

Mahoganies: candidates

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Mahogany ranks as one of the world's finest timbers and it will probably be commercially extinct by 1990. The dramatic decrease in trade of true mahogany as well as a switch to previously untapped resources since the early 1970s reflects a general pattern of over-exploitation of tropical rainforests. The lack of mahogany cultivation and a move into other, unrelated mahogany-like, primary rain forest hardwoods, such as *meranti* and *red lauan*, emphasises an inevitable and irreversible decline for many hardwood forests. The authors give a summary of historical and current trade patterns in mahogany as part of a pilot study initiated and sponsored by ffPS in 1982.

Mahogany is a trade name applied to stable dark red, tropical hardwoods noted for their water and pest resistance (Edlin, 1969). This unique combination of qualities is very much sought after by the timber trade and for centuries mahogany has been considered ideal for almost everything, its uses ranging from shipbuilding to cabinet-making (Anon., no date).

The trees involved

At least 23 species are involved in the trade and because of discrepancies between vernacular and scientific names it is often difficult to understand the trade (see Table 1) (Anon., 1945). True mahogany is the timber derived from *Swietenia*, a

small genus of tropical trees in the Mahogany family, the Meliaceae. *Swietenia* has a comparatively widespread distribution, from Mexico in the north through Central America and Amazonia, to Peru and Bolivia in the south of its range (Pennington and Styles, 1981). Honduras mahogany is derived from *Swietenia macrophylla*, a large tree often attaining heights of 25–30 m or more, with a straight bole of up to 18 m by 2 m in diameter. A very similar timber is obtained from *Khaya* species, better known as African mahogany. In appearance and working properties African mahogany is difficult to distinguish from Honduras mahogany. This is not surprising since both *Khaya* and *Swietenia* are closely related genera in the same family, the Meliaceae. *Khaya* occurs predominantly in the narrow belt of rain forest in West Africa, and although there are five species, the bulk of African mahogany comes from *Khaya ivorensis*. This is a very large tree, reaching 30–43 m in favourable situations. With a clear bole of 11–28 m it is easy to appreciate what a valuable source of timber this species provides (Anon., 1945).

Prior to 1950 several other species in the Meliaceae were also called mahogany, with the local geographical name as an identifying prefix. For example, *Entandrophragma angolense* a Nigerian species, used to be called Jebu mahogany (Latham, no date). It is now more likely to be sold under the names *edinam* or *gedu-nohor*. A comparable situation is found on examination of South East Asian timber trade statistics. In the Philippines, for example, many species of another important family of tropical trees, the Dipterocarpaceae, are also prized for their deep red timbers (Floresca, 1973). These are less

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valuable than the mahoganies from Central America and Africa, but occasionally the timbers *meranti* and *red lauan* (*Shorea* and *Parashorea* species) are described in the trade as Philippine

mahogany, sometimes without the prefix (Lomibao, 1973).

History of trade

Mahogany trading on an international scale began in the late sixteenth century, when the first Spanish explorers reached the West Indies (Lamb, 1966). Hardwood was one of their first requirements, to repair damaged ships. Their choice of timber was inspired by the native people of Hispaniola, who had used mahogany (*Swietenia mahagoni*) trunks to manufacture canoes (Latham, 1957). The explorers also needed a worthwhile cargo to fill their holds on the return journey and took quantities of the timber to King Phillip II, as a gift; it was used for doors, windows and desks in the library of the great Escorial Palace. This began in 1584 and is the first known use of mahogany in Europe (Lamb, 1966). By 1730 trade between England and the West Indies was well established, with Jamaican mahogany fetching £8 per ton. In 1770, 15,675 pieces of mahogany, totalling a volume of 8500 cubic feet were exported from Jamaica and valued at £50,000 (Latham, 1957).

Meanwhile, the then British Empire was expanding in other directions and attention was temporarily switched to the rain forests of West Africa. The Royal Africa Company, having received its charter from Charles II in 1672, was soon to begin trading in West African mahogany or *khaya*, a timber almost indistinguishable from *Swietenia* (Latham, 1957). International trade in mahogany continued to expand until the latter half of the twentieth century, when dwindling supplies caused rapid escalations in price and forced the importers to look elsewhere.

Table 1.

Common name	Scientific name
Spanish mahogany	<i>Swietenia mahagoni</i>
Cuban mahogany	<i>Swietenia mahagoni</i>
Jamaican mahogany	<i>Swietenia mahagoni</i>
Honduras mahogany	<i>Swietenia macrophylla</i>
Pacific coast mahogany	<i>Swietenia humilis</i>
NB. All the above often referred to simply as Central American mahogany	
African mahogany	<i>Khaya ivorensis</i> <i>Khaya grandifolia</i> <i>Khaya arthotheca</i> <i>Khaya senegalensis</i>
Makore mahogany	<i>Mimusops heckelii</i>
Cherry mahogany	<i>Mimusops heckelii</i>
Sapele mahogany	<i>Entandrophragma cylindricum</i>
Utile mahogany	<i>Entandrophragma angolense</i> <i>Entandrophragma macrophyllum</i> <i>Entandrophragma septentrionale</i>
NB. Since 1960 utile, sapele and makore are treated as distinct from mahogany	
Philippine mahogany	<i>Shorea leprosula</i> <i>Shorea argentifolia</i> <i>Shorea leptocladus</i> <i>Shorea macroptera</i> <i>Shorea parvifolia</i> <i>Shorea sandakanensis</i> <i>Shorea smithiana</i> <i>Shorea almon</i> <i>Parashorea plicata</i> <i>Parashorea malanonan</i>

Trade patterns in the 1970s

A survey of 99 British importers was undertaken in 1982 to determine current trends in mahogany trade. Thirty-five replied to the following questionnaire:

- (1) Annual quantity of timber imported under the trade name mahogany, in cubic metres, for the years 1950, 1960, 1970 and 1980?
- (2) Price per cubic metre at the time of purchase?
- (3) Any further information regarding international suppliers, particularly those operating in country of origin, would be greatly appreciated.

Over 50 per cent of the replies were very informative, while 77 per cent yielded further potentially useful sources of information. However, interestingly, only 55 per cent of the importers who replied actually kept any records of past trading activities.

From the results it seems that the trend in international trade shows a marked shift in emphasis, from Africa to South America by the mid-1970s, and towards the latter part of the decade, increasing reliance on South East Asian stocks. Figure 1 shows United Kingdom imports of mahogany from the major exporting countries of Africa, over a 10-year period. Several of the importers involved in the survey commented on the decline in trade with African countries, often apportioning the reasons to factors other than natural resource depletion. For example, one dealer stated that '... export of wooden goods ceased after 1960 when oil was found in Nigeria. ...' (Allot, 1982, pers. comm.). However, it should be added that during the 1970s, Nigeria became an importer of timber (Burton, 1983, pers. comm.) and having lost most of its primary rain forest to secondary and tertiary forest, which is species poor, it can now be described as forest bankrupt (Leakey, 1983, pers. comm.).

As a result of wildly fluctuating prices many importers have turned to Brazil for their supplies. The current price of Brazilian mahogany is low and comparatively stable, as for example confirmed by Allot (1982, pers. comm.), 'At present, in sawn lumber, Brazil probably sends about 90 per cent of all mahogany to the UK.' However, this is not reflected in recent trade statistics, which at present are only complete for 1979. This failure



This stump of *Swietenia humilis*, cut in 1946 during exploratory forest projects in Costa Rica, had scarcely rotted by 1983 (C. Humphries).

of the statistics to show what appears to be the case is partly due to the fact that much Brazilian timber comes to the UK via North America (Taylor, 1982, pers. comm.).

The increasing cost of true mahoganies has forced timber traders to seek suitable alternatives elsewhere. The similarly red-coloured, durable timbers of tree species belonging to the Dipterocarpaceae family have recently become very familiar to European merchants (Floresca, 1973). These timbers, which come from several closely related species are commonly known as Philippine mahogany (Lomibao, 1973), and although these woods are not normally used for high class

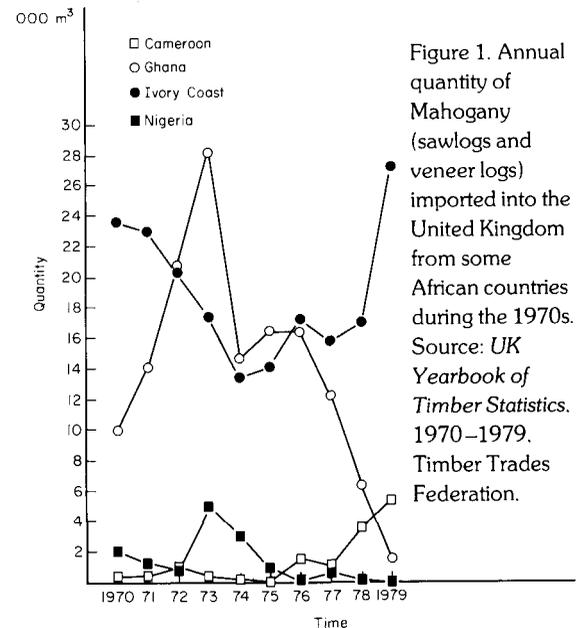


Figure 1. Annual quantity of Mahogany (sawlogs and veneer logs) imported into the United Kingdom from some African countries during the 1970s. Source: UK Yearbook of Timber Statistics, 1970–1979. Timber Trades Federation.



Fruiting branches of *Swietenia humilis*. The tree is in an annexe of Santa Rosa National Park, Costa Rica (C. Humphries).

furniture, they are being consumed very rapidly by what is probably best described as the commodity market, their main use being as frames for double-glazing and for doors. Many of the Dipterocarps were unknown to international traders prior to the 1950s, but once the value of their timbers was realised, woods such as *ramin*, *meranti* and *luaun* were soon in popular demand. By the 1970s South East Asia was accounting for 70 per cent of all exports of tropical hardwoods and if present exploitation trends persist, most of the lowland forest of the Philippines and Peninsular Malaysia will be logged within ten years (Myers, 1979).

Cultivation

A minor but encouraging aspect of the mahogany trade is the establishment of plantations in Trinidad, Honduras and India (Edlin, 1969). However, cultivation is often seriously hampered by shoot boring insects. *Hypsipyla* spp. (Whitmore, 1981), which were responsible for the total destruction of a semi-mature plantation of *Swietenia* on Fiji. The crop was rendered useless and despatched for pulping (Whitmore, 1982, pers. comm.). This problem of insect attack is one of the few factors which prevent the extensive use of several tropical species in plantation forestry. Consequently, if tolerant genotypes could be identified the use of vegetative propagation (Leakey *et al.*, 1982), as developed for other tropical hardwoods, could be adapted to meet the needs of important timber producing species such as *Swietenia* and *Khaya*.

Mahoganies

Mahogany species are being extracted at a rate which far exceeds replenishment (Anon, 1982b), when even the basic biology is not fully understood. In addition, it is thought that the world's timber demand is likely to reach 300 million cubic metres per annum by 2025 and, for this to be partly satisfied, current planting programmes would have to be increased by 300 per cent (Spears, 1980).

Prospects

Much of the world's primary forest will be destroyed by the year 2000, many countries having been totally exploited already. Examination of government statistics helps to quantify state of world trade and reflects the situation on the ground. For example, 86 per cent of South East Asian timber is exported to Japan, which imports 54 per cent of the world's tropical hardwoods (Anon., 1982a). North America imported 37 per cent of Brazil's sawn wood in 1980, the second largest quantity (9.8 per cent) reaching the UK in the same year (FAO, 1982; Norman, 1979). A further set of statistics is shown in Table 2. Again, Japan heads the league of world importers, taking 43.65 per cent of all exported, non-coniferous sawlogs and veneer logs in 1980 (FAO, 1982).

Action

Although future prospects appear grim, future trade in all mahogany could be controlled by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, (CITES). Pacific Coast mahogany *Swietenia*

Uses of Mahogany

Piano manufacture	Flooring
Beds	Public house bars
Book-shelves	Printers' blocks
Chairs	Snooker tables
Coffee and dining tables	
Desks	Panelling in:
Doors	Luxury yachts
Double-glazing frames	Railway coaches
Kitchen units	Public houses and hotels
Mantle-shelves	Restaurants
Picture frames	Shops
Speaker cabinets	
Toilet seats	Structurally in:
China cabinets	Shipbuilding

humilis is already included on Appendix II (Anon., 1973). This ensures that the timber of this species cannot be exported without an export permit from the Scientific and Management Authorities of the exporting country. There are two further Appendices, I and III, but these seem to have received less attention than Appendix II. The regulations for Appendix I are the most strict, covering species threatened with extinction which already are or may be affected by trade, while Appendix III is designed to include species which are rare in one country but not in others (Synge, 1979).

Since many hardwoods will be gone by the year 2000 and mahogany still commands a prime position in the hardwood league, there will be no recognisable trade in mahogany by 1990 if present trends continue. Therefore, as a result of this study it would seem appropriate to list all *Swietenia* and *Khaya* species, the true mahoganies, on Appendix II of CITES. Careful consideration should also be given to the several genera whose timber is sold as Philippine mahogany. The adoption of this 'blanket approach' will give protection to the large number of species affected by the trade.

Table 2. Direction of trade in hardwoods during 1980. Source: FAO (1982).

Major importers	Quantity 000m ³	% world total
Japan	19.202	43.65
China	7050	16.03
Korea	4623	10.51
Italy	2800	6.36
France	1780	4.04
Singapore	1328	3.01
Germany	1201	2.73
Austria	1093	2.48
Others (inc. UK)	4913	11.16
World total	43.990	

Major exporters	Quantity 000m ³	% world total
Malaysia	15.146	36.74
Indonesia	14.884	35.61
Ivory Coast	3199	7.65
Gabon	1200	2.87
Others	7361	17.61
World total	41.790	

The data forming the basis of this study have been deposited with the Wildlife Trade Monitoring Unit, Cambridge.

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Arabian tahr rediscovered in the United Arab Emirates

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Arabian tahr

In 1949, an apparently isolated population of Arabian tahr was discovered on the mountain Jebel Hafit in the United Arab Emirates. Until recently it was thought that the group had died out: no tahr had been seen there since 1963. But in 1980 the authors rediscovered the population; it is small and is threatened by many factors but especially by a road up the mountain, now well under construction.

The Arabian tahr *Hemitragus jayakari* exists as a single main population of about 2000 individuals in the mountains of northern Oman (Munton, 1979). An apparently isolated group was discovered

covered on the mountain Jebel Hafit by Thesiger in 1949 (Thesiger, 1949) and the last individual recorded from this population was in 1963 (Harrison, 1968). No evidence of further survival has appeared and local opinion has suggested that the group has died out.

Jebel Hafit lies astride the UAE/Oman border and is some 11 km long and 1–2 km wide. The mountain rises to 1240 m and its long axis runs north–south. The rock is layered limestone which is very hard and brittle. The mountain is isolated from the main northern Omani range by 25 km of uneven rock desert but still receives sufficient rainfall to maintain shaded rock pools in steep gullies throughout the year. Vegetation is very sparse and includes *Ziziphus spinachristi*, *Caralluma* sp, *Acacia tortillis*, small shrubs and grass tussocks.

Both sides of the mountain were surveyed by P.D. and C.W.F. by helicopter in March 1980. A total of five tahr were seen, two juveniles, a single adult and a female with a calf. All the animals were on the sides of steep rock gullies in the central part of the west face. Following these sightings, the same area was searched on foot over a period of several days in May 1980. Numerous droppings were found and hoofprints were seen beside rock pools. A single horn was found at the base of a gully.

In January 1982, C.W.F. and A.G.G. found a carcass in a pool on the same area of the mountain. The animal was an old male judging by the extreme wear of the horns and teeth. The carcass which was largely decomposed was carried off the mountain and autopsied, but no cause of death could be determined. The live body weight was estimated to have been about 30 kg but no

useful measurements could be taken. The skeleton has been retained for reference.

Although it is clear that this isolated population, the most western group of the species's range, still exists and is capable of reproduction, numbers must be very small taking into account the availability of food and water. We estimate that there are probably fewer than 20 animals, unless there are other groups elsewhere on the mountain. The population is threatened by many factors. Feral goats frequent the lower slopes, competing for food and capable of introducing disease, including rinderpest which occurs regularly in the area. Droppings of both tahr and goats, which are readily distinguishable, fresh tahr droppings being harder and more elongated than the local goats', were found in the same areas around water. Hunting is prohibited in the UAE but there is little practical protection for the tahr from hunters from both sides of the ill-defined border. Only the steepness and inaccessibility of the habitat is in the animals' favour.

Despite these pressures, this small population has remained viable for 35 years since its discovery and has probably never been large. This fact in itself should be an encouragement to those

planning conservation measures for the main group in Oman (Munton, 1979). Whether it can survive the increasing development of the mountain which is now in progress, including the construction of a road and cable car to the summit, seems less likely. Clearly there is little room for either expansion or migration of the surviving animals, so it is to be hoped that the authorities will at least restrict development to areas away from the west face, now that their attention has been drawn to the problem.

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Abbreviations and acronyms used in this issue of *Oryx*

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EEC	European Economic Community
FAO	Food and Agricultural Organisation
ICES	International Council for Exploration of the Seas
IUCN	International Union for Conservation of Nature and Natural Resources
IWC	International Whaling Commission
NAFO	Northwest Atlantic Fisheries Organisation
NGO	Non-Governmental Organisation
NNR	National Nature Reserve
RSPB	Royal Society for the Protection of Birds
SSC	Species Survival Commission
UNEP	United Nations Environment Programme
WHO	World Health Organisation
WWF	World Wildlife Fund