

## Appendix 4.10

### Project Report

Title: GIS Internship Final Report

Author: Joseph, I.

Produced by: Iwokrama International Centre for Rain Forest Conservation and Development, Georgetown, Guyana

Date: September 2002

---

**This publication is an output from a research project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID. Project R7795, Forestry Research Programme.**

---

**Final Report**

**GIS Internship**

**Ivan Joseph**

**September 3, 2002**

## Introduction

The following objectives were outlined to be completed at the end of the period of internship with the Geographical Information System (GIS) Unit of Iwokrama International Centre (Annex 1 Terms of Reference):

1. Become functional in ArcGIS 8 (estimated: 1 month) – self study and tutoring from Joselyn Grimmond and other GIS staff.
2. Produce maps illustrating the crabwood oil business in Guyana; and the relationship with, for instance, the natural resource base.
3. Develop a research question related to (spatial) retail analysis of the crabwood oil business in Guyana.
4. Produce a report.

It is hoped that this study illuminates the crabwood oil business in Guyana and makes a useful contribution to the global Iwokrama – CEH collaboration.

## Objective 1

In order to achieve these objectives, during the first two weeks of internship, exposure was given to the programme ArcView GIS as an initiation to GIS software. Self Study of the manual “*Using ArcView GIS*” supplemented with instruction from the staff in the GIS unit were the methods utilised to acquire knowledge of this software and GIS concepts. This was followed by the introduction to ArcGIS 8 software through the manual and tutorial “*Getting To Know ArcGIS Desktop: Basics of ArcView, ArcEditor,*

*and ArcInfo*” again with guidance from GIS staff. In summary the following exercises were covered:

- Introducing GIS
- Introducing ArcGIS Desktop
- Exploring ArcMap
- Exploring ArcCatalog
- Symbolizing features and rasters
- Classifying features and rasters
- Labeling features
- Querying data
- Joining and relating tables
- Selecting features by location
- Preparing data for analysis
- Analyzing spatial data
- Projecting data in ArcMap
- Building geodatabases

Having completed these exercises, the task of cleansing the Crabwood oil data obtained from the Social Sciences Unit commenced.

## **Objective 2**

To achieve this objective necessitated the creation of a master file and a considerable amount of data cleansing. This was primarily in the form of ensuring accuracy and uniformity of the data. Place names were corrected and now exist in an accurate and uniform fashion in the revised data set <G:\Crabwood Oil Data Copy\Craboil\Village Profiles.xls>. Most points also had to be spatially enabled by means of geo referencing from Global Positioning System (GPS) points, other existing Iwokrama GIS data sets

and the “*Gazetteer of Guyana.*” Having completed this process, three maps were created demonstrating:

1. Point locations of producers and markets.
2. Graduated symbols of the number of producers in regions 9 and 10.
3. Point locations for lumber dealers.

### **Objective 3**

Given the data available, the following descriptive type research question was pursued:

What is the spatial nature of the Crabwood Oil business in Guyana?

### **Analysis**

From the existing data and maps created, it can be seen that six (6) areas from Region 9 and eleven (11) areas from Region 10 were involved in Crabwood oil production.

While surveys were done in more villages only these areas had complete information to be represented and analysed spatially. The villages in Region 9 had a population total of 1867 persons and those in Region 10 had a population total of 2043 persons. While this represents only a difference of only 176 persons, there exists a marked difference in both output and involvement in production between the two regions. A greater proportion of the population was involved in Crabwood oil production in Region 10, approximately 24.11% in comparison with 4.36% for Region 9. (Table 1)

**Table 1: Crabwood Oil producing villages in Regions 9 and 10**

Region	Villages	No. of Crabwood Oil producing H/holds	Average Size of Household	Estimated Number of Persons involved in Crabwood Oil Production	Estimated No. of Actual H/holds per Village	Population	% of Population producing Crabwood Oil	Production Level (gal)
9	Annai	4	6.2	24.8	60	372	6.67%	0.20
9	Massara	1	5.6	5.6	57	319	1.76%	1.00
9	Rupertee	3	6	18	38	229	7.86%	1.25
9	Toka	3	6.3	18.9	35	219	8.63%	Not Available
9	Wowetta	1	7.1	7.1	34	243	2.92%	0.10
9	Yakarinta	1	7	7	69	485	1.44%	Not Available
		<b>13</b>		<b>81.4</b>		<b>1867</b>	<b>4.36%</b>	<b>2.55</b>
10	Sand Hill	14	6	84	103	450	18.67%	100.00
10	Kumaka	2	4.3	8.6	14	60	14.33%	40.00
10	De Velde	14	4.4	61.6	34	150	41.07%	182.00
10	Ebini	20	4.4	88	34	150	58.67%	591.00
10	Fort Nassau	3	4.5	13.5	11	50	27.00%	79.00
10	Gaetroy	5	4.5	22.5	11	50	45.00%	87.00
10	Ituni	12	4.3	51.6	12	52	99.23%	35.00
10	Maria Henrietta	11	4.3	47.3	14	60	78.83%	105.00
10	Torani	3	3.8	11.4	13	50	22.80%	27.00
10	Weroni District	6	2.3	13.8	131	571	2.42%	Not Available
10	Wiruni River	21	4.3	90.3	92	400	22.58%	Not Available
		<b>111</b>		<b>492.6</b>		<b>2043</b>	<b>24.11%</b>	<b>1246.00</b>

**Source 1: Anon 1. Iwokrama - CEH Crabwood Oil Project**

**Source 2: Anon 2. Iwokrama - CEH Crabwood Oil Project**

In terms of volume of output, the difference between regions 9 and 10 is even more significant with region 10 producing almost 500 times as much Crabwood oil as Region 9. Output was 1246 gallons and 2.55 gallons respectively (Anon 2). This is some .61gal and .001gal per capita for the respective areas.

Distance from resource is one of the possible reasons which could explain the regional disparities. Statements from the community level questionnaires for Toka, Yakarinta, Rupertee, Annai, Wowetta and Massara declared that distance from resource,

inadequate transport facilities, lack of knowledge of or accessibility to markets and the closure of the Balata company as reasons for the low production levels. In contrast the producers in region 10 have easy access to markets in Linden and Georgetown by the use of developed river and road transportation networks. With the great disparities which exist, this could mean that even with better transport options region 9 would not be able to compete successfully with region 10 for the coastal market since their cost of production would be significantly higher. The only alternative is if some form of product differentiation is possible. This may allow region 9 to market their product at a higher price and cater for a particular target market. However, it seems that the nature of the product is such that price differences are minimal and insufficient to compensate for the large cost differences.

Perhaps the greatest limitation was posed by the fact that the data was insufficient for spatial analysis. This is by no means due to the inadequacies of the unit collecting the data. Perhaps one reason for this is that the department which collected the data overlooked the contribution GIS could make to data analysis and display. The GIS requirements seem not to have been considered. This project can be further extended to such dimensions as

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

## **Conclusion**

Should the development of the Crabwood oil industry be considered, the data indicates that it may be advisable to focus on Region 10 to cater for commercial demands from the local and overseas markets. Region 9 on the other hand could continue to produce Crabwood oil to meet the needs of the community and supplement the income of a few households.

## **Recommendation**

Being cognisant of the tremendous contribution that GIS can make particularly in representing and analysing spatial data, it is recommended that project managers for field projects executed by Iwokrama International Centre incorporate some form of geo referencing in their data collection. This will help to create standardized databases and greatly enhance project output by adding greater flexibility to data allowing it to be integrated and analysed in many varied dimensions.

## Works Cited

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

Anon 1. Iwokrama - CEH Crabwood Oil Project. <G:\Crabwood Oil Data>

<Copy\Craboil\Craboil village pop.xls>

Anon 2. Iwokrama - CEH Crabwood Oil Project. <G:\Crabwood Oil Data>

<Copy\Communities 1.xls>

Gis Unit. Iwokrama – CEH Crabwood Oil Project. <G:\Crabwood Oil Data>

<Copy\Craboil\Village Profiles.xls>

Iwokrama – CEH Crabwood Oil Project. Community Level Questionnaires.

## Works consulted

<G:\Crabwood Oil Data Copy\Craboil\Chainsaw operator.mdb>

<G:\Crabwood Oil Data Copy\Craboil\Community Crabwood Survey1.doc>

<G:\Crabwood Oil Data Copy\Craboil\Craboil Interim Report.doc>

<G:\Crabwood Oil Data Copy\Craboil\Crabwood oil Producers.xls>

<G:\Crabwood Oil Data Copy\Craboil\family level.mdb>

<G:\Crabwood Oil Data Copy\Craboil\GPS-LatLong LumberD&Smill.xls>

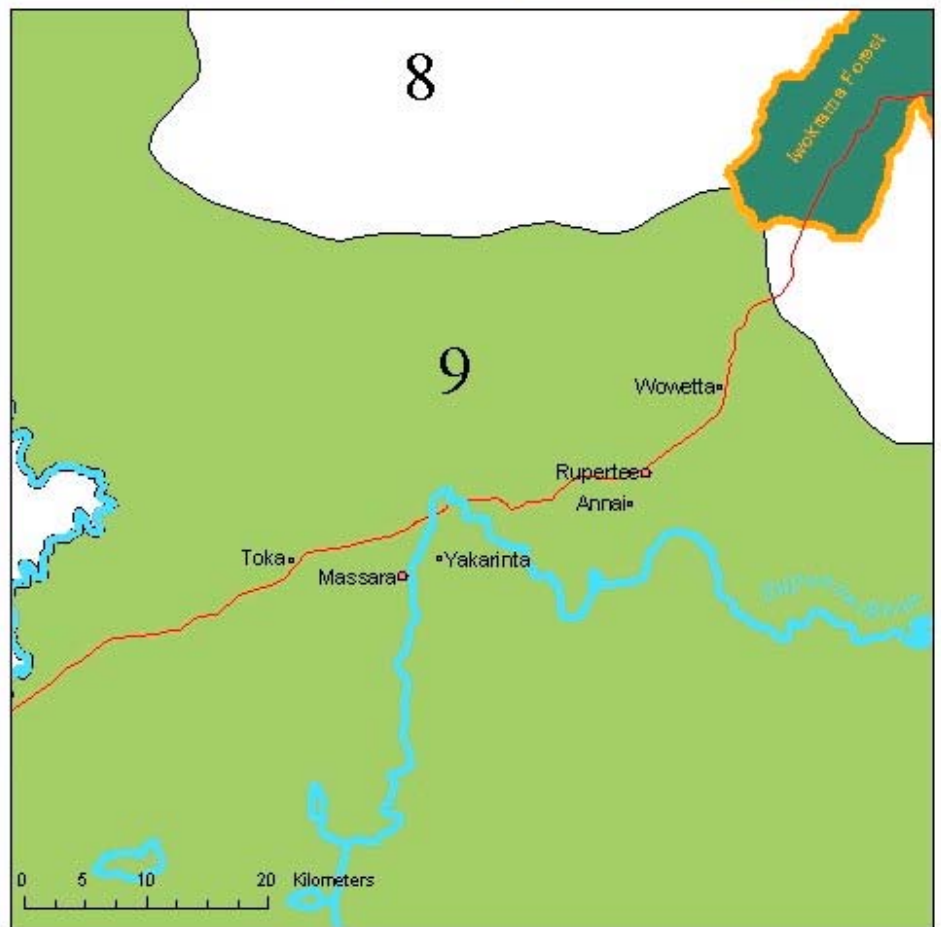
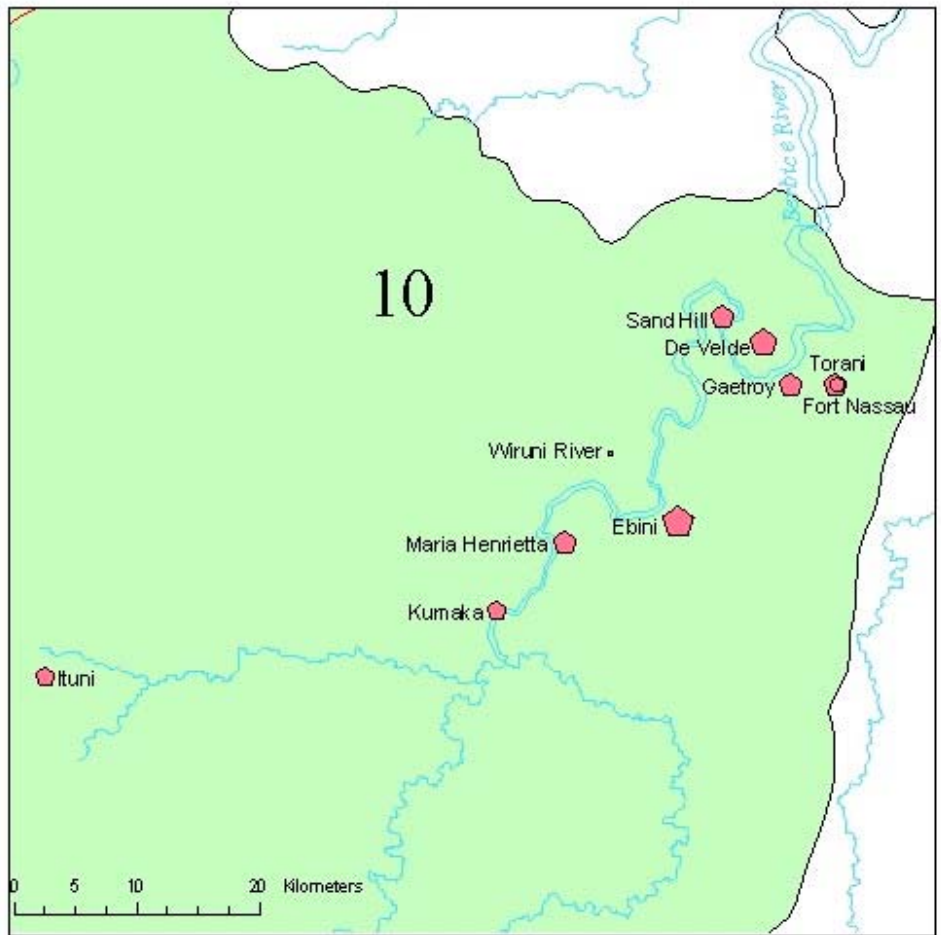
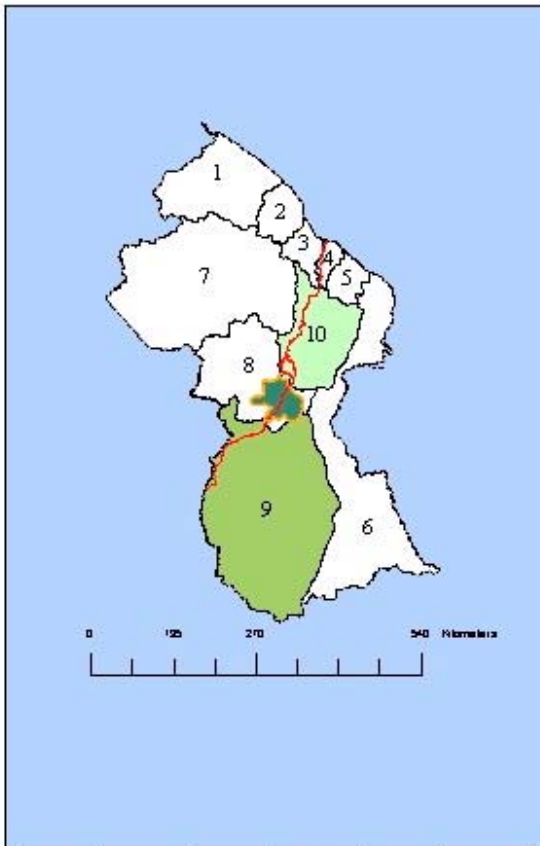
<G:\Crabwood Oil Data Copy\Craboil\Lumber Dealers.xls>

[G:\Crabwood Oil Data Copy\village\\_profiles.xls](G:\Crabwood Oil Data Copy\village_profiles.xls)

[K:\Forest Management\Crabwood Oil Project\Simon Milward\Craboil Study Simon  
Milward.doc](#)

[K:\Forest Management\Crabwood Oil Project\T Martinborough](#)

# Volume of Crabwood Oil Produced In Regions 9 and 10



Region	Villages	No. of Crabwood Oil producing HHolds	Estimated Number of Persons Involved in Crabwood Oil Production	Population	Production Level (gal)
9	Annai	4	243	372	0.20
9	Massara	1	56	316	1.00
9	Rupertee	3	18	228	1.25
9	Toka	3	189	216	Not Available
9	Woiwetta	1	7.1	243	0.10
9	Yakarinta	1	7	486	Not Available
10	Sand Hill	14	84	480	100.00
10	Kumaka	2	86	60	40.00
10	De Velde	14	616	180	62.00
10	Ebini	20	88	180	69.00
10	Fort Nassau	3	135	90	79.00
10	Gaetroy	6	225	90	87.00
10	Ituni	12	516	52	36.00
10	Maria Henrietta	11	47.3	60	105.00
10	Torani	3	11.4	90	27.00
10	Wiruni District	6	138	571	Not Available
10	Wiruni River	21	903	400	Not Available

- Main Rivers
- Georgetown to Lethem Road
- Iwokrama Forest

Copyright (c) 2002 Iwokrama International Centre. All rights reserved.  
 Some source data are copyright the Guyana LBSC.  
 Some source data courtesy the Iwokrama - CEH Crabwood Oil Project.  
 Produced by the Iwokrama Geographic Information Science Unit.  
 Iwokrama International Centre for Rain Forest Conservation and Development.  
[www.iwokrama.org](http://www.iwokrama.org)

