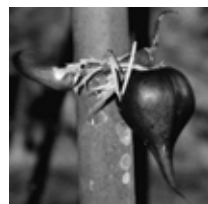


Cover photo by John Kovar of his surf shop in Batemans Bay, NSW. The bamboo is *Bambusa oldhamii*. See story in the President's Column. More photos on the back cover.

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Seed of *Melocanna baccifera*. Story page 20.

PLEASE NOTE: This "Bamboo Bulletin" contains the views of many authors, and the Bamboo Society of Australia Incorporated is not responsible for the accuracy of such material, nor do the opinions expressed necessarily represent those of the BSA Board. We welcome the submission of articles.

President's Column by Hans Erken

I am happy to report that Janne Nilsson has picked up the web jockey baton and put together the start of our Joomla based website. The new web address is **www.bamboo.org.au/community** and if you go to our old home page you will be automatically redirected to the new site. We have a forum there now where members can interact, make announcements, ask questions etc. In time the site will develop and an image gallery and other modules will be added. There are bound to be some teething problems and we all need to learn how to use it but it's not hard. If you have any problems just ask Janne or me and one of us will happily help you out.

This is not news to those of you with valid email addresses but I got about a dozen bounced emails from addresses that are no longer valid from recent emails I sent to members. Please! let us know when your email address changes or better still keep your profile information up to date on the website. As more of you register on the website it will become easier to track down members in your area. The member profiles are only able to be seen by registered members who are logged-in to the site. I encourage you to fill in the profile information correctly because we will try to figure out how to extract this and import it into our regular database to update it. This means you are responsible for maintaining your own record. If you notice you're not getting any news or Bulletins from us then you can just go to the site and make sure your contact information is correct and all will be well. Too easy!

On the home front: after 5 years at our new abode in Maleny our bamboos are revealing which ones like the climate and which don't. It turns out a few of the tropicals are finding it a bit cool. We are at 440m above sea level and although we get only occasional light frosts, winter days are often cold and we suffer periods of strong cold winds. I don't like to see plants not prospering so I plan to remove the species not doing well. They include: *Cephalostachyum pergracile*, *SCHIZOSTACHYUM Brachycladum*, *SCHIZOSTACHYUM Glaucifolium*, *SCHIZOSTACHYUM Zollingeri* and *Bambusa vulgaris* Wamin. Now Wamin handles the cold easily enough but the reason I add it to the list is that in these cool conditions the internodes don't ventricosa very much. That is, they don't swell and flatten as we want them to and the plant ends up much taller. Over the years I have had various theories of what effects the degree of ventricosity, what a word, you know, bellying. Recently I thought it was down to water, more water at shooting time, shorter fatter internodes. This summer I visited Australia Zoo where they have planted some Wamin

in the tiger enclosure right up against a fake stone concrete wall. The clumps have the nicest form of any I have seen anywhere on the east coast. The penny dropped, it must be due to the heat radiated from the wall. Unfortunately our mountain home is just too cool.

At the end of last year we got an interesting order to supply bamboo to fit out a surf shop. John 'Einstein' Kovar, surfboard maker in Bateman's Bay, contacted me wanting 500+ x 2.5m poles. He had setup a couple of surf shops before filling them up with bamboo frames and said it was great for business but he had had problems with borers and the bamboo splitting on him. It was a relatively big order for us and I was keen to get right and supply bamboo that would last a reasonable amount of time. We ended up supplying oldhami bamboo which we clump cured by cutting the poles and leaning them into the clump for some days with all their leaves & branches in tact then coming back days later and trimming the poles to size and preparing bundles to load on the truck. Unfortunately with Xmas looming there was not as much time as I would have liked to leave the culms curing and they only had 4 days. I would have liked them to sit for at least 7. Anyway, the job is done now and it looks great. I have included photos of the operation and finished product. If you are ever in Bateman's Bay, call in to John's shop and check out the boo. He is next door to Harvey Norman. See photos on front and back covers.

Editorial & NT News by Geoff Kyle

It seems that there has been at least temporary relief from the drought experienced in the southern parts of Australia. News of the much-welcome *La Nina*-influenced rains is reaching the tropical far north and is being greeted with "Ho-hums". Despite dire predictions about global climate change, Top End locals are accustomed to mobs of water and flooding, and marvel at all the fuss over a few inches a rain.

Here in the arid tropics, (~S12), the few small holdings where bamboo is farmed are in the middle of the usual four to five months of the wet season, which invariably delivers around 2 metres of rain to the region, makes maintenance difficult, promotes mould on boots, and discourages life outdoors.

We have also had our first cyclone for this season. Cyclone Helen blew in from the western oceans and provided mobs of pelting rain driven by 150-odd km winds. As cyclones go, Category 2 Helen was not a big one, but it managed to cause considerable damage to crops.

BSA members Dave and Sue Mullavey's young and vibrant crop of *D. Brandsii* was badly affected. Dave

reports on damage to Anembo Park elsewhere in this Bulletin.

Sue and Eddy Kendal sustained only minor damage to their Sri Pratchin Aspers, and John Cooke reports no damage at all to his Sri Pratchin Asper plantation at Lambell's Lagoon. The superb grove of *B. vulgaris* Vitatta at John's place that featured in a previous Bulletin story was also undamaged. Larry Toohey's N.T. Bamboo nursery and plantation suffered only minor damage, but Larry's *G. atrovioleacea* – prized because it was the first of the species that he managed to clone - blew over and had to be winched back into its bed.

Here at Badlands Bamboo, we lost a couple of Pai Tong Keo Aspers, a fairly sickly *D. Lima*, and one of my favourite plants, a *Nastus elatus* that, although never completely happy on the side of a small hill in a climate to which it is not well-suited, was once a delight to the eye.

A couple of the native Arnhemicas that we grew from seed allowed the odd culm to yield to the wind, but generally displayed the tight grip on country for which they are infamous – if you have ever tried to dig one out you will understand.



D. asper Pai Tong Keo on its side at Badlands Bamboo after Cyclone Helen.

The embryonic bamboo industry in the Northern Territory has taken a big step backwards with the closure of largest commercial bamboo operation, and the only bamboo farm that exported its shoots to southern markets. Phil Vivian and Lee Berryman have sold PAL enterprises and retired. PAL once featured thousands of *D. Latiflorus* and *D. Brandsii*, a large planting of *B. Arnhemica*, and trial plantings of a number of other potential shoot species. Apparently, returns from the shoots only occasionally exceeded the costs of labour, production, transport and marketing, and PAL survived for some time on its large scale and associated mango operation.

The remaining bamboo farms in the Territory are small operations that market their shoots directly to

Darwin restaurants and suburban vegetable markets, occasionally sell culms into the local craft market, and receive their best returns from the wholesale nursery trade in potted ornamentals. It seems that the future of the bamboo industry in the Top End will remain on hold until such time as the local market increases in size, or someone builds a laminated board factory in Darwin. Talk overseas of using bamboo as a feedstock for the production of biofuels is interesting, and could provide a market for Territory bamboo. However, bamboo has disadvantages compared to other plants – it contains too much cellulose and not enough starch – and the local biofuel plant is presently feeding its boilers with imported palm oil.

This edition of the Bulletin features a report from Ian McNiven on the bamboos of the Torres Strait Islands. The illustrations accompanying this story are truly wonderful. Also featured is a travelogue of Don Franklin's trip to Indochina, where he found time to indulge his interest in bamboo. Don's images of bamboos growing along the Mekong River are superb. The Editor travelled on the Mekong and in that general region in the early 1970s, but as it was the 70s, he doesn't remember seeing any particular bamboos.

The Tucker Department focusses on so-called "bamboo pith". The pith is actually a mushroom that apparently grows around bamboo, and is a culinary delicacy in China. There is an mushroom of the same genus and general appearance in tropical Australia, and, while it is depicted in the Editor's garden, it was not taste-tested.

Members and readers are reminded that the Editor is always happy to receive contributions to the Bamboo Bulletin.



Subscriptions Were Due 01 January 2008

To ensure that you receive the full compliment of the BSA information, please make sure that your subs are paid early.

If you wish to pay by Direct Bank Deposit, please **make sure that you put your name** in the Reference box for us to know where the money comes from. Otherwise no Bamboo Bulletin.

The BSA bank details are;

BSB 014-557 Account number 3517-85823

We still accept cheques, money orders and cash.

If you have changed any contact details, then please use the form, and print details clearly.

Send to; **Treasurer, PO Box 2, Eudlo, QLD 4554.**

May 2008

BONZA BAMBOO FIELD DAY
Northern NSW
28th June Starting at 10.30 am

For those of you who were at our last field day a couple of years ago will notice the changes the freeway has made to the access at Billinudgel, you now come in through the industrial estate a little south of the village. In 2005 we had two delightful students from Nürtingen University in Southern Germany stay and work with us for 5 months on a number of bamboo related projects, the girls Tabea Schmid and Julia Balko are with us again. Tabea has chosen a bamboo project for her final thesis at University and is working very hard at it so she has something to show you in June and Julia is here on a months holiday before she has to return home and start her final thesis for uni. Tabea's project is interesting, a small bamboo structure built half in and half out of a sizeable clump of small leaf D. Lat, in it's early stages at the moment it should be well along in a couple of months time. Our plantation is still untouched since 2002, not for want of trying but we have like you all many other distractions. This past season has induced a number of the supposed small leaf D. Lats. to flower, the past flowerings of this variety produced not seed (as the Large leaf D. Lat. did) these 5 or 6 clumps might be different? A few months will tell I guess. Our Asian inspired cabin moves along, slowly, that might be of interest to some. A light lunch is available on the day, \$5, and tea, coffee, cake etc will be provided. **Please phone/email for numbers/directions.**

Ph. 02 66 845354 or email; norval@lis.net.au

See you there.

Carolyn Bailey & Lance Seadon

NORVAL

521 The Pocket Rd

Billinudgel 2483

NSW

Phone: 02 66845354

Email: norval@lis.net.au

DIRECTIONS

If you are coming from the North along the freeway, exit at Billinudgel/Ocean Shores/New Brighton which will take you onto the old Pacific Hwy. Turn right into Billinudgel under the bridge (signed) through the Industrial estate and turn left at the T'intersection into Billinudgel or if you are coming from the South along the freeway just turn left into Billinudgel straight off the freeway.

Go through Billinudgel-approximately 500 metres to a T'intersection and turn right at The Pocket Rd. We

are 5.21 km from Billinudgel on the left hand side of the road just before The Pocket Primary School.

Look out for the school zone speed sign and we are the first driveway on the left.

You will see a white post and rail fence with 521 on it and a dark varnished timber letterbox with a sloping corrugated iron roof. There is also a sign on the fence "Pocket Place".

There is a clump of *Bambusa Vulgaris* Wamin (4 metres tall) on either side of the entrance.

This is a dirt Rd which services 3 properties. Please drive SLOWLY and look out for the cattle.

Continue along this track for approximately 2/3 km past the cattle dip. Take the left hand fork. We have another NORVAL sign at the entrance; a cattle grid and a bitumen driveway. Drive up and park at the top of the turning circle.

See you there!!!

BSA Meeting - WA Chapter, held at 26 Mathieson Rd, Ascot, on October 27th, 2007

In Attendance: Andrew & Annette Holmes, Paul & Helen Sachse, Fred & Marlene Oosttryck, Dave & Kelly Parnham, Kevin & Jeep Fitzpatrick, John Elkington, Ned Skroza, Peter Jones, John & Irene Clarke, Greg Morrison, Myles Yates, Conny Morgan & partner, and Rupert & Beatrice Tyer.



Members of the WA Branch.

Items Discussed:

Zoo Meeting:

The meeting at the zoo was considered to be a success by all who attended. The information provided by Kathie Mauger was fascinating as was the opportunity to see the Red Panda's close up. The zoo uses bamboo extensively to screen fences, especially around the elephant enclosure. The auction raised \$517 and we donated \$100 to the zoo as they did not charge us for our entry or our tour. Our host, Kathie, informed me beforehand that the reason the zoo was happy to host us was due to the generous nature of Ned Skroza who donates bamboo cuttings

to the zoo to feed the Red Panda and provided plants to the zoo as very reasonable prices. A big thank you to Ned! The zoo has a lot of new bamboo plantings which are 2-3 years old so it is proposed that we have another meeting at the zoo in 2-3 years time to see how they are progressing.

Annual General Meeting:

It was proposed that we send a WA Representative to the BSA AGM in November. We have sent delegates in the past but we haven't sent anyone for 2 years. It was suggested that Ned Skroza go but he declined. It was then suggested that Peter Jones attend and he has accepted. BSA will pay for return flight to nearest city, car hire and accommodation if we cannot find accommodation with a BSA member.

Garden Week:

All who attended our BSA stall at Garden Week in April, 2007 considered the event to have been a great success and very enjoyable. The stall we had was a society stall which meant that there was no entry fee to the show but we were not allowed to sell anything. The only costs were insurance and tent hire which totalled \$250. Items which were especially effective in our display included the Bamboo Fencing provided by Bamboo Living, the bamboo poles display, the "Runners vs Clumpers" display and the large pots of ornamental bamboos.

The sponsors of Garden Week, ABC's Gardening Australia, have changed the date from April to September. There was an expo held in September 2007, but we did not attend so the next event will be in September, 2008. Many of the members are keen to hold a commercial stall with all members being able to contribute plants to sell. It was agreed upon that the BSA-WA would pay for the cost of the stall's entry fee but members would contribute 10% of their sales back to the society to reimburse the costs. This system was considered the fairest way to split costs so that those who only had a small number of plants to sell would be able to enter without losing all their profits to paying for their share of the entry fee. The entry fee for a commercial stall in April, 2007 was approx \$600 for a 3 x 3m stall but is expected to be higher in 2008.

The most asked questions by patrons were, "where do I get black bamboo?", and "what sort of bamboo can I use to screen a fence line in a 60cm garden bed?" So sale of plants catering to those situations would be very successful.

Next Meetings:

The autumn meeting of the BSA-WA will be held at Peter Jones' property in Gin Gin. The proposed date
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is Saturday, April 19th, 2008, (to be confirmed with Peter). This is the middle weekend of the school holidays. The following Saturday is the Balingup Field Day so is not good for a few of our members.

The spring meeting will be held at Bob Gretton's in Denmark in mid-November 2008. The exact date is to be confirmed but will be either the 13th or 20th November.

It was also proposed we have a mini-meeting in late February to visit Rupert Tyers place in Melville. Myles also suggested we could visit his place in Jandakot afterwards. This meeting would just be to visit the properties but would not involve a formal meeting or dinner. The exact date is to be confirmed.

The following year (2009) will likely see us travelling to Geraldton to visit Grant Walsh and his property.

BSA-WA Funds:

At the beginning of the day we had \$1500 in cash. We received \$417 from the auction, (after donating \$100 to the zoo), and book sales of \$455. We currently have \$2200, but will spend approx \$1000 to send Peter Jones to the AGM. It was proposed that we use the BSA funds to purchase plants from the eastern states but this was declined due to the cost of quarantine spraying, large minimum order sizes and reluctance of Eastern states growers to ship interstate. There were no other suggestions for use of BSA-WA funds.

Plant Auctions:

It was proposed that at our next meeting we try a Blind Auction instead of our usual auction format. This would involve people writing down bids during the course of the meeting with the auction winners determined once we reached the cut-off time. Members can provide items other than plants to include in the auction.

Workshops:

Some members requested holding workshops/demonstrations in propagation techniques so new members can learn about these processes. No definite dates are proposed but if the commercial growers in the BSA are interested in holding a workshop at their property they can contact Kelly who will inform all the members. The benefit to the grower is that they can get a lot of free help from attendees to propagate large numbers of bamboos in exchange for teaching their methods. These workshops could also be open to the public in order to promote the society and bamboo. It was also

suggested we hold more public workshops in order to promote the society and encourage new members. One suggested venue is the zoo and that a member give a talk at the zoo once a year for the public.

Email Group:

New members asked about an email forum to discuss bamboo. We do have a BSA-WA Yahoo Group set up so Kelly will email all members not already a part of the group with an invite to join.

Further Issues arising from BSA Meeting:

Peter Jones has since asked if anyone has any issues that he would like to be raised at the AGM in November 24th. Please contact either Peter on 9575 7507 or western.bamboo@yahoo.com.au or Kelly Parnham on 9277 3255 or kellyparnham@yahoo.com.au to discuss.

In order to promote the society further, I propose a member enter their garden into the Open Garden Scheme. The BSA-WA will pay any entry fees and will be able to set up an information table for public to learn about the society. Andrew & Annette Holmes property would be an excellent venue but unfortunately they are not permitted to hold such events by their employer. Would anyone else be interested. We could hold a busy bee with members pitching in to tidy up if needed beforehand.

The next WA BSA meeting will be held at Kooinda Bindi, 164 Quin Rd, Muckenburra on Saturday 19th April 2008.

Launch of the new Bamboo Society Website.

For some time now there has been considerable talk about upgrading the website, well, it has now finally happened (or *happening* rather, as there is still much to be done).

The new website is a much more dynamic site than the old one in that members can 'Log In' and contribute to the site in a manner which was not possible before. The aim is to create an online bamboo community whereby bamboo enthusiasts can discuss and share their experiences, knowledge and questions with everybody else. I know for a fact that bamboo people love talking bamboo to other bamboo people. I'm also sure that we all like to learn new things – and there's no better way of doing this than by sharing information.

Due to these reasons, the site has been set up to include the following features:

- **Forum** – Members can post new topics (open for discussion) relating to bamboo issues, queries or

questions. Of course, you can also share your expertise in replying to other people's topics.

- **User-Submitted Articles** – Members can write articles which will then be published on the website (and viewable by public). This can either be the author's own work or an excerpt or cut-and-paste job from another source – remember, its all about *sharing* information.
- **Events** – Are you holding a market, field day, promotional event, BBQ, meeting, etc? Then advertise it on the website. What / where / when / who – there's room to enter all the relevant details – even photos. Make use of it.
- **Corporate Member Sites** – Corporate members get a listing for their respective businesses under either of the following headings – 'Bamboo Nurseries' or 'Bamboo Products'. These links are available on the home page.
- **Links** – You'll find a multitude of links to bamboo resources all over the world. Also, if you feel there's a good link that isn't listed, then you can easily add it to the online listings yourself (must be logged in to do this).

Member Profiles

Logging in to the site will enable a 'User Menu' which is only visible to logged in members. In the user menu you will find a menu item called 'Profile'. This is where your contact details are maintained. If you change your address, telephone number, email, etc, then don't forget to change it on your profile. The contact details that you supply here is what will be used for any correspondence, including postage of your Bamboo Bulletin.

NOTE: If you're reading this and you are not a computer / internet user – then don't worry, just contact one of the board members notifying them of your changes and your details will be updated for you.

Future Plans

- In order to streamline the process of receiving membership payments and updating the status of members, it is planned that an online payment system be employed which automatically updates the membership status once payment has been processed. It is also hoped that membership numbers will rise by making it easier for new visitors to the site to become members. If it is too complicated or takes too long – people simply won't bother.

As mentioned, the site is still being developed and it is one of those things that take up a lot of time. What will really help is to get as much feedback, ideas and comments as possible such that the site can be fine-tuned to work for everyone.

If you haven't yet visited the site, then I urge you to do so. Create an account and start playing with it. It is the content on the site that will ultimately attract new online members, therefore it's up to current members to do their bit to keep the Bamboo Society alive (and hopefully growing). Since the popularity of bamboo is still on the rise, one would expect that membership numbers should follow.

Janne Nilsson

Bamboo Land Nursery & Parklands

**Bamboo Travels in Indochina.
by Don Franklin¹.**

Lao PDR and northern Thailand lie just south of the bamboo heartlands of southern China. Having a passing interest in the subject of bamboos, I couldn't help but be attracted to them whilst exploring the forests and rivers of the region during a recent holiday. Here's a few photographic highlights.



Post-flowering die-off, fire and seedling regeneration, Nam Tok Mae Surin National Park, north-western Thailand. A nature trail sign gave the identification as *Cephalostachyum pergracile*.



Dendrocalamus strictus and *D. membranaceus* are common in the semi-deciduous forests that were once dominated by Teak (*Tectona grandis*). With the heavy logging of these forests, the bamboos are often now dominant. [Another possible identity is *Bambusa* (Stapleton) or *Dendrocalamus* (Dransfield and Wong) *membranacea*.]²



A fairly large bamboo, possibly *Dendrocalamus* sp., Nam Tok Mae Surin National Park, north-western Thailand.



A giant bamboo in moist evergreen forest by Pha Sua Waterfall, north-western Thailand - possibly *Gigantochloa* sp. The culms were about 25 cm in diameter at the base. [Also possibly *Dendrocalamus latiflorus*, (Ma Chu). It is now a major cultivated plant throughout SE Asia.]²



Riverside village bamboos near Luang Prabang, Lao PDR, on the bank of the clear-water Nam Ou (River Ou). [The major cultivated species in this area are *Dendrocalamus asper*, (Pai Tong), *Thyrostachys siamensis*, (Pai Ruak), *Bambusa blumeana*, (Pai Seesuk), *B. bambos*, (Pai Pa), and *B. nana* (Pai Liang)]²

1. Don Franklin is a Research Fellow at Charles Darwin University, Darwin. Don describes himself as, "... not really a bambusero, just a jack-of-all-trades-and-master-of-none amateur naturalist with a particular interest in bamboo." don.franklin@cdu.edu.au

2. The editor sought other opinions on the identities of some of these bamboos, and thanks Harry Simmons and Andre Leu for offering direction.



Riverside village bamboos near Luang Prabang, Lao PDR, taken just before sunset on the banks of the mighty Mekong River. [Non-cultivated bamboos tend to be: *Bambusa membranacea*, *B. polymorpha*, *Dendrocalamus strictus*, *Cephalostachyum pergracile* and *Melocalamus* sps. [These] can dominate large areas of forest.]²

What's In A Name? - The Bamboo Fabric Mystery by John Eden¹

What is bamboo fabric?

Mystery abounds in the world of bamboo, and that's one of the things that keeps us fascinated. When that mystery is "Why did that new division I set out three weeks ago send up shoots that surpass the height and breadth of the culms in the division?" or "What is that bamboo in the bonsai pot my friend gave me?" then mystery is good and stimulates our intellectual integrity.

When mystery extends to the true nature of products offered for sale as "bamboo fabric," then our whole bamboo venture is at risk.

I have been a bamboo lover for most of my life, and have been trying to be a small-scale grower for a dozen years now, so when companies in the USA began offering clothing made from "bamboo fabric," I was excited. I ordered a few shirts from a company in South Carolina, and have enjoyed wearing them for several years now. They are soft, cool, and comfortable, seem to resist odor in the humid south Georgia climate, and wash well - just as claimed. I've always been a fan of "natural clothing" - cotton especially - and found I just could not wear things with polyester in them. So I was really happy that this new cloth was so wearable and bamboo too.

I have sent gifts of this "bamboo clothing" to family and friends and extolled its virtues to everyone, eager to promote use of bamboo that would encourage wider acceptance and appreciation of this wonderful

plant. Here was clothing as comfortable (almost) as cotton, yet without the “Cost of Cotton,” as the frightening film from back in mid-20th century had it. For those of you too young or otherwise innocent of the lovely facts of cotton production, let me just say that producing cotton with slaves was only a little worse than the way cotton was produced for most of that century - workers in the fields while DDT was being sprayed is one of the vivid scenes from that film. I imagine it is little better today in much of the world, despite the outlawing of DDT in the US and other industrial countries. Cotton-growing seems inherently detrimental to the environment, what with its huge requirements for petroleum fuels and fertilizers, water, herbicides and pesticides.

So, though I was not prepared to eschew cotton t-shirts, I was excited that there seemed to be a natural option, an environmentally benign source of fabric, and that it was my beloved bamboo.

And then, of course, the bubble burst. In the process of searching online for help in identifying that mystery bamboo in the bonsai dish, I came across an article suggesting that so-called bamboo fabric is a hoax.

I was horrified! How could it be? All these companies marketing clothing made from “bamboo fabric” couldn’t be wrong. The glowing descriptions of the natural alternative, the environmentally friendly fabric, soft, odor-free, UV resistant... How could it all be simply a marketing ploy? One high-fashion clothing website I visited claims bamboo fabric is “the latest and hottest sustainable eco-fabric in the fashion industry.” That pretty much sums up how it’s being presented right now. Sounds so good, doesn’t it? Makes us bamboo-philes happy to hear it.

Problem is, what is being sold to all these manufacturers as “bamboo fabric” may be just rayon. The process for making rayon is horrible, and though it’s made from natural sources, the fiber itself is synthetic, an extrusion from chemically liquified cellulose. This is where the issue gets sticky. Certainly bamboo is being used - has been used for a long time - as the cellulose basis for viscose (the technical name for rayon). But what about these other claims that there’s a new cloth made from true bamboo fibers, or that there’s a new and better process that’s environmentally okay?

In the past few weeks, I have pursued these questions with a passion - my wife would say obsession. I wanted to know the truth of the matter, and I felt sure someone out there could give me facts, solid scientific proof one way or the other.

And there’s the next problem. Facts, proof, even just plain old information about all this are dangled hard to come by, as they say here in the South (USA).

I have corresponded with several chemists who assure me that viscose - rayon - requires the use of very nasty chemicals, carbon disulfide and sulphuric acid, to break down and then regenerate the cellulose. (A very detailed description of the process is available on Wikipedia.) Regardless of the source of the cellulose in viscose, its chemical and fabric properties are the same. A representative of a company selling “bamboo” clothing is quoted on the National Geographic Green Guide as saying that all the “bamboo fabric” in the US comes from one factory in China, and others have noted that as bamboo chips are a very cheap source of cellulose in China, it’s highly likely that the Chinese are using bamboo to make viscose, which is then marketed as “bamboo fabric.”

The question is complicated further by the existence of documents which appear to be patents (by Zhuzhou Cedar Ramie Industrial Co. Ltd.) on an essentially mechanical process for turning bamboo into fiber in much the same way that ramie is made into thread, and their website claims they are producing “Pure Natural Bamboo Fabric.” Another Chinese manufacturer, China KongFi Textile Co., has a very slick website which describes, complete with photographs, a similar process, which it claims to be fabric made from bamboo fibers, and offers a distinction between “original bamboo fiber” and bamboo pulp fiber.

KongFi says, “As we all know, Bamboo fiber is made from bamboo; but in fact, lots of people don’t know that bamboo fiber is divided into two kinds of bamboo fiber according to different process flow and method: bamboo pulp fiber (bamboo viscose fiber) and natural original bamboo fiber. Natural original bamboo fiber is a kind of new type natural fibers, using physical and mechanical method of making pure natural original bamboo fiber. Original bamboo fiber is essentially different from bamboo pulp fiber.” However, my chemist friends counter that the phrase “bamboo fiber is made from bamboo” is not something we all know.

In fact, in both Germany and Brazil, and possibly other countries, where strict labeling requirements prevail, there is no fabric which can be labeled “bamboo fabric.” There is only viscose. As far as I have been able to determine, no one has validated these claims for a new fiber made of bamboo. According to tests done in Germany (by Verbraucherzentrale Berlin), these fabrics test out the same as any other viscose fabric.

The other problem is that no one, even the clothing manufacturers, seem to be able to get good information from the factories producing the fabric. This is the full quote from a National Geographic Green Guide article ("How Green are Bamboo Clothes?" By Mary Logan Barmeyer) about the manufacture of bamboo fabric:

"Not only are bamboo's growing methods questioned, but so is the process of turning the stalk into fiber for fabrics and clothing. According to Morris Saintsing, sales development and operations partner of bamboo clothing retailer Bamboosa, all bamboo stalk intended for clothing in the United States is converted into raw fiber at one factory in China. "This is a proprietary process and they have a patent on it," says Saintsing. "It's hard to find out what is going on from an R&D standpoint," he adds. Other sources have compared it to the viscose process used on rayon, which involves sodium hydroxide and carbon disulfide, both of which are caustic, and carbon disulfide² has been known to cause breathing and sleeping problems among workers. Sodium hydroxide can threaten aquatic wildlife when released into groundwater and streams."

"Saintsing said that greener ways of creating bamboo fabrics are being tested, but those generally result in a linen-like product that doesn't have the silky texture people are looking for in clothing. Few of the alternatives are in use, but "We're doing what we can to make it a greener process," he says."

Many of the people I've corresponded with say that their efforts to find out what is actually going on in these factories have met with zero response. At least one person with impeccable bamboo credentials says that the photos and descriptions on the KongFi website are not believable and appear to be impossible to achieve with mechanical or chemical methods. Another points out, in an article published last year, that bamboo cellulose fibers are only 2 to 3 mm long, whereas creation of textile requires fibers at least 30 mm in length, and that there is no known way to "mend bamboo fibers to make them long enough to produce a yarn."

Here is the text from the bamboo fiber patent: "Abstract of WO2004076728: This invention relates to a kind of yarn comprising bamboo fibers and its processing method. The basic bamboo fibers can be individual fibers made by the process disclosed in Chinese Patent No. ZL0211138.7 or technical fibers made by reserving factitiously some lignin and pectin. In order to increase the spinnability and strengthen the dispersion and bundling property of the original bamboo fiber, the basic bamboo fibers are fed with oil (emulsified oil) and dried, and then they are dewed and fed with oil. After being stacked

certain time, they are picked, tidied and drafted twice, and then yarn form slivers satisfying the spinning requirement. Slivers are combed, drawn, rowed and spinned. At the result, the yarn of basic bamboo fibers matching the textile requirements can be obtained. The bundles of basic bamboo fiber can be drawnd directly or together with other textile fiber bundles so as to achieve yarns of different characteristics. Basic bamboo fiber are applied to make clothes with various count for spring and summer leisure, and its yarn has the function of high wet permeability."

So, is there such a thing as "natural bamboo fabric?" At this point, it seems highly unlikely. The burden of proof, of course, lies with these manufacturers to support their claims, and such proof, so far, has not been provided. Those who have traveled in the area report being shown "Potemkin factories" - facilities set up to present a good appearance but lacking in substance - and not being allowed full access to the facilities. Perhaps the companies are afraid of industrial spies, but some degree of openness is necessary to substantiate their claims. Neutral parties also could be asked to verify these claims. None of this seems to be happening, as consumers seem to be gullible enough - like me - to believe what they want to believe and not ask for any proof.



Basket factory in Wuyishan, China, 2006³.

One potentially highly productive source of information is still pending. Venerable American bambusero Robert Roark is currently touring in Kunming, China, and has said he will make an attempt to penetrate the obfuscation and secrecy

surrounding the current processes. We eagerly await his reports!

We as bamboo growers and aficionados would all love to find out that there is a wonderful natural bamboo fabric. However, if this is, as seems likely, a fraud, a hoax, a marketing ploy - then the cause of bamboo will be damaged, and we must be the first to step up and say, "But the emperor has no clothes!" We struggle against (at least here in the States) negative attitudes about bamboo as an invasive crop already. We don't need the image of hucksterism to taint our world further. Without blaming the people who are marketing the product, and without seeming to be on a vendetta against manufacturers, we need to present the case for serious investigation and scientifically verifiable labeling, and we need to be open about what we know and don't know.

Anything less would not be worthy of the beauty, honesty and integrity of the great green grasses we love.

Editor's notes:

1. John Eden is a regular contributor to the Bamboo Plantations internet group, in which forum the topics of the promotion of bamboo fibres and fabrics, and the technical details of their production, have received a great deal of attention.

2. At very high levels, carbon disulphide may be life-threatening because it affects the central nervous system. Significant safety data come from the viscose rayon Industry, where both carbon disulfide as well as small amounts of highly toxic hydrogen disulphide may be present.

The Material Safety Data Sheet for carbon disulphide says, in part, "Poison - may be fatal if swallowed or inhaled. Serious health hazard, affecting the CNS. Readily absorbed through the skin. Sufficient material may be absorbed through the skin to be fatal. May cause reproductive damage, including impairing fertility. Chronic exposure may cause liver, kidney and CNS damage, or impaired vision. Causes burns. Severe eye and respiratory irritant. Skin irritant." See: http://physchem.ox.ac.uk/msds/CA/carbon_disulfide.html

3. The photographs were taken by Richard Joynes during an INBAR-sponsored trip to a basket factory in Wuyishan, China, in 2006. Richard was not convinced that the factories which he was shown were real factories, and later coined the term, "Potemkin Factory". Richard's view is shared by a number of other western hemisphere bamboo people who have inspected what they were told were the source factories of Chinese manufactured bamboo products.

An "All Eggs in One Basket" Reproductive Strategy?

by Sean M. Bellairs¹, Donald C. Franklin² and Nicholas J. Hogarth²

As noted in the preface to another of Don Franklin's contributions to this issue, bamboo flowering is currently a topic of intense interest among many bambuseros. In order to further inform readers of some of the scientific study that has been conducted into the phenomenon of bamboo flowering and related subjects, the Bulletin presents the Abstract of a recent paper on the subject³ - Ed.

Seed dormancy may be disadvantageous for gregariously semelparous plants because it disrupts the high levels of reproductive synchrony necessary for success. Alternately, it may provide a bet-hedging option for an otherwise 'all eggs in the one basket' reproductive strategy. Rapid germination of seeds upon hydration has been demonstrated for a range of tropical, semelparous bamboos, but the fate of seeds that failed to germinate promptly has been inadequately investigated. We demonstrate prompt germination of seeds upon hydration and the absence of a dormant seedbank in a long-lived, gregariously semelparous bamboo, *Bambusa arnhemica*, from monsoonal northern Australia. However, we refute the suggestion that seed dormancy is necessarily maladaptive in a gregariously semelparous plant. Rather, caryopsis dormancy may not be possible in a seasonally moist tropical climate. Given an inability to adjust or bet-hedge their germination, bamboo germinants must cope with the vagaries of the monsoonal climate, a factor that may contribute to the general restriction of bamboos to regions with higher rainfall.

Key words: *Bambusa arnhemica*; bet-hedging; caryopsis; germination; monsoonal northern Australia; Northern Territory; reproductive biology; seed biology.

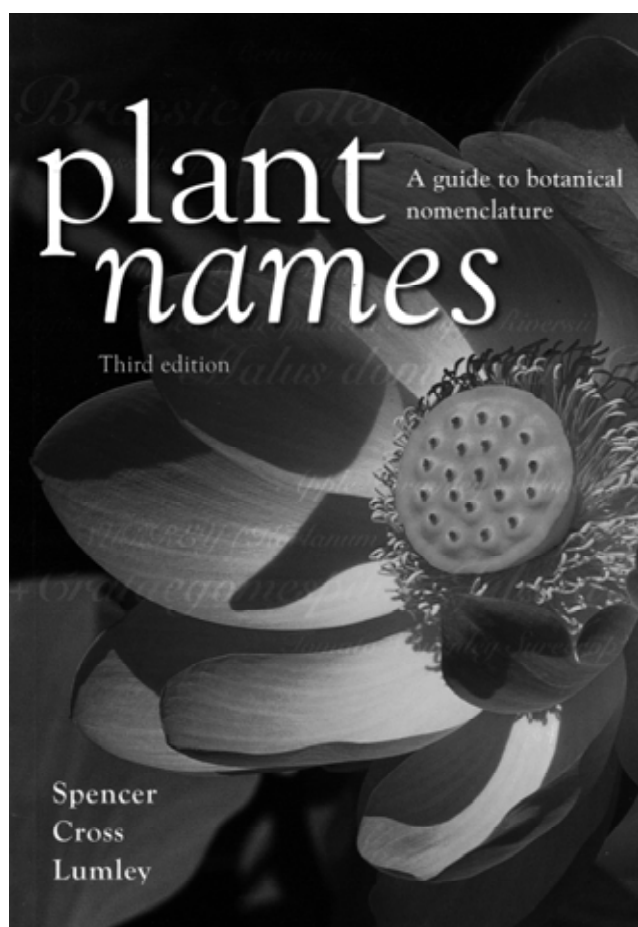
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2. School for Environmental Research, Charles Darwin University, Darwin, Northern Territory, 0909, Australia.

3. The paper is entitled, *A Tropical, Gregariously Semelparous Bamboo Shows No Seed Dormancy*. It was published in full in the journal *Biotropica*, 40(1): 28-31, 2008, and can be obtained from the authors: don.franklin@cdu.edu.au, sean.bellairs@cdu.edu.au, yabbieyabbie@hotmail.com

Book Review by Geoff Kyle

Plant Names – A Guide to Botanical Nomenclature,
by Roger Spencer, Rob Cross and Peter Lumley,
CSIRO Publishing, Third Edition, 2007. ISBN:
9780643094406.



The various names of bamboos, (and other plants), can be a mere amusement or an annoying frustration, depending on one's need for and concern about a universal naming system that categorises a vast array of possibilities, facilitates identification, and distinguishes fine detail.

At Badlands Bamboo, the lady and chief gardener of the house does not mind what a species is called, and refers to the wild and domestic plant and animal inhabitants of her domain by all manner of local and exotic common names, while her would-be bamboo farmer partner needs to be very sure of exactly what he is growing. What he would know as *Nastus elatus*, she would address with a sympathetic smile as "Little Nasty". (That montaine species from Papua New Guinea survives but does not thrive in our poor soils and low altitude tropical climate.)

Everyone has some experience with the need to distinguish one plant from another. In the bamboo world, there is nowadays a wide choice of species available for gardens, collections and plantations.

Particular information about bamboo is critical for some of those applications and can best be sourced by reference to the scientific name of the plant, rather than to the often confounding host of local names that usually exist for the same plant.

The use of Latin in the international naming of plants began with the 1753 plant lists of Swedish biologist Linnaeus. These were in Latin as that was the language of science when printing was invented, and the system has survived to this day because it is both universal and readily maintainable – even if the terms are a mouthful for the ordinary person.

There have been controversies in the bamboo world over the relative merits of the use of scientific and common names. Some of those have centred around commercial definition for quarantine purposes, apparent fraud in propagule sales, and the patenting of some common names. Anecdotally, misrepresentation is common in the nursery trade.

One of the most long-lived controversies is over pronunciation of Latin names. That has attracted comment from purists and wags, and was a most entertaining thread on internet bamboo sites. The authors of *Plant Names* note that, "There is no general agreement on how Latin should be pronounced." They provide a concise survey of what is known about the pronunciation of classic Latin and advice on the best way to pronounce it in the modern world. Fortunately, they conclude that, "...pronunciation is not of vital concern provided others can understand what is being said."

Plant Names is a comprehensive presentation of every aspect of the names of wild and cultivated plants. Its Foreword proposes to address all the frequently asked questions about plant names:

- Is there anything wrong with using common names?
- Why are botanical names in Latin?
- Who controls their origin and use?
- Why do they change?
- What exactly are cultivars and hybrids?
- Is there a correct way to write and pronounce them?
- How can I remember them all?
- Where can accurate and up-to-date lists of plant names be found?
- Which names and which plants are covered by which Code of plant nomenclature?

Everyone will find something of interest in this volume. Whilst the content is organised and presented in a scientific manner, a scientific

education is not necessary to access the contained information.

The reviewer particularly enjoyed the discussion of the categorisation of wild and cultivated plants given in the Introduction, and the previously-mentioned section on pronunciation.

Minutes of the 2007 Annual General Meeting of the Bamboo Society of Australia

The Meeting was held at the property of Thomas Lindley's Bamboo Creations at Burringbar, NSW, on Saturday 24th November 2007.



Tom's shadehouse.

Fifteen members were present, Nine members had appointed proxies and apologies were received from two others. The meeting started shortly after ten a.m.

Minutes of the last AGM were read by Barry O'Connell.

Motion moved by Kevin Lang. Seconded by Alan Irvine. "That the minutes as read be accepted as a true record of the 2005 AGM". Motion passed.

President's Report:

Hans Erken reported a small increase in membership up two from last year to 116. Many more members now have access to email, and the number of organisations granted free membership was culled back from 27 to 20 to reduce costs.

Motion moved by Carol Bailey. Seconded by Lance Seadon. "That the President's Report be accepted." Motion passed.

Treasurer's Report:

Kevin Lang, who had replaced Shane Nichols as Treasurer during the year, reported a profit of just over \$2200 for the year, with a balance of \$7658 in the bank as at the time of the meeting. The profit was in part the result of only two Bulletins being published during the year. (The main reason that there were not more Bulletins was the lack of material being submitted for inclusion.)

Motion moved by Kevin Lang. Seconded by Lance Seadon: "That the Treasurers report be accepted". Motion passed.

Matters arising from the Treasurer's Report:

Thanks were expressed for Shane's many years of devoted work as Treasurer.

Uses for the healthy amount of funds in kitty were discussed. It was suggested that they could be used for subsidising meetings or functions. A bamboo arts and crafts competition with prizes could be sponsored. This led to a suggestion for a bamboo node size competition and somehow the idea bamboo calendar was raised.

Discussion then moved on to Bamboo paper and charcoal, Terra Preta, (the Amazonian charcoal impregnated soil), and carbon credits for bamboo plantings. (Lots of good ideas there if someone wants to run with them.)

The Australian Commercial Bamboo Corporation, (ACBC), which was formed at the same time as the BSA, has almost folded for lack of active participants and will pass it's remaining funds on to the BSA, for safekeeping in a fixed deposit, for future use in promoting commercial bamboo production.





What boo?

Correspondence:

There were some queries and comments about field days including a request for one on building with bamboo.

A representative of French Bamboo Orchestra had sent a number of emails sounding out interest in a performance tour in Australia. A number of options that could be passed on to them were suggested. They sent us a DVD with their story which Hans can forward to anyone who is interested.

General Business:

There was discussion about the Bulletin, sourcing bamboo seed, the idea of chapters in each state and holding the next AGM in Western Australia.

A motion, "That the Board investigate the possibility of holding the next AGM in Western Australia", was moved by Barry O'Connell and seconded by Kevin Lang. The motion was passed.

The idea of subsidising travel to the AGM was raised.

A motion, "That, at the Board's discretion, the Society subsidise travel by interstate delegates to each important Society meeting", was moved by Kevin Lang and seconded by Peter Jones. The motion was passed

Field days:

Lance Seadon offered to hold a field day around the end of May, when he and some visiting Germans will be building a tree house which could form the basis of a workshop.

Janne Nilsson offered to hold a field day at his place around Easter, 2008

Board positions:

President: Hans Erken nominated to stay on in the position

Treasurer: Kevin Lang nominated to stay on in the position

Secretary: Barry O'Connell nominated to stay on in the position

All other positions were filled as followed:

Vice Presidents: Tom Lindley and Kelly Parnham, (Coordinator for Western Australia.)

Committee: Lance Seadon, Geoff Kyle, Janne Nilsson, Jim Mahoney, (Coordinator for NSW Central Coast.)

Anembo Park, Northern Territory, vs Cyclone Helen by David Mullavey

We sat back during November and December and admired just how well the plantation was going. We had finally finished marking all our poles that would be ready for harvesting for timber over the next two years as well as harvesting the Brandisii shoots for the local fresh markets. We are also undertaking processing pickled, dried and vacuum-sealed shoots for the local markets, hoping to keep it a local cottage industry.¹



December 2007 - Bamboo Looking Good

In came the new year, Wednesday, January 2nd, and a cyclone warning. Cyclone Helen is named as a category 1 sitting in the Bonaparte Gulf off the

northern coast, west of our location, heading west but is expected to alter course over the next 12 hours.

Thursday, January 3rd: Helen has turned and is now heading east, putting Anembo Park in its sights. Everything has earlier been cleaned up and packed up ready. If Helen keeps her track she will cross the coast near Peron Islands between Port Keats and Dundee Beach

Friday January 4th: 1030 hrs: took my wife Sue into work and went in to give my daughter-in-law Kirrilee and the grand kids a hand to pack up as my son is away on duty with the army. 1730 hrs: Picked the wife up, grabbed a few more items of food and headed home. Sue will be going back in to Darwin to be with Kirrilee and kids while I will stay at home with our two pet dogs, my son Shain and his wife Michelle. As Captain of the local Volunteer Bushfire Brigade, I checked with other members in preparation for clean up if we get hit by Helen.



Surprisingly little damage to the fire unit

1930 hrs: Sue was told by her employer, Woollies Petrol, to close up early and head home. 2130 hrs: All battened down as Helen is on course to pass to South of Anembo Park. Helen is now category 2 with winds to 120 klm. I will not be going to bed tonight, remaining on call for emergencies. I brought the Fire unit into the carport attached to the house, set the generator up and settled down to watch TV as well as listening to radio news on what Helen is doing. 2230: Helen has crossed the coast between Daily River Mouth and Dundee Beach, which puts her right on course for the Darwin River area and Anembo Park.

Helen Hits, Saturday, January 5th: 0100 hrs and things are very quiet. Winds are almost still, our little dogs are very restless - Ming hates heavy rain and thunder. 0145 hrs: winds are really starting to pick up to 80 - 90 klms and the power is down, but I leave the generator until tomorrow morning. Phone lines are also out and Brigades next G has no bars - but my own CDMA is showing full bars.



Poles that will not reach their market.

0230 hrs: winds have now died down to just a heavy breeze so have ventured out for a quick look around. Only a few trees down around the house, but nothing much and we have only had moderate to medium rain fall so far. 0330 hrs: winds are now getting very strong - so much for the 80 - 90 klms - trees coming down everywhere. One has just missed the front verandah and there are sounds of falling and splintering trees everywhere. House is as solid as a rock, rain now very heavy. I estimate winds in excess of 150 - 160 klm. This went on until just before day break. 0545 hrs: wind have dropped to blustery gusts and is still raining, light to medium. Went out side to check the radio in the fire vehicle, only to find that a tree had fallen across the back, with very little damage. You have to be lucky some times.



Dave used a truck to pull these clumps back to the vertical.

Phoned my wife Sue to let her know that we were all ok and to enquire what damage they had suffered in Darwin. 0600 hrs: Clean up starts. Shain is removing a tree from back of fire unit and I have taken my small 4x4 out to check on the roads in the area. Most roads are closed with trees and/or power lines down, and minor flooding with some roads cut by water. One good thing is that we only had 92mm rain from 0700 4th till 0700 5th. 0800 hrs: Headed down and checked the bamboo, road was blocked by trees and

has to clear a path for the tractor. Down at the bamboo we discovered that over 120 plants were flattened or had been partly uprooted, while another 50 were leaning at quite an angle with broken and twisted poles. These will have to wait until Sunday. We spent the rest of the day clearing roads and checking out residential properties in the Darwin River Area and assisting where required.



Many clumps were completely uprooted.

Anembo Park Clean Up Begins, Sunday January 6th. 0730 hrs: Headed down to the plantation, where do we start? Of the 20 rows by 25 plants, only the 4 rows of old asper to the east and 2 rows of 8 month old Sri Pratchen between them had survived almost in tact, except for one asper that was completely uprooted. The Brandisii had suffered the worst with the quite a few fattened, while the majority were partly down or laying at odd angles. We commenced clearing a path down the rows by cutting most of our poles that would have been ready for harvest in 2008 and 2008 dry season - we even had sales for them. Hearts are down as we see how our beautiful rows of shade and greenery have been bent, broken and denuded of a large percentage of leaves. The birds, butterflies and insects have gone and it has a ghostly appearance. We will have to go into town this morning to purchase an amount of rope to stay the culms as we straighten them up. We ended up buying 340 mtrs in total, in addition to all the other ropes and tie straps we had on the farm.



Stays hold raised clumps while they get a new grip.

The work will have to be done by hand as the power will not be back on for a few more hours yet, we need the genie to run the house. We worked the rest of the day without the generator for the power saw, mainly preparing to stand the clumps, digging holes to assist in standing and place star pickets where we estimated they would be required.

Monday, January 7th, 0800 hrs: A quick call to Durnford Dart in Queensland to check up on if what we are doing is the right thing as Mark Traynor, our local bamboo guru, is on holidays and we can not contact him. The answer from Durn is yes that is all you can do. So, with the genie and reciprocating saw on the trailer behind the tractor, I got back in to it. There has been no rain since the 5th and the root balls are starting to dry out, so we stand the clumps, starting with the worst and working our way through the plantation. We had to cut most of our beautiful poles off to enable us to stand the clumps, but them's the breaks.



A row of raised and stayed clumps.

Recovery: We have not been able to harvest the shoots from the Brandisii as they really dropped back and a lot aborted. The shoots were very woody as they had been exposed to the air. The three rows of Lats that survived, almost in tact, still produced enough for Sue to attend limited local markets.



Anembo Park renewal

1. The editor has taste-tested some of Sue's pickled bamboo shoots, and can report that they were all excellent. The Bulletin has asked Sue to offer a few tips its readers in a future issue.

Bamboo Flowering - A Suicidal Bout of Sexual Production?

by Donald C. Franklin¹

Bamboo flowering is currently a topic of intense interest among many bambuseros, particularly on the Sub-continent, where famine threatens as one consequence. In order to inform readers of some of the scientific study that has been conducted into the phenomenon of what is generally called "gregarious" flowering, the Bulletin thought it timely to present the Abstract of one of Don Franklin's papers on the subject. The full paper is entitled, "Synchrony and Asynchrony: Observations and Hypotheses for the Flowering Wave in a Long-lived Semelparous Bamboo", and can be obtained from the author – Ed.

Aim: (1) To describe the spatio-temporal patterns of mass-flowering and die-off in a long-lived, semelparous, clumping bamboo, *Bambusa arnhemica*, at landscape and local scales. (2) To discuss causal processes in the flowering patterns of semelparous bamboos. **Location** The entire range of *B. arnhemica*, in the monsoonal, tropical, northwest of the Northern Territory of Australia, mostly along watercourses.

Methods: Landscape-scale flowering patterns were assessed by a combination of air, boat and ground survey in each year from 2000 to 2002. Areas that flowered prior to 2000, and those in which no flowering occurred, were also recorded, and historic records collated. At local scales, initiation of flowering, rates of die-off, and subsequent germination densities of seedlings were quantified by groundbased counts.

Results: After an estimated 40–50 years of vegetative development, *B. arnhemica* flowered, seeded prolifically, then died. Flowering occurred synchronously within patches ranging from 0.002 to 3200 km². One or more patches flowered in successive years from 1996 to 2002, forming a temporally-structured but spatially-chaotic flowering wave that affected c. 80% of the population. Synchronous flowering took the form of a flowering distribution in which over 95% of clumps within a patch initiated flowering in a central year, most of the remainder flowering the year before or after. Along the Daly River, an exception was observed in which 56% of clumps flowered in the peak year. Seedling densities were three orders of magnitude greater under clumps that flowered in the central rather than the leading year of the flowering distribution.

Main conclusions: Synchrony is argued to be the primal state in semelparous bamboos, promoted by

intense selection acting on a endogenous (genetic or biological) clock whose influence largely overrides that of the environment. A flowering wave may develop within an initially synchronous population when stochastic events interact with the biological clock without permanently altering the clock setting, producing an off-set patch. Off-set groups may only survive if sufficient individuals are off-set by the same amount at the same time and in the same vicinity so as to produce a new synchronously-flowering patch. This could be driven by two processes. Inter-year climatic variation may alter the biological clock's perception of time, producing off-sets at local or regional scales or even affecting entire populations. Severe environmental pressures may also force oneoff changes to flowering schedules, as suggested by a severe flood event prior to flowering on the Daly River. A dynamic hypothesis for a wider range of bamboo flowering patterns is proposed in which synchronous flowering is fragmented and disrupted over time but renewed by allochronic speciation and dispersal.

Keywords

Bambusa arnhemica, gregarious semelparity, mast fruiting, biological clock, stabilizing selection, bamboo flowering wave, allochrony, reproductive isolation, incipient speciation.

1. Key Centre for Tropical Wildlife Management, Charles Darwin University, Darwin, Australia. don.franklin@cdu.edu.au This paper was published in full in the Journal of Biogeography, (J. Biogeogr.), (2004), 31, 773–786.



**The Blooming of *Melocanna baccifera* in
Northeast India and its Consequences
Story and pictures by Walter Liese¹
Translated by Trudi Latour²**

India has a greater amount of bamboo and more species of it than any other country in the world. Of 25 million hectares worldwide, 9 million grow in India, consisting of 23 genera with 125 species. Bamboo is especially prevalent in the northeastern states, where we find 16 genera and 60 species. Amongst the most important are *Melocanna baccifera* (Roxb) Kurz, locally called “muli”, a pachymorph growing bamboo, that covers vast expanses of the mountainous landscape. In the state of Mizoram, south of Assam and surrounded by Myanmar and Bangladesh, *M. baccifera* is the most dominant species occupying about 90% of the area, which also features an occasional *Bambusa tulda*.



The Tribal States of Northeast India and the distribution of *M. baccifera*.³

With an estimated supply of 26 million tons on about 10,000 km², the yearly harvest amounts to 5.8 tons, of which only 10% is useable, due to the inaccessible topography. Since the tree coverage is meagre and also protected, *M. baccifera* supplies indispensable materials for construction, housing, cellulose/paper, mats and board-like materials, many household goods, and is also used as a daily source of energy for cooking and heating in the bitter climate. *M. baccifera* contains the highly desired and pricey “Tabasheer”.⁴ While Mizoram, as a politically, (90%

Catholics), and geographically, (a long distance from the centre Delhi), isolated region, has so far only been mentioned in connection with the neighbouring state of Assam, (tea), the region is now experiencing hectic attention on the highest levels.



Fruit of *Melocanna baccifera* in Eastern Pakistan, (Bangladesh), 1968.

Melocanna baccifera is starting to bloom over vast areas, and people remember the previous catastrophic results of these events. With a lifespan of 7 years, the spears of *M. baccifera* bloom and die off area-wide, every 40 to 45 years. The last blossoming occurred in this region in 1958/60, and before that around 1815, 1863 and 1911. In the past 1 to 2 years another mass blossoming event has announced itself, noticeable by the increased appearance of caterpillars, the absence of new growth as well as individual blossoming spears. The area-wide blossoming is expected in 2006 to 2007. *M. baccifera* is already blossoming in other locations, like in the Botanical Gardens of Bogor, Indonesia, and on a plantation near Pereira, Columbia.



Blossoms and fruit on a plantation near Pereira, Columbia, September 2004.

While other bamboo species produce small, inconspicuous seeds, *M. baccifera* develops big, pear-shaped fruit of about 30 to 35 (and up to 45) mm. in diameter. It is the most flamboyant of all of the bamboo species.

The edible fruit contains a rich pulp with approximately 50% starch and 12% protein. A virility-enhancing capacity has also been attributed to the fruit. While still hanging on the tree it already develops strong rhizome strands as well as the tip of the spear – the birthing of a living entity – also called viviparism.



Fruit with rhizome on the spear, Pereira, Columbia, 2004.



Fruit taken from the spear with rhizome strands and spear tip, Mizoram, India October 2004.

Once dropped, the fruit develops into a new plant through further rhizome and spear development, which, due to the good nutrient supply, grows vigorously. The spears die off after the blossoming and so does the rhizome. The dead spears often break and collapse. The causes and the process of this “spear-brittleness” are not thoroughly known – regardless of the considerable consequences of such a mass event for the storability of the useful dead spears. The starch stored in the spear is used up completely by the blooms and fruit as an energy source. Thus, the spears are quite resistant to fungi and insect pests. That means that the cell wall structures must undergo biochemical changes, which process should be clarified urgently.

The rapid germination and growth of the young shoots reduces the otherwise always present danger of erosion of recently cleared ground after area-wide die off. A precondition for such a quick “nature rejuvenation” and re-greening is protection of the young spears against the common damage caused by animal browsing. The scene however is more wishful thinking than reality for Mizoram, because rats have to be counted as a factor in further development. The mass appearance of rats and its catastrophic socio-economic and ecological consequences during earlier blooming periods are remembered with fearful anticipation. Rats already eat the fruit while they are still hanging on the branches and the fallen fruit are devoured quickly.



Fruit eaten by rats, Mizoram, India, 2004.

The biology of reproduction in rats is indeed frightening. The animals reach their reproductive age after 3 months and have a lifespan of up to 3 years. Since the female can give birth to 4 to 12 young every month, she can produce up to 15,000 young a year under good feeding conditions. In the months of May to October, the ripe bamboo fruit is eaten by the rats, while enormous hordes eat everything on the fields afterwards, including grain and potatoes, and even move into the villages due to their existential gluttony. During the previous blooming periods, great famines, diseases, (such as cholera, malaria, typhus), and also political unrest was reported. A

local name for *M. baccifera* is “mautak”, which also means “famine”.

In response to this, far-reaching programs have been developed by many committees of the central and state governments for the prevention and then handling of the predictable catastrophe with measures concerning the harvesting of the useable materials, pathway systems, impact, transport, medium and long-term storage of spears while maintaining their quality, planning of capacities for the manufacture of suitable products, like board-like materials, parquet, furniture, cellulose/paper, pharmaceuticals, charcoal and pyroligneous acid, abolition of former export bans, (for example, 100,000 bamboo spears were transported in very complicated ways to the earthquake effected Andaman and Nicobar, (India), islands), pest eradication measurements against rats, (traps, poison), design of factories for the utilisation of rat meat for export to interested countries such as China, as well as a plantation program for interested countries like China, and a plantation program for the next 7 to 8 years on 100,000 ha plots.

1. Dr. Walter Liese is Professor of Wood Biology at Hamburg University and a world-renowned expert commentator on bamboo matters.

2. Trudi Latour is a New South Wales based independent journalist and film producer who makes German language documentaries for SBS and other media. With Walter's permission, Trudi has translated a number of his papers for publication in the Bamboo Bulletin.

3. This map is an addition to the original paper. It was included for the benefit of readers who are not familiar with these little-known parts of India, and was adapted from: Seethalakshmi, K.K., and Muktesh Kjumar, M.S., *Bamboos of India*, INBAR, 1998. Readers who are further interested in the northeast tribal states are referred to: Rustomji, Nari, *Enchanted Frontiers*, Oxford, 1973.]

4. Tianzhuhuang, Tabasheer, (or Tabashir), is bamboo sap. This is the secreted, dried sap from the joints and from surface injuries, (caused by parasitic wasps). It has a yellowish appearance. Pieces of this material are found in the hollow area, resting at the joints. Shaking the plant reveals their presence as they knock against the side. Tabasheer is sweet and finds uses in treating colds, clearing heat, resolving phlegm, fever, or loss of consciousness associated with phlegm-heat, and as anti-convulsive, especially used in remedies for children's feverish disorders and epilepsy. (For more information, see: Subhuti Dharmananda, Ph.D., Director, Institute for Traditional Medicine, Portland, Oregon, <http://www.itmonline.org/arts/bamboo.htm>)

West Australian Chapter - Field Day at the Perth Zoo

Words by Peter Jones and pictures by Marlene Oostryck

The WA Chapter of the BSA met at the Perth Zoo on Saturday 27th October for the second of its biannual meetings for 2007. It was the first occasion that our group has had a field day at a public venue and I believe all present would consider it a great success. Although many members had previously admired the zoo's bamboo plantings privately, this was the first opportunity for the group to view and discuss them collectively, and with the added benefit of an expert guide. Kath Mauger, a horticultural officer with the zoo, made herself available for our meeting to not only guide us around the myriad of paths and trails of the zoo but to give us an insight into the importance to the zoo of the various bamboo species grown there.

The Perth Zoo began service 109 years ago with a dual role – not only did it house Perth's zoological collection, but it was also Western Australia's official Botanical Gardens. Kings Park has since assumed this latter role but the rich legacy of old, and some rare, botanical specimens is clearly evident. Amongst the exotics there were trees such as the Sausage Tree, (*Kigelia pinnata*), Coral Trees, (*Erythrina* spp.) from different continents, English Oak, (*Quercus robur*), Golden Shower, (*Cassia fistula*), Magnolias and Natal Plums, (*Carissa macrocarpa*), to name just a few. Australian trees included Red Cedar, (*Toona australis*), and some notable Acacias and Norfolk Island Pines, (*Araucaria heterophylla*). There is one particular tree which is a cross between the Kurrajong and Illawarra Flame Tree, (*Brachychiton populneus x acerifolius*), that is absolutely magnificent. The collection of palms is awe inspiring, with some specimens over 100 years old.

For bamboo enthusiasts, however, it is the massive stands of *Bambusa balcooa*, planted way back in the 1890s, which are the standout botanical feature. Whether you love Balcooa or feel otherwise about this unruly monster of a grass, the arching, spiralling, ducking and weaving of its heavy green culms leaves a lasting impression. Bearing testimony to this is the fact that hundreds of visitors to the zoo over the years have been moved to carve their name, or sometimes a witty message, into its chunky internodes.

Whilst the towering Balcooa clumps dominate the zoo from a horticultural perspective, there are many more bamboo species showcased amongst the animals. Once our tour started the first species we came across was the perennial favourite and great all-rounder, *Bambusa oldhamii*. Oldhamii is being used

extensively around the zoo where a tall, erect screen is required, or just for the vertical element it affords. There is much *Oldhamii* around the African elephant enclosure, most of it quite young. In years to come this area will be stunning. Further along our tour route, on the higher viewing side of the Asian elephant enclosure, there were mass plantings of Painted Bamboo, (*Bambusa vulgaris* 'Vittata'), once again quite young. Along with various Gingers and Rice Paper plants, these form the backdrop to a magnificent bamboo and timber bridge-like viewing platform. This area will develop into a veritable bamboo thicket in time and the elephants may well be called in for duty to do some serious thinning!

Bambusa multiplex is very well represented at the zoo, especially since it is used extensively as fodder and for screening. Many of the individual clumps look as though they are struggling to satisfy the demand for their foliage. This may well be a sign that local bamboo growers could do more to assist the zoo to meet its ongoing demand for bamboo produce. A few clumps that I spied in deep shade looked particularly poor, infested with mealy bug and white wax scale and struggling to stay alive.

Further into the tour, our party came across some large clumps of *Bambusa vulgaris* 'Wamin' with very few of the culms showing much evidence at all of the characteristic internodal swelling. Even for Perth, where the exaggerated compression of internodes is hardly ever seen and the culms grow taller than in the tropics, this is rather unusual since there are usually a few 'wobbly' culms within a clump. Also spotted were some attractive clumps of the smaller Buddha's Belly, *Bambusa ventricosa*, of which much use is made for fodder in the zoo.

At the Sun Bear enclosure examples of *B. oldhamii*, Elephant Grass, (*Pennisetum purpureum*), and more gingers combined to produce an interesting environment for the tenants. It was near this point in the tour when a buzz of excitement went through the group as the sharp-eyed Dave Parnham noted a single flower stalk projecting from a lone *B. balcooa* plant.

Arrow Bamboo, (*Pseodosasa japonica*), literally has the run of the zoo in many areas. It is kept in check by being regularly harvesting for fodder by zoo staff and also by the destruction caused by of the Bamboo Spider Mite, (*Schizotetranychus celarius*). This mite differs from the more common Two-spotted Mite in that it prefers moist living conditions. Consistent watering at the zoo has created a microclimate in which the mite thrives and control is difficult.

Impressive screens of *B.v.* 'Vittata' flanked the paths leading to the popular Orangutan enclosures. The zoo has cleverly used dense living screens, often comprising bamboo, between pathways to keep

separate the variously themed sections of the zoo. Sometimes there may be but two metres between one trail and another but, for the visitor, the difference may be Africa and Asia.

Elsewhere during our zoo meanderings we saw clumps of *Dendrocalamus latiflorus*, *D. strictus* and Timor Black Bamboo, (*Bambusa lako*). Considering the quite favourable growing conditions afforded by the zoo, it was surprising to see that the Timor Black clumps were growing without much vigour. Perhaps this species is less able to cope with competition from other plants when closely planted, as plants generally are in a zoo setting.



A Red Panda at Perth Zoo.

The Perth Zoo proudly provides a home to four Red Pandas, one being a tiny female baby born quite recently. The Red Panda, (*Ailurus fulgens*), is more closely related to the Raccoon than to its more famous second cousin the Giant Panda, (*Ailuropoda melanoleuca*). At the zoo, they live in an enclosure centred on a Port Jackson fig that they call home. The pandas used to eat the figs of this tree and often made themselves sick until they eventually learned to leave them alone. Normal figs are a favourite, however, and are served up as a special treat or when a bribe or inducement is called for.



A Possum/Wombat/Fox cross?

During our visit, when the first Red Panda made his way down from way up in the branches of his home tree, quite a few of us were shocked and thought that someone had successfully crossed a fox with a small bear! Some others thought that it was a wombat/possum cross, so unlike the better known Giant Panda was this creature before us!

Although not as particular in its eating habits as its larger namesake and the koala, Red Pandas still tend to make selections from a very limited menu. At the zoo they are fed a proprietary pellet soaked in pear juice, some diced fruit but mostly bamboo shoots and leaves. The Red Panda have seven species of bamboo on their menu. These are *Bambusa malingensis*, which was served up during our tour, *B. multiplex*, *B. ventricosa*, *B. vulgaris*, *Pseudosasa japonica*, *Phyllostachys aurea* and surprisingly, *P. nigra*. In the wild they have been known to lash out occasionally and eat small birds and their eggs, insects and even lizards. A little known but important fact about our new acquaintances is that they defecate 'above their weight', which is to say that, kilo for kilo, they produce more poo than any other inhabitant of the Perth Zoo. If that isn't enough, their dung is an unforgettable bright green! This is possibly due to the brief period of digestion that the Red Panda exhibits – only 1 to 2 hours and the food is through and out. It seems they can't digest much in the way of cellulose and this also helps explain their fussiness in that they choose only the most tender shoots and leaves to eat, and they have to eat a lot of them to keep up the calories.



Ailurus fulgens enjoys a feed of sliced *B. malingensis* shoots.

Red Pandas are listed as an endangered species in the wild, mostly due to destruction of their habitat. Fortunately, they are happy to breed in captivity so, as long as meaningful gene pools can be maintained, they will be with us for a while yet.

We concluded our time at the zoo with our usual auction, although some constraints were imposed by our hosts: only small plants were to be brought into the zoo, and we were to be discrete about it. Some of the auction offerings were *Fargesia nitida*, *Chusquea coronalis*, *Sinobambusa tootsik*, a *Pleioblastus linearis* seedling, *Indocalamus tessalatus*, *Chimonobambusa marmorea*, *Pleioblastus viristriatus* 'Allgold', various cacti and Agave, *Sasaella glabra* 'Albostriata', *Dendroclamus brandisii* 'Black' and *Bambusa vittata* 'Wamin Striata'

The auction list reflected the size constraint, with *D.brandisii* 'Black' being the only large species represented. Bidding was spirited and many Society members left the zoo, after a very interesting tour and a fun day, with a bargain bamboo buy under their arm.

Most of the group moved on from the zoo to Dave and Kelly Parnham's place at Ascot. There we conducted the more formal aspects of our meeting and did well to resolve some issues over drinks and a sumptuous meal. I'm not sure, but I reckon being down amongst the wild animals and bamboos for a few hours must put a sharp edge on one's appetite, judging by the way Kelly's offerings disappeared at a rapid rate!

The autumn meeting of the BSA-WA will be held at 'Kooinda Bindi', Peter and Kree Jones' property at Muckenburra, which is west of Gingin. The date is Saturday 19th April, 2008, right in the middle of the school holidays. The spring meeting will be held at Bob Gretton's property in Denmark in mid-November, 2008, date to be confirmed. This meeting is likely to see representation, or even a contingent, of office bearers from BSA HQ and should not be missed on any account.



Bamboo and Torres Strait Islanders of Northeast Australia by Ian J. McNiven^[1]

Stand anywhere in a traditional Torres Strait Islander village 150 years ago and the importance of bamboo would be obvious. Today, Torres Strait Islanders inhabit over 15 islands set amongst coral reefs between the mainlands of Australia and New Guinea. Even though fiberglass dinghies and outboard motors have replaced double-outrigger canoes and woven pandanas sails, and bricks and mortar have replaced post and thatch for houses, traditional resource use underpins much Islander life. Following a 4000 year tradition established by their ancestors, Torres Strait Islanders are marine specialists and expert hunters of turtle and dugong. While traditional horticulture and cropping of yams and bananas have given way to store food for most families, on all inhabited islands the bush continues to provide the key versatile raw material - bamboo. So how do Torres Strait Islanders use bamboo, and how did this versatile plant come to be established across this tropical archipelago?

See Figures 1 & 4 inside front cover. Paintings by Melville 1849.

In 1792, Capt. William Bligh made the first European recording of bamboo in the region when he observed canoes with bamboo masts. As Torres Strait became a major shipping channel in the 19th century, Europeans had better opportunities to observe traditional bamboo use. Canoes up to 21m in length had bamboo outriggers and elaborate bamboo platforms, (some with shelters), upon which sailors sat, slept and cooked. During droughts, canoes ferried lengths of bamboo filled with freshwater to thirsty relatives on nearby islands, (Figure 1). Lengths of bamboo, (0.5-1m), formed tobacco smoking pipes, (Figure 2), and musical instruments such as drums.



Figure 2. Bamboo tobacco smoking pipe. (Jukes, 1847, p. 165)

Bamboo weaponry included bows so strong that in 1802 none of Matthew Flinders' crew could bend them. Split bamboo knives, (called "upi"), were used on headhunting raids and were sharpened simply by peeling off strips to expose razor-sharp edges. Each peeled strip and associated notch signified a head, (Figure 3). More somber were bamboo frames to support the mummified and decorated bodies of relatives. Fish were caught using bamboo shaft spears and split bamboo scoop baskets. Reef ownership and

associated fishing rites were demarcated by bamboo pole beacons up to 9m in length, (Figure 1). Long lengths of bamboo set upright in the sand formed palisade-like village windbreaks, (Figures 4 and 5). Most houses and some shrines used bamboo frames and gardens featured bamboo fences and stakes. Pieces of bamboo were incorporated into body adornments such as ceremonial headdresses, necklaces and combs.



Figure 3. Bamboo beheading knife. (Haddon, 1980, p.115)

The range of uses for bamboo remains extensive across Torres Strait. In November 2007, my friend Mark David from Iama island made a quick list:

- utensils: straws to drink coconut 'milk', spoons, tongs for moving hot stones in ground ovens, long poles with hooks to bring down coconuts;
- gardens: fences and stakes, (Figure 6);
- dancing: clappers and headdresses;
- hunting equipment: bows and arrows for birds, fishing spears, extensions on dugong and turtle harpoons to add buoyancy;
- dinghies: sleeping shelter frames, poling in shallow water;
- food: young shoots; and,
- frames for temporary camping structures.

Bamboo on Iama, like all Torres Strait islands, is obtained from groves. Different groves produce different types of bamboo with recognized different qualities. Three key types are associated with small spear shafts, large poles, and 'building bamboo' with large diameter and thick walls. Most groves on Iama are family owned and it is poor manners to harvest bamboo without appropriate permission. In some cases oral history records ancestors who established groves.

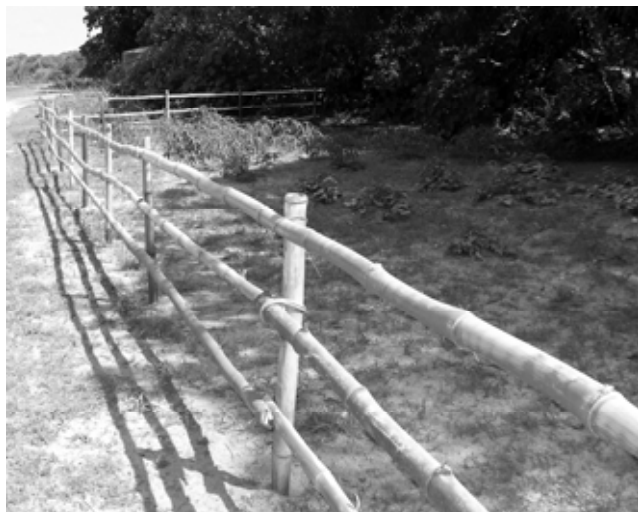
The origin of bamboo in Torres Strait is mysterious. Preliminary vegetation surveys have identified three species of bamboo – *Neololeba atra*, *Mullerochloa moreheadiana* and *Bambusa vulgaris*, and possibly two further species according to Dan Kelman of the Queensland Herbarium. Other research tentatively identifies two further species, (*Bambusa bambos* and *Schizostachyum* spp.). *M. moreheadiana* is endemic to northeast Queensland and *N. atra* is native to northeast Australia and Papua New Guinea. In contrast, *B. bambos* is an Asian species which

implies that its presence in Torres Strait is a result of human transport. *B. vulgaris* and *Schizostachyum spp.* were also probably introduced by people given they are native to Southeast Asia, (and perhaps mainland New Guinea), but not Australia.



Bamboo windbreaks, Erub island, November, 2000.
(Photo: Ian McNiven)

Obviously, further research is required to fully understand the true status of Torres Strait bamboos across Australia's northern doorstep. Clearer is the central role of Torres Strait Islanders in this story as the first bamboo groves on the islands were likely established by people through vegetative propagation hundreds and possibly thousands of years ago. Perhaps with Torres Strait bamboo groves we are looking at the oldest continuously-owned cultivated plots in Australia.



Garden with bamboo fence, Iama island, December 2007.
(Photo: Ian McNiven).

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The Social and Environmental Costs of Bamboo - Toxic Snakes in the Grass. by Rebecca Clarren¹.

Bamboo has arrived. American consumers have embraced the veritable grass with a passion not seen since the first hippie rolled a joint. In the past five years, bamboo products have become a multibillion-dollar industry. Last year, imports into the U.S. exceeded \$2.6 billion, with bamboo flooring alone seeing a 50 percent increase from 2005. Aside from flooring and fencing, bamboo is increasingly used to make everything from surfboards and bike frames to designer clothing. This diverse array of products is united by a singular message: Bamboo is good for the Earth.



Bamboo has achieved its green reputation for sound reasons. As one of the world's fastest growing plants, it grows up to 1 foot per day and can be harvested in an average five years, as opposed to the 40 to 120 years it takes to grow most trees. Regenerated from rhizomes, small stems attached to roots in the ground, bamboo doesn't need to be replanted after being hewn. Such quick growth means it can sequester more carbon from the air than a slower growing species like, say, a rose bush. Furthermore, it's cheap - or at least, it can be. Costco and Home Depot both sell bamboo flooring for less than \$2 a square foot.

As a textile, it's also comfortable and breathes well. I always thought the only people who bought eco-fabrics were those who needed something else to wear beside a tie-dyed T-shirt. But Sameunderneath, a Portland company, lent me some bamboo-fiber clothing to wear around town. On an overcast day when the damp chill threatened to mold my soul, I road my bike wearing one of its hooded sweatshirts and stayed warm. I went to a party that night wearing a black jersey-knit dress that wasn't just incredibly soft, it was stylish enough to help me blend with the hipsters, never an easy task for someone whose fashion sensibility is inspired more by Value Village than Vogue. Companies like Nike, Lands' End and Danskinn, not exactly big tie-dye aficionados, now use bamboo rayon in their clothing and linens.

Although bamboo grows like, well, grass in most parts of the country and the world, high-density (or the strongest) bamboo grows best in tropical climates with high elevation. That's hard to find in the U.S., which explains why China, not Florida or Oregon, produces the most consistent species known as Moso. Aside from bamboo fences, gates and poles that can be grown in the Southeast and the West Coast, most of the bamboo we use in North America is grown in China. As well as having the right climate, China, as you may have heard, has cheap labor. Every company I spoke with said it's simply not affordable to manufacture bamboo in the U.S. There are 500 Chinese factories just making bamboo flooring, says David Flanagan of the American Bamboo Society's Northeast chapter. Bamboo textiles aren't produced anywhere else.

The transportation of all this bamboo from Asia might seem like the most obvious of environmental problems, but welcome to the complex global world of forest products. Much of the hardwood flooring sold in the U.S., even if it's grown here, is processed in China. In the bizarre math of global economics, it takes less diesel fuel to ship something to California across the ocean from China than via truck or train from New York, according to the U.S. Department of Energy. So while buying local is always the best alternative from an ecological perspective, bamboo from China is not necessarily worse than wood from Georgia.

However, there are a few snakes in the grass; not all aspects of bamboo are entirely green. Manufacturers of bamboo textiles use sodium hydroxide - one of the main ingredients in Drano - and carbon disulfide, to turn bamboo into a fiber that can be woven. Both chemicals are volatile organic compounds that can contribute to smog and of course can lead to a host of diseases if ingested. That's why Nau, another Portland clothing company dedicated to sustainability, refuses to use bamboo fiber.

"The rayonizing process is nasty," says Jamie Bainbridge, Nau's director of materials research. "Despite using a natural, renewable fiber, the chemicals and amount of water involved are far from ideal. We have not yet found a facility that properly treats the wastewater or better yet one that keeps the water in a closed loop system."

Another big bamboo import, flooring, also has some drawbacks that scuff up its sustainable image. Some bamboo producers apply pesticides to increase their yields. Some plant on hillsides, which critics claim causes erosion and mudslides after harvest. In China, where logging is illegal, bamboo is grown plantation style on former agricultural land. But as bamboo production expands into Southeast Asia, South

America and Africa, there is concern that poor countries will readily clear native forests, displacing fragile ecosystems. No one is certain that this isn't already happening.

"In Latin America, a common pattern is to replace forests with plantations of cash crops," says Miguel Pinedo-Vasquez, a professor at Columbia University's Center for Environmental Research and Conservation. "If bamboo is planted intensively and extensively, of course there will be environmental damage. Bamboo will completely replace the native vegetation and lead to the extinction of local plants and animals."

Some companies, like EcoTimber, assure their customers, including retailers Carpeteria and the Environmental Home Center, that their bamboo products are pesticide-free, sustainably harvested, and glued with an adhesive that doesn't off-gas formaldehyde, (unlike most wood and bamboo floors).

Nearly all the experts, though, say that the bamboo industry needs better oversight. That could come in the form of a third-party certification, akin to organic labels, that would offer consumers assurance that companies truly deliver a sustainable product. For more than 13 years, the Forest Stewardship Council, a respected nonprofit organization, has certified forests and non-timber products throughout the world. In 2004, FSC announced that it had developed guidelines for certifying bamboo, but so far only one company, based in Malaysia, that produces bamboo for furniture has signed up.

"People should be asking for the same level of rigor in measuring the social and environmental costs of bamboo, as they are when it come to other forests or plantations," says Jeffrey Hayward of the Rainforest Alliance, which certifies forests following FSC rules. That will certainly help us know when the grass is truly green.

1. Rebecca Clarren is a contributor to "The Good Life", a magazine for environmentalists. This article appeared in November, 2007, and is reproduced with the permission of its author. The article is written from an American perspective, but is relevant to the Australian experience, where consumers are beginning to encounter inadequately evidenced claims associated with manufactured bamboo products and plantation-derived carbon credit offsets. There are one or two minor factual errors in the text, (for example, caustic soda is neither volatile nor organic, and moso is not a tropical bamboo), but those are minor and not strictly relevant to the validity of the view presented and the importance of considering "sustainability" in an holistic context ... Ed.

Bamboo Piths – or Mushrooms by Jacqueline M. Newman¹

Thanks to a Wildlife Conservation Law in Taiwan in 1989, animals on their way to extinction got a reprieve. Items in the plant kingdom were, at that time, not as lucky, but fortunately for them and for us, in 1996, a Plant Conservation Task Force was established. This has made many items never seen in western Chinese markets commonplace. One such is this readily available fungus. Commonly known as both bamboo pith and bamboo mushroom, the former is an older but more common designation, the latter a more recent nomenclature.

If you never heard of it, seek it out. Don't begin by looking in most mushroom books. A fine book to consult, *Growing Gourmet and Medicinal Mushrooms* by Paul Stamets, (Ten Speed Press, Berkeley CA, 1993), does not list them by botanical or by common name in the index or elsewhere. Nor were they found in any of a dozen major mushroom books.

The *Encyclopedia of Mushrooms* by Colin Dickinson and John Lucas, (Crescent Books NY, 1983), does have a paragraph or two on the Genus *Dictyophora* but nothing about this specific species called "multicolor" in Taiwan. It does speak of and illustrate one in the *Clathrus* species. For them, it says they inhabit tropical and sub-tropical regions and are "among the most beautiful of all toadstools, although they are best appreciated from photographs because they also smell."

When in doubt about almost everything edible, turn to Stephan Facciola's *Cornucopia*, (Kampong Publications, Vista CA). Searching the most recent edition *Cornucopia II*, (1998), they are referred to as Bamboo mushrooms, *Dictyophora indusiata*, and Facciola says they are a "rare and exotic tropical mushroom enclosed in a lacy white, netlike veil ... (have) a crunchy texture and a unique musty, earthy flavor." He goes on to say that they are, "usually reserved for banquets and fine vegetarian cuisine"... and "available dried at Chinese markets in different grades, some being extremely expensive."



Dictyophora indusiata is a stinkhorn with white stalk and pale yellow cap, covered with slimy spore mass; with a white lacy frill hanging from apex. The other species of *Dictyophora* in Australia, (*D. multicolor*), has an orange cap and a pink frill with a smaller mesh.

We have never seen them fresh, but do share a picture found in our files, unfortunately with no source indicated. Dried they are hardly worth photographing because they come flattened and in bundles. They are almost white and even on a black background looked washed out.

Dried, we have used them sporadically for about ten years. Found them first in Chinese herb stores in both Western and Eastern Canada, and in the past three years, in many Chinese herbal markets or herbal sections in Chinese supermarkets all over the United States. They may have been there longer, but no one could verify that.



This mushroom is common in the tropical Top End of the Northern Territory, but is not noted for an association with bamboo ... Is it *D. multicolor* or just another magic mushroom?

I do recall a fantastic meal in Vancouver more than a half dozen years ago that began our desire to learn about and try using this mushroom. On the menu in long-forgotten restaurant was a dish called Bamboo Pith For Peace. Never saw or read about that dish again until it was featured As Bamboo Pith Heralds Peace at the Chinese Food Festival at the Sheraton Hotel in Flushing Queens in November 1998. Only there no one could taste the featured foods.

In Yunnan cookery, dried bamboo mushroom use is common. It probably grows abundantly there and on nearby Hainan Island. They grow inside or outside rotting bamboo and sometimes on reasonably good bamboo everywhere in the southwest of China. Searching for them on the web at the end of June, (www.nj-eat.com/northsea/menu/htm), they were found on a menu of a restaurant called North Sea Village Restaurant. They were in a dish called Wild Bamboo Pith Stuffed with Asparagus and Chinese Seaweed and in another called House Special Mixed Vegetables with Wild Bamboo Pith. Chinese restaurants are known to serve them with shrimp, pork, beef, etc.

We do not recall seeing this versatile ingredient in any cookbook published in a western country, and rarely in any published in Taiwan, Hong Kong, or China; nor have we ever found their nutrient content. They do not seem to be used by chefs of other cuisines, though we would recommend them to them for exactly that purpose.

They are easy to spot and easy to use. Dried they are about two to three inches long and tied together before packaging. Just rinse the ones to be used in warm water for twenty minutes to dislodge any sand. Must confess, we only found sand in one batch two years ago, but still we recommend rinsing. Then, if using as a vegetable just simmer them in a rich stock for a half an hour alone or with other foods. In soups, eliminate the soaking process and cut them with a scissor into desired sizes then cook with other soup ingredients for that same half hour or more.

After soaking, they can be stuffed, and then cooked. If you haven't tried any, seek them out prepared in Chinese restaurants or purchase a package, they are usually sold in half pound or one pound packages, and try your hand with them; their texture is wonderful and those little pockets hold sauce and deliver flavor in abundance. You'll find them wrapped in plastic or cellophane. They stay for months in your kitchen cabinet. Recommend putting the package in a heavy plastic bag with a dozen bay leaves. All mushrooms have spores, some have larvae, too, so do flours and sometimes beans. Store all dried foods with bay leaves be they shiitake

mushrooms, cloud ears, dried beans, peas, or flour. This assures no hatching on your turf.

Bamboo Pith with Bean Curd

Ingredients:

12 whole bamboo piths,
6 bamboo piths that can be broken, cut, or otherwise not whole,
3 dried shiitake mushrooms, soaked and minced fine,
2 scallions or several large chives or garlic shoots, minced fine,
6 Tablespoons frozen peas, defrosted and slightly mashed,
2 Tablespoons oyster sauce,
1 Tablespoon cornstarch mixed with 1 Tablespoon cold water salt and white pepper, to taste,
1 cup chicken stock,
1 Tablespoon light soy sauce,
1 Tablespoon sesame oil,
1/2 teaspoon hoisin sauce,
2 Tablespoons cornstarch mixed with 2 Tablespoons cold water.
1 cup any steamed or cooked greens such as spinach, the tops of bok choy.

Preparation:

Soak both [broken and whole] sets of bamboo pith for twenty minutes, then drain and mince the broken ones [for use in the stuffing].

Make the stuffing by mixing the shiitake mushrooms, scallions and or other greens, peas, and oyster sauce, and finally the cornstarch mixture.

Fill the whole bamboo pith pieces with the stuffing. A pastry bag without a tube at the end works very well, and set aside for ten to fifteen minutes.

Heat water to boiling in a steamer and put the filled piths decoratively around the outside of a heat-proof plate that is at least one inch deep. Steam them for five minutes, then remove the plate and its contents.

Bring the stock, light soy sauce, sesame oil, and hoisin sauce to the boil. Stir in the cornstarch mixture and continue stirring until the sauce clears.

Put the greens in the center of the bamboo piths and pour the boiling sauce over them and the pieces of stuffed pith. Serve immediately.

1. Jacqueline M Newman is editor-in-chief of "Flavor and Fortune", a magazine published by the Institute for the Advancement of the Science and Art of Chinese Cuisine. www.flavorandfortune.com P.O. Box 91, Kings Park, N.Y., 11754, U.S.A. flavorandfortune@hotmail.com

A Practical Guide to Bamboo Fabric by Geoff Kyle

A lot has been said and written in recent times about bamboo fibres and the blended textiles that are made from them. And there is a lot that has not been said that perhaps should be said about the technical details entailed in the production of such materials.

There are those who assert that bamboo fibres impart a wide range of antibacterial and mechanical properties to textiles woven from them. Others declaim bamboo cloth as a cunning marketing ploy designed to impart green credentials to viscose rayon that is produced from a chemical soup. Some experts have said that, even if it is possible to extract fibres from bamboo, they would be far too short for spinning and weaving. Indeed, laboratory analyses of such textile products have not identified bamboo fibres in the matrix of the material.¹

One manufacturer told me that bamboo fibre textiles can be produced by two similar pulping processes. The one relies on the “rayon” chemical soup process, whereas the other uses a similar process, but avoids the toxic chemicals in favour of “natural additives”. Textile testing of the latter does indicate the presence of bamboo fibres. An analogy to old and new methods of tanning leather was suggested. The source told me that the reason the “natural additive” process is little-used relates to the extra time, effort and cost involved.

All of this is somewhat confusing to the average person. On the one hand, extravagant claims are made for these allegedly bamboo-derived materials. Such claims predicate their appeal on a long folk history of bamboo utility and a growing desire among modern humans to abandon products and production methods that are ecologically damaging and not sustainable. On the other hand, there is a corresponding dearth of scientific information and detailed production mechanics that could support the claims.

That such information could be – but is steadfastly not – offered by the promoters and manufacturers of so-called bamboo textiles, seems to be a conundrum of commercial logic, the only logical explanation of which indicates a deliberate attempt to cloud the issue. If a superior product can be produced under any of the several existing patents, why would the holders of those patents refrain from advertising the details to prospective customers? One possible answer is that there is nothing to be gained and everything to lose from supporting the claims with scientific evidence. That, in turn, raises the question

of what it is that the manufacturers and promoters are trying to hide from consumers.

Another way of looking at the array of clothing that is made from blended bamboo fibre is to ignore the technical, marketing and political aspects of the minor controversy and look hard at the utility of the product. Robert Hardman, a sock manufacturer from Victoria,² sent me several pairs of his bamboo/cotton blend socks³ to try out inside my work boots in a tropical climate. Here, I report on their performance.



bamboo blend socks

The test socks were agreeably light, thin and soft to the touch and remained so after a number of washes. I wore them inside steel-capped boots while I tramped around mine sites in Kakadu and Western Arnhem Land, on a couple of half-day treks through the savanna woodlands of Kakadu while looking for cultural artefacts from pre-colonial times, and an exercise in traditional fire management or “cool burning”. Although it is autumn in this part of the world, it is still a hot and sticky place, with centigrade temperatures in the low to mid thirties, and persistent humidity. The socks were exposed to those conditions and the abrasive effects of walking over some rather rough country, as well as being in very close proximity to fire for extended periods. The socks performed very well.

I had heard reports that other brands of blended bamboo fibre socks had worn rapidly at the toe and heel, and did not retain their shape for very long. My experience with the socks I tested was quite the opposite. Even my large and surfboard-bumped feet did not produce the usual thin spot where the steel caps overlap with the boot leather. I had also heard a

report from a well-known American bambusero who reckons the odour from his notoriously smelly feet was eliminated by bamboo fibre socks. While I don't suppose that my feet are any more or less odiferous than anyone else's after a day of walking, I can report that my oldfactory senses were not outraged when I performed the sniff test at the end of the day. That says little about anti-bacterial properties, which testing has shown are a feature of bamboo fibres, but which are largely lost in the blending process. Nevertheless, it does compare very well with the performance of the most popular brand of sock in this region.⁴ Walking around outdoors in a tropical climate can be a sweaty experience, and all socks eventually reach their limit of absorption. The test socks were no different, but they retained their absorbant ability very well for extended periods.

In my youth, rayon socks or hose were popular. I remember my father's businessman's socks drying on the clothes line, and recall how he didn't like the furriness that developed after several washes. The socks I have been testing did not suffer the same degradation, perhaps because they are made from a blended material. Rayon-derived clothing also has the laibility of being highly flammable. Taking a leaf from Graham Kennedy's book of consumer information,⁵ I decided to see if the test sock would burn. The test sock was not ignited or even singed by adjacent flame. However, when directly exposed to a propane torch for several minutes, it caught fire and burned quite slowly at first. Exposure to wind induced almost complete pyrolysis, but there were no tell-tale drips of "plastic". The resultant ash retained the shape of the sock and featured the original weft and warp matrix provided by the cotton. The entire process depicted in the images took about 15 minutes to complete.



The test socks did burn, but were not highly flammable, and had a high ignition point.

If I have a criticism of the test socks, it would be that the height is insufficient for use in work situations. Most mine sites and factories nowadays insist on ankle-length lace-up boots with steel caps. As socks settle during the day, they need to start off tall if they are to prevent chafing at the ankle. I found that it was necessary to pull them up every few hours. Another

aspect of the same deficiency relates to the elasticised "ankle skirts" that are commonly worn to prevent weed seeds attaching themselves to socks and being transported into other areas. A low sock results in a pressure welt around a region a few inches above the ankle. Those problems could easily be remedied by producing a version with a longer reach above the ankle and marketing those in the same way as "Explorers" are currently pitched to the outdoor working world.

Generally speaking, the test socks were excellent. I would recommend these socks just as they are for general, dress and sporting wear, but would like to see a longer and slightly thicker version made for serious work wear.⁶

1. American Customs report on imported cloth, and fibre analysis by German Consumer Affairs.

2. Robert Hardman – "The Sock Man", Melbourne, Australia, 61-03-98784201, roberthardman@optusnet.com.au Socks available in black or stone colour at AUD 5 per pair plus postage.

3. The advertised composition of the test socks was 50/50 bamboo/cotton. That was supported by a certificate that defines the textile product according to the Chinese Standards, "Organic Exchange 100" and "CU Inspection Regulations". The manufacturer notes that test certificates are now being issued by a body called the International Testing Service, a highly-regarded textile testing agent.

4. By far the most popular sock in this part of the world is a thick and heavy wool/cotton/nylon, (50% nylon), blend manufactured by Holeproof and sold under the brand name "Explorer". The bamboo blend socks are said to be heavier than "Explorers, and perhaps they are in terms of mass, but they have a lower density. However, I found that they felt much lighter. And they are less than half the price of "Explorers".

5. Some readers will remember Graham Kennedy's "In Melbourne Tonight" television show, where he tested various products live on air. The reference refers to a famous incident where Kennedy set fire to a pair of very expensive Raoul Merton shoes, and was sued for his trouble.

6. The Sock Man told me that the socks I tested are designed for dress wear, and that a thicker and longer version for work wear is in development. The work sock will feature enhanced air circulation, increased height, a blend with wool rather than cotton, and 70% bamboo fibre content.



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More photos from harvesting *Bambusa oldhami* for the surf shop project.





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See Page 8 for the story "Launch of the New Bamboo Society Website."

Above is the Forum Page showing the Member Login on the left hand side.

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Harvesting *Bambusa oldhami* poles for the interior of a surfshop at batemans bay in NSW. The photo at right shows the poles drying while still standing, but after having been cut. See the President's Report on Page 4



Left, Test frame with clothes. Right, the finished product. Below right, building the frames on a jig, lot of knots to tie. Below is a detail of the final tied bamboo.

