

A spatial assessment of Crabwood Oil production in Regions 9 & 10 of Guyana

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Background

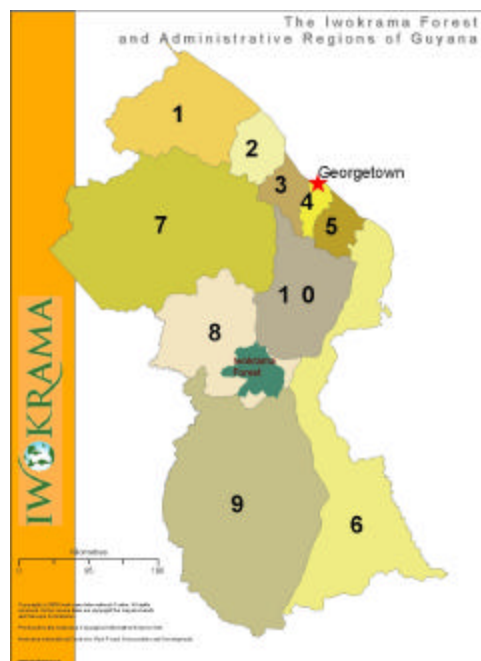
A three-month internship at the Iwokrama International Centre GIS Unit was devoted to learning ArcGIS and spatial analysis of data collected through Iwokrama's involvement in the Centre for Ecology and Hydrology (CEH) Wallingford 'Winners and Losers' Project. The Winners and Losers Project investigates the human and ecological impacts of the commercialisation of Non-Timber Forest Products (NTFPs). Iwokrama's mandate is to promote the conservation and the sustainable and equitable use of tropical rain forests in a manner that will lead to lasting ecological, economic and social benefits to the people of Guyana and the to the world in general, by undertaking research, training and the development and dissemination of technologies. Towards this aim Iwokrama has conducted scientific and market studies on the NTFPs Balata, Nibbi, Kufa, Haiwa and Crabwood Oil. A linkage between the Iwokrama Forest Ecology Unit and CEH Wallingford began in 2000 and in 2001-2002 several questionnaire and other types of surveys were conducted in various parts of Guyana focusing on Crabwood Oil. Ivan Joseph, a final year University of Guyana student in Geography-Economics was supervised and tutored during August-October 2002 by staff of the GIS Unit including Joselyn Grimmond and Vijay Datadin and conducted the work upon which this report is based. Iwokrama normally offers internship and volunteer opportunities to students from around the world. This internship was supported by funding from DfID UK. This is Iwokrama publication number 2002/1.

Materials and Methods

The data was drawn from studies of Crabwood Oil producers in Administrative Regions 9 and 10 of Guyana by Iwokrama International Centre staff collaborating in the CEH 'Winners and Losers' Project. Communities within these two regions are known to be producers of Craboil – the colloquial name in Guyana. The data used in this study were collected in 2001 as part of a general investigation of Crabwood Oil production and trade in Guyana. Crabwood (*Carapa guianensis*) (portuguese: Andiroba) is an important tropical hardwood. It forms part of the timber trade of Guyana and other countries of the region. In addition natural oil is extracted from the large seeds. In Guyana and Brasil this oil is utilised for topical and other uses; it has a reputation as being good for skin care and as a natural insect repellent.

The focus of this study was to illustrate the spatial nature of Craboil production in Guyana to aid in the understanding of the business and to further investigate the possibilities of retail analysis of these data.

Results



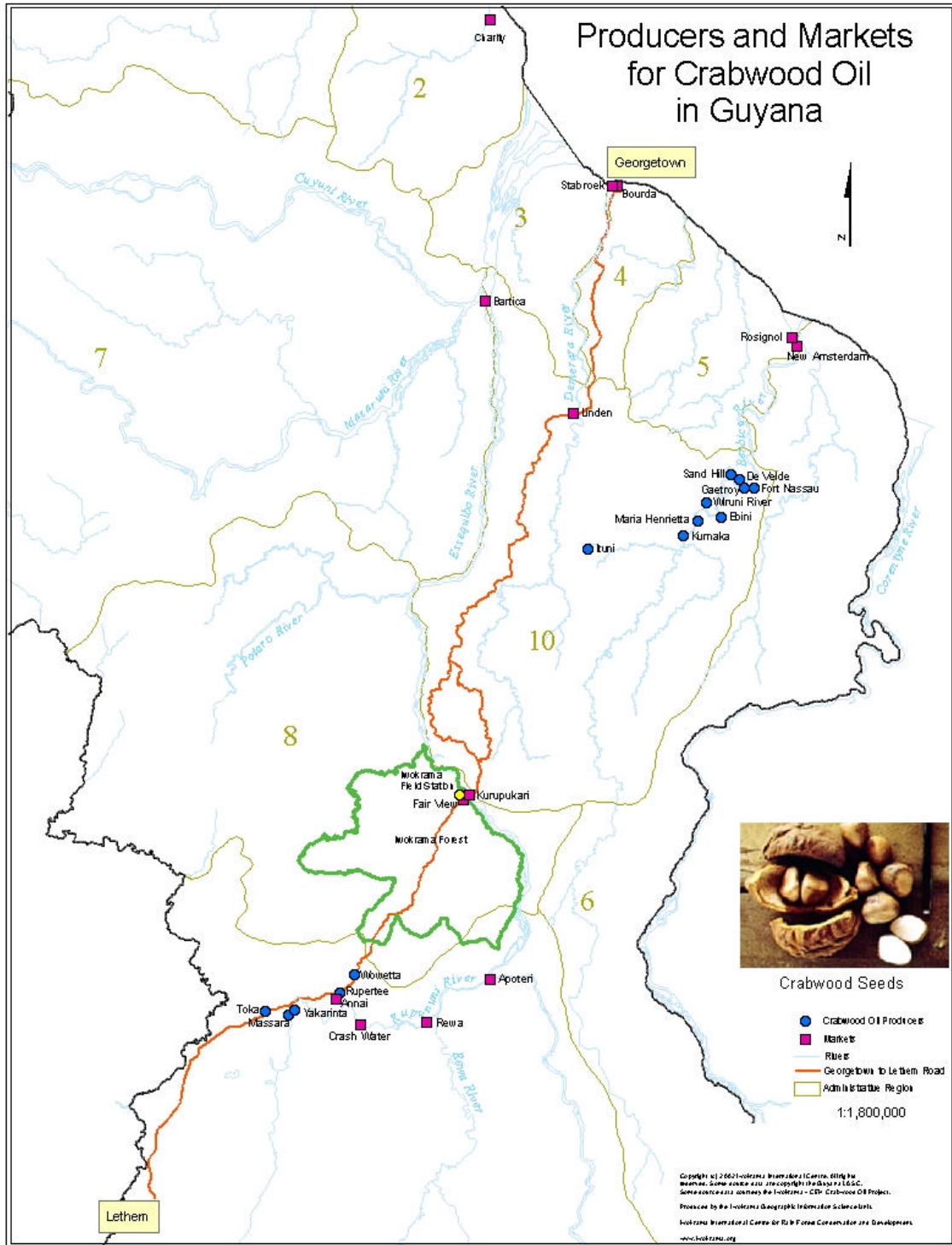
The data had been collected largely under a questionnaire-based approach and with a view to examine the social and business implications. To make further use of these data with a GIS, extensive data-cleansing had to be carried out. For instance, place names were corrected to be expressed in an accurate and uniform fashion in the revised data set. Many records also had to be spatially enabled with the aid of Global Positioning System (GPS) fixes, matching with other existing spatial data sets or adjusted with positions listed in the official Gazetteer of Guyana (2001, Lands and Surveys Commission). The following maps were then composed (see pgs. 3-5):

- ? Location of Producers and Markets for Crabwood Oil in Guyana
- ? Producers of Crabwood Oil in Regions 9 and 10 – showing numbers of persons involved per community location
- ? Percentage of Crabwood Oil Producers in Region 9 and 10 – showing the percentage of persons involved per community location

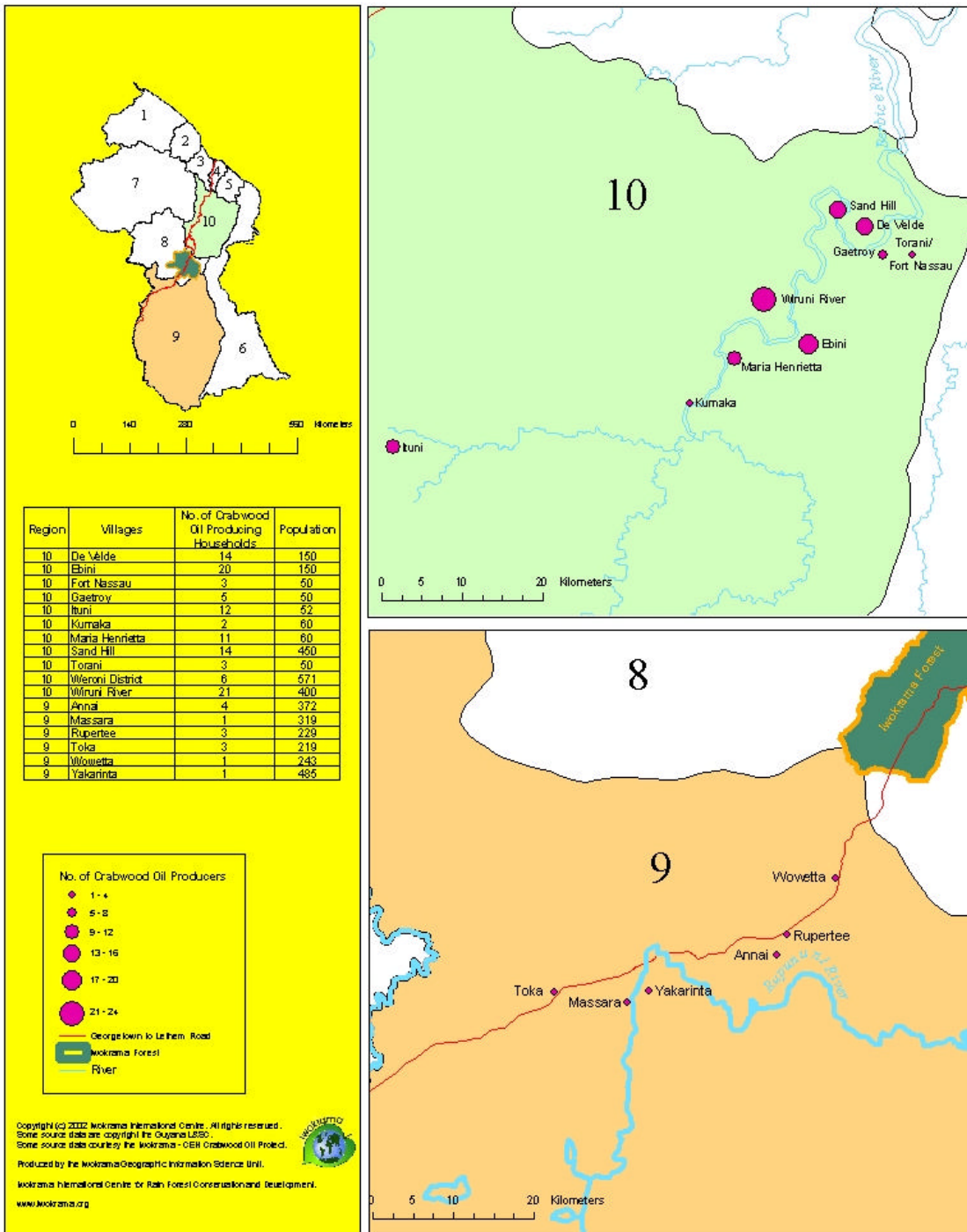
Discussion

From the data and maps produced, six (6) areas from Region 9 and eleven (11) areas from Region 10 were involved in Crabwood oil production. While surveys were done in other villages only these 17 locations had enough information to be spatially represented/ analysed. The population totals by region were 1867 persons and 2043 persons for Regions 9 and 10, respectively. Whilst this represents a difference of only 176 persons, there exists a marked difference in both output and involvement in production between the two regions.

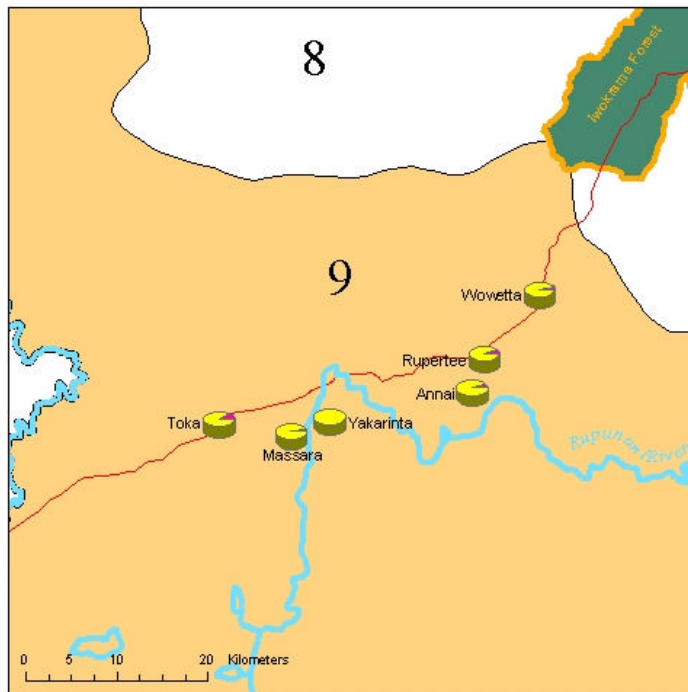
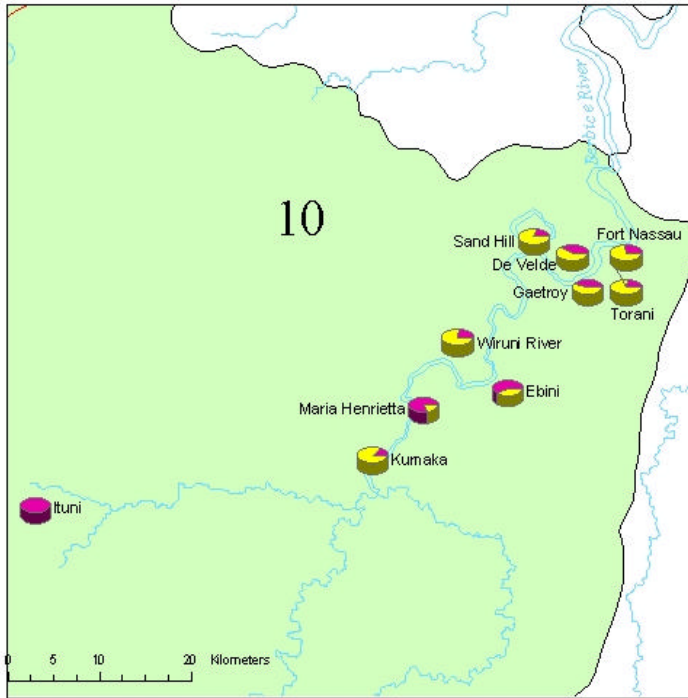
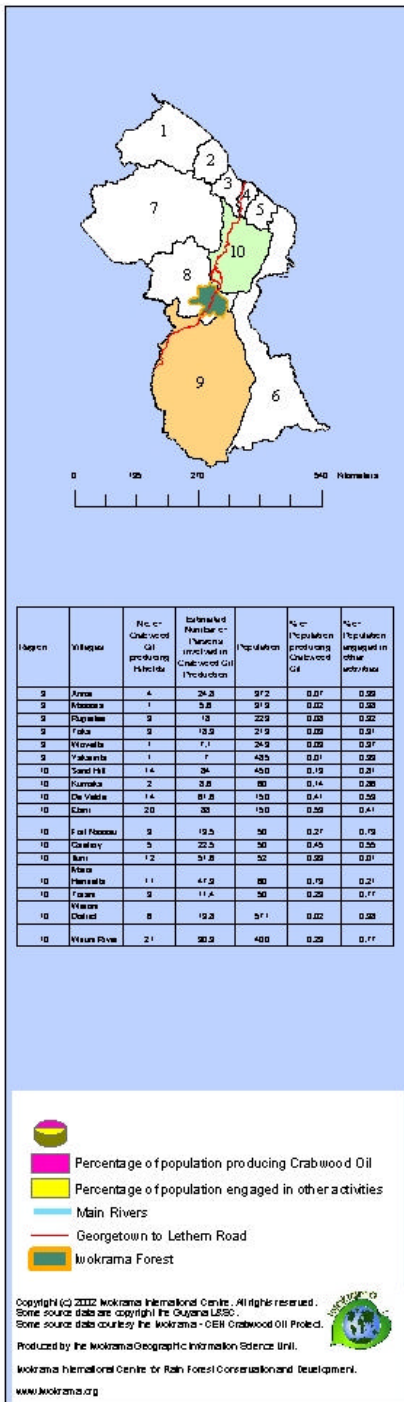
Region	Villages	# of Crabwood Oil producing HH	Estimated No. of Actual HH per Village	Population	% of Population producing Crabwood Oil	Production Level (gal)
9	Annai	4	60	372	1.08%	0.20
9	Massara	1	57	319	0.31%	1.00
9	Rupertee	3	38	229	1.31%	1.25
9	Toka	3	35	219	1.37%	Not Available
9	Wowetta	1	34	243	0.41%	0.10
9	Yakarinta	1	69	485	0.21%	Not Available
		13		1867	0.70%	2.55
10	Sand Hill	14	103	450	3.11%	100.00
10	Kumaka	2	14	60	3.33%	40.00
10	De Velde	14	34	150	9.33%	182.00
10	Ebini	20	34	150	13.33%	591.00
10	Fort Nassau	3	11	50	6.00%	79.00
10	Gaetroy	5	11	50	10.00%	87.00
10	Ituni	12	12	52	23.08%	35.00
10	Maria Henrietta	11	14	60	18.33%	105.00
10	Torani	3	13	50	6.00%	27.00
10	Weroni District	6	131	571	1.05%	Not Available
10	Wiruni River	21	92	400	5.25%	Not Available
		111		2043	5.43%	1246.00



Crabwood Oil Producers In Regions 9 and 10



Percentage Of Crabwood Oil Producers In Regions 9 and 10



The data indicate that a greater proportion of the population was involved in Crabwood oil production in Region 10 - i.e. 5% (five percent) - in comparison with 0.7% of the population for Region 9. In terms of volume of Crabwood Oil output, the difference between Regions 9 and 10 becomes even more significant, with Region 10 producing almost 500 times the volume of Crabwood oil produced by Region 9. Output was 1246 gallons and 2.55 gallons respectively. Finally, these results may be expressed in per capita terms: i.e. 0.61gal per capita for Region 10 and 0.001gal per capita for Region 9.

Distance from resource is one of the possible reasons which could explain the regional disparities. Comments from the Region 9 communities of Toka, Yakarinta, Rupertee, Annai, Wowetta and Massara mention distance from the resource as a factor. Inadequate transportation facilities, lack of knowledge about the existence of markets and prices were also cited. Due to the low resolution of the Forest Type data in the areas, confirmatory analysis of distance to the resource supply could not be carried out – but the questionnaire results are expected to accurately reflect the stated circumstance.

With the great difference in volume of production and per capita production it is concluded that Region 10 is a main centre of Crabwood Oil production. It is suspected that with access to raw materials being the main contributor to the difference in production, even with better transport-to-market provisions Region 9 would not be able to compete successfully with Region 10 for the coastal market; their cost of production should remain significantly higher and they are additionally naturally further away from the coast. The only alternative for Region 9 may be product differentiation, if possible. This may allow Region 9 to market their product at a higher price and cater for a particular target market. On the other hand, the nature of the product is such that price differences are minimal and insufficient to compensate for the large cost differences.

Conclusion and Recommendations

The data, though no doubt useful for the purposes for which it had been collected, was inadequate to achieve a more in-depth spatial socio-economic analysis. It is therefore recommended that future surveys consider the possibility of adding value to their traditional studies by collecting data that could be easily adapted to providing a spatial insight into the research. It is also recommended for future research that similar studies can extend to such dimensions as

- ? Cost/Benefit analysis of the production of Crabwood oil in the various communities.
- ? Spatial Analysis of Crabwood oil production vis-à-vis resource location/transport networks to producers and markets/trade area.

Many examples of the latter may be found in the GIS-retail analysis literature. With regard to strategy regarding Crabwood Oil development, it is felt that the data suggest that Region 10 provides a good base for further commercial development. Production could also be encouraged in Region 9 for village consumption and occasional trade.

References

(2001). Lands and Surveys Commission. *Gazetteer of Guyana*. Lands and Surveys Commission and the German Agency for Technical Cooperation (GTZ).

Notes

This document may be found on the website of the Iwokrama International Centre - www.iwokrama.org.