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Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2005

THEMATIC STUDY ON MANGROVES

GUYANA

COUNTRY PROFILE

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Forest Resources Development Service
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The purpose of this paper is to provide early information on on-going activities and programmes, to facilitate dialogue, and to stimulate discussion.

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INTRODUCTION

Mangroves are found along sheltered coastlines in the tropics and sub-tropics where they fulfil important functions in terms of providing wood and non-wood forest products, coastal protection, conservation of biological diversity and provision of habitat, spawning grounds and nutrients for a variety of fish and shellfish. High population pressure in coastal areas has led to the conversion of many mangrove areas to other uses and numerous case studies describe mangrove losses over time. However, information on status and trends at the global level is scarce. The first attempt at estimating the total mangrove area in the world was undertaken as part of the FAO/UNEP Tropical Forest Resources Assessment in 1980, where the world total was estimated as 15.6 million hectares. More recent estimates range from 12 to 20 million ha. For many of these studies, countries with small areas of mangroves were excluded due to lack of information and because their combined area of mangroves would not significantly affect the world total.

A recent initiative by FAO aimed at facilitating access to comprehensive information on the current and past extent of mangroves in 121 countries and areas (FAO. 2003). This built on the earlier FAO/UNEP assessment and on the recent FAO Global Forest Resources Assessment 2000 (FRA 2000). An extensive literature search yielded additional information. More than 2800 national and sub-national datasets were collected, with the earliest estimates dating back to 1918. One of the results was an updated list of the most reliable, recent estimate for each country, mostly based on inventories or analysis of remote sensing imagery. Regression analyses based on earlier data provided estimates for 1990 and 1980 and an extrapolated estimate for 2000 for each country.

The preliminary results of this initiative showed that mangrove deforestation continues, albeit on a slightly lower rate in the 1990s than in the 1980s. The relatively large mangrove deforestation rates in Asia, the Caribbean and Latin America in the 1980s reflect large-scale conversion of mangroves for aquaculture and tourism infrastructure. Most countries have now banned the conversion of mangroves for aquaculture purposes and require environmental impact assessments prior to large-scale conversion of mangroves areas for other uses.

In order to provide the most accurate and comprehensive evaluation of current mangrove status, FAO is presently updating the above cited preliminary results, which have been sent out to all countries and areas in which they exist (124) for information and validation. Additional literature search, active collaboration with national and international mangrove experts and the use of remote sensing imagery interpretation have further supported the preparation of the final report, which will be published in 2005.

Readers are strongly encouraged to provide feedback and additional information to help update and improve this database for the benefit of all those who may have an interest in mangroves.

Guyana

Vegetation description

Mangroves are found along most of the coastline of Guyana with the major stands occurring between the Pomeroon and Waini Rivers to the west, which represents the largest intact mangrove forest in the country. Other relevant mangrove stands are located on the northern coast of Wakenaam and Leguan Islands, and in Hog Island. Three main species dominate the stands in Guyana, *Avicennia germinans*, *Rhizophora mangle* and *Laguncularia racemosa* (white mangrove) which is the smallest species among the dominant mangrove trees, generally growing up to 6 m in height. *Avicennia germinans*, locally called "courida" or black mangrove tends to dominate on the exposed coastal mudflats, where it can grow up to 20 to 25 m, but often is as low as 12 m. This species grow in pure and in mixed stand and it is found in big concentration at the mouth of the Mahaica River where there are also important evidence of natural accretion. *Rhizophora mangle* (red mangrove) may reach 25 m in height occurs in snore sheltered areas; in the Berbice River, on Crab Island it cover the main part of the seaward side, then followed by *Avicennia sp.* in the leeward side and on the river shores

Uses and threats

Mangroves have been significantly depleted by human activities; they originally covered a large portion of the country's coastal zone, but have then been heavily reclaimed for agriculture and cut for fuelwood, poles (mainly used for the mooring of boats), charcoal, timber and tannins. *Rhizophora mangle* is also commonly used for the production of crab and fish traps and it is the main source of tannins for the leather industry. This production dramatically increased during the period from 1996 to 1999, leading to a serious damage to mangrove forests. *A. germinans* seeds are also used as food when cooked. Honey production is important in some areas using the flowers of *A. germinans*, while the bark of *R. mangle* is still used for tannin production. There are some forest policies and legislation in the country, however they are fragmented and do not deals with mangrove specifically; there have been some proposals for afforestation projects as a means of shoreline protection, but there has been little action to date.

Fanshawe, D.B. 1952. *The vegetation of British Guyana. A preliminary review.* Institute Paper No. 29. Oxford, I.F.I.

Guyana Forestry Commission. Second mangrove management plan. www.guyana-tourism.com/Mangr2.pdf

Spalding, M.D., Blasco, F. & Field, C.D., eds. 1997. *World Mangrove Atlas.* The International Society for Mangrove Ecosystems, Okinawa, Japan. 178 pp.

National level mangrove estimates

In order to provide the whole range of the information currently available on mangrove area extent for this country, all the national level mangrove area estimates collected so far have been reported in the following table.

Differences in methodologies, classifications, mapping scales etc. may have led to discrepancies in estimations. Only the figures considered as the most accurate and reliable (marked in the Trend column in this table) have been used for the analysis of the area changes over time; the remaining have been reported, but not used for the trend analysis.

Year	Area (ha)	Source	Trend	Methodology/Comments
1980	91 000	**FAO, UNEP**. 1981. *Los Recursos Forestales de la América Tropical. Proyecto de Evaluación de los Recursos Forestales Tropicales* (en el marco de SINUVIMA). FAO, UNEP, 343 + 86 pp.	X	Estimation and updating based on: **FAO.** 1970. *Forest Industries Development of the more accessible forest areas.* Based on the work of R. de Milde and D. de Groot. FO:SF/GUY 9 Technical Report 8 - Georgetown.
1980	620 000	**Unesco/C.I.T.V.** nd. *Vegetation Map of South America*		Cited in: **FAO, UNEP**. 1981. *Los Recursos Forestales de la América Tropical. Proyecto de Evaluación de los Recursos Forestales Tropicales* (en el marco de SINUVIMA). FAO, UNEP, 343 + 86 pp. The figure should be considered as an over estimate of the resources.
1983	150 000	**Saenger, P., Hegerl E.J. and J.D.S., Davie.** 1983. *Global status of mangrove ecosystems.* Commission on ecology Papers No.3. IUCN. Gland, Switzerland. 88 pp.		Secondary reference, no primary source provided. The "Year" is the publication year.
1989	80 000	**GFC/CID.** 1989. *National Forestry Action Plan 1990-2000.* Guyana Forestry Commission/Canadian International Development Agency, Georgetown, Guyana.		Cited in **Spalding, M.D., Blasco, F. and Field, C.D.**, eds. 1997. *World Mangrove Atlas.* The International Society for Mangrove Ecosystems, Okinawa, Japan. 178 pp. The "Year" is the publication year. Rough estimate
1992	80 432	**GAHEF**, 1992.	X	Cited in: **Guyana Forestry Commission**. Second mangrove management plan. www.guyana-tourism.com/Mangr2.pdf Full reference not available.

Year	Area (ha)	Source	Trend	Methodology/Comments
1995	71 700	**Spalding, M.D., Blasco, F. and Field, C.D.**, eds. 1997. *World Mangrove Atlas.* The International Society for Mangrove Ecosystems, Okinawa, Japan. 178 pp.		Map analysis. Map data were supplied in digital format from the World Wildlife Fund (USA). These data are of unknown origin, but have been published in Olson *et al.* 1996. **Olson, D. M., Dinerstein, E., Cintron, G. and Iolster, P.** 1996. *A conservation assessment of mangrove ecosystems of Latin America and the Caribbean.* Report from WWF's Conservation Assessment of Mangrove Ecosystems of Latin America and the Caribbean Workshop, December 2-4, 1995, Washington D.C., USA.

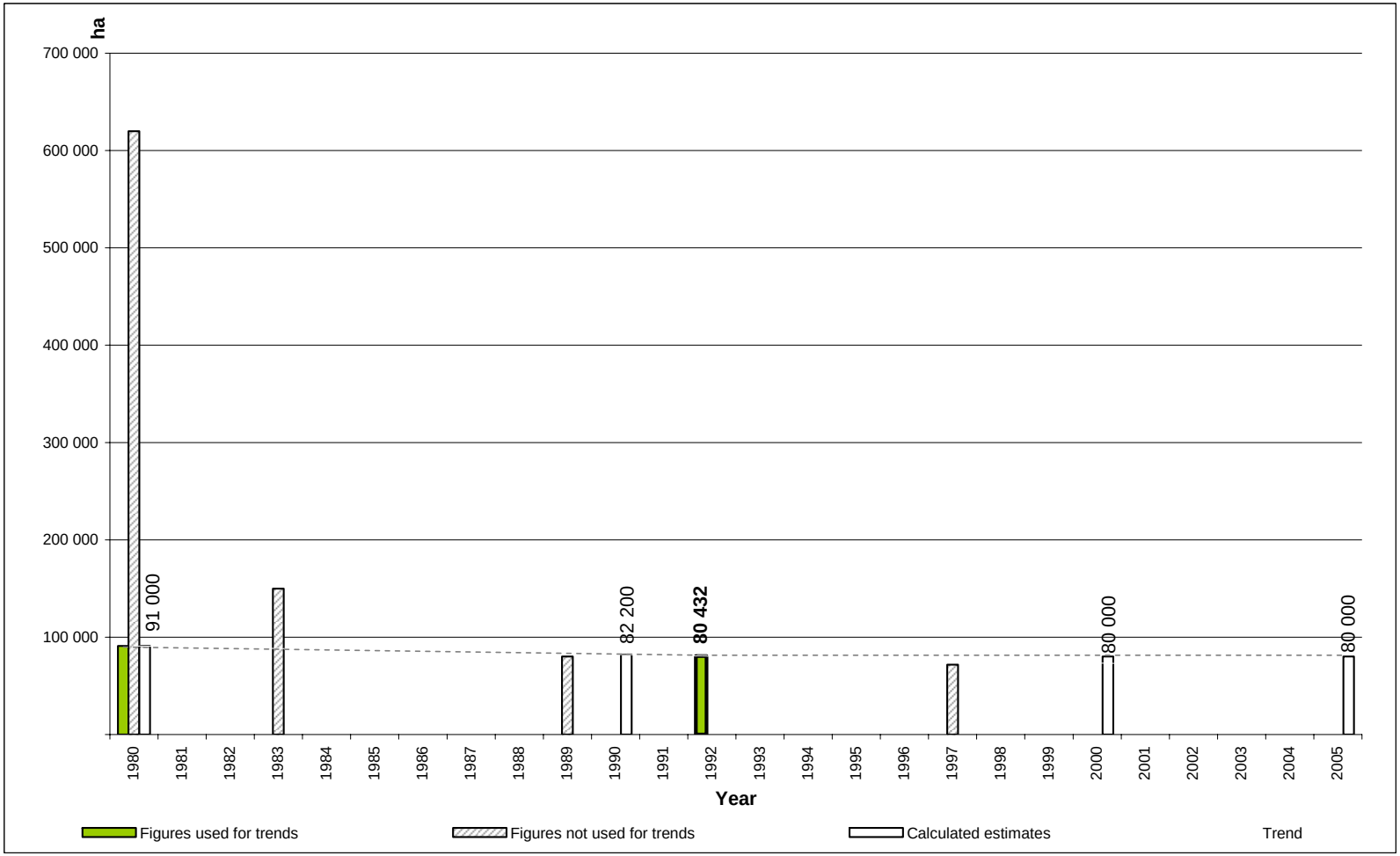
Mangrove species checklist

Following Tomlinson 1987 classification, mangroves may be divided into three groups according to their features: major elements (strict or true mangroves), minor elements and mangrove associates. Tomlinson list of true mangrove species have been here modified by adding some species commonly found as exclusive mangrove species (Saenger et al. 1983)

In the context of this assessment, only true mangrove species found in the present country will be reported:

Avicennia germinans
Avicennia schaueriana
Conocarpus erectus
Laguncularia racemosa
Rhizophora mangle

Trends in mangrove area extent over time



The estimates for 2000 and 2005 are expert estimates based on the qualitative information currently available.

Summary status of mangrove area extent over time

	Most reliable, recent mangrove area estimate		Mangrove area estimate 1980	Mangrove area estimate 1990	Mangrove area estimate 2000	Mangrove area estimate 2005
	ha	**year**	**ha**	**ha**	**ha**	**ha**
Guyana	80 432	1992	91 000	82 200	80 000	80 000

References

FAO. 1995. *Forest Resources assessment 1990: Global synthesis.* FAO Forestry Paper No. 124. Rome, 46pp.

FAO. 2005. *Global Forest Resources Assessment 2005: main report.* FAO Forestry Paper. Rome. *In press*

FAO. 2003. *Status and trends in mangrove area extent worldwide.* By Wilkie, M.L. and Fortuna, S. Forest Resources Assessment Working Paper No. 63. Forest Resources Division. FAO, Rome. *(Unpublished)* http://www.fao.org/documents/

Saenger, P., Hegerl, E.J. & Davie, J.D.S. 1983. *Global status of mangrove ecosystems*. Commission on ecology papers No. 3. Gland, Switzerland, IUCN.

Tomlinson, P.B. 1986. *The botany of mangroves.* Cambridge Tropical Biology Series, Cambridge, 419 pp.

Explanatory notes

Figures used for trends

The estimates used for the trend analysis have been marked with an “X” in the “Trend” column of the national level mangrove estimates table; they have been coloured in green - with no patterns - in the chart.

Most recent reliable figures

The figure chosen as the most recent reliable is underlined in the national level mangrove estimates table; it has been bolded in the chart.

Formulas used for the trend analysis

Linear:
$y = mx + b$ where m is the slope and b is the intercept.