

SURVEY OF LEATHERBACK TURTLE
NESTING SITES IN 1990

BY
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MINISTRY OF NATURAL RESOURCES AND LABOUR

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1. EXECUTIVE SUMMARY

The leatherback turtle is culturally one of the most important animals found in the B.V.I. The fishery of these turtles has been occurring for centuries in our islands, and ancient mysticism and superstitions surround it.

It appears, however, from surveys conducted over the last four years, that the leatherback turtle, the most endangered of all sea turtles, is becoming extinct in the B.V.I. In 1990, aerial and ground surveys were conducted regularly of all known leatherback nesting sites in the BVI. The 1990 survey showed only three confirmed nestings at Trunk Bay, Tortola, these nests could have been made by the same female.

There are many reasons for this decline in numbers, these include plastic pollution in the marine environment, over fishing, development of nesting beaches, and the illegal taking of both eggs and nesting females.

In the light of the survey results over the last four years, an amendment has been drafted to the Turtles Ordinance declaring a total moratorium on leatherback turtle fisheries. This amendment should come into law early in 1991.

2. INTRODUCTION

The leatherback turtle (*Dermochelys coriacea*), or "Trunk" as it is locally known, is the largest species of sea turtle in the world. It can measure up to 8 feet long, and the heaviest specimen on record weighed over 2,000 pounds. Leatherbacks are highly pelagic, and will come from foraging grounds as far afield as Canada, in order to nest in the B.V.I. between the months of March and July.

According to local fishermen there used to be up to six leatherbacks per night nesting on certain beaches during the peak of the season in the 1920s and 1930s. Surveys in recent years show an alarming decline in these figures, suggesting that the leatherback turtle could be in immediate danger of disappearing from B.V.I. waters.

This report details the results of a comprehensive survey of all known leatherback nesting beaches in the B.V.I. during the nesting season, March to July, 1990. The survey was conducted by staff from the Conservation and Fisheries Department, Ministry of Natural Resources & Labour, Government of the B.V.I. Financial assistance for the survey was obtained from the World Wide Fund for Nature United Kingdom.

3. SOCIAL AND ECONOMIC IMPORTANCE OF THE LEATHERBACK TURTLE IN THE B.V.I.

Leatherback fishing was traditionally very important throughout the B.V.I., but it has declined sharply over the years. In 1986, when the closed season on turtle fishing (1st April - 30th November) was revised to include leatherback turtles, it was determined that the harvest had been reduced to certain beaches along the northern shore of Tortola.

The leatherback fishery was never as economically important as the green and hawksbill fishery, since the leatherbacks are seasonal visitors and as such are not available throughout the year. As there was not a large market for most of the by-products obtained from the turtles, these were distributed in a subsistence manner within the community.

Although the economic values of this fishery were never large, the social and cultural ties were extremely deeply rooted, with the beginning of the customs and traditions being traced by some back to the days of slavery, whilst others believe that they were actually brought to these islands from Africa. Some of the mysticism that surrounds the leatherback fishery, as maintained by local fishermen, include phenomena such as music, whistling, human voices, strange odors and turtle shaped clouds pointing to the beach where a female will come up to nest.

Leatherback fishermen wait on a beach where they believe a turtle will nest. If a turtle does appear, she is turned on her back, and holes are cut into her front flippers which are then tied across her plastron (belly). The turtle is left until the morning, whereupon the women carry containers to the beach to carry meat home, and the men butcher the turtle and boil the meat, thus rendering the most important product of the leatherback turtle, the oil.

Some of the oil gleaned from a turtle is shared amongst the community, and the rest has traditionally been sold locally. The oil is prized for its aphrodisiac qualities and for its properties as a cure for respiratory ailments. The oil is not, however, as easy to sell as it was in the past, and the financial gain from leatherback fishing is minimal. This effectively discourages the younger generations from continuing to slaughter the turtles.

4. PREVIOUS LEATHERBACK SURVEY RESULTS

Previous beach surveys have been conducted in 1987, 1988 and 1989. In 1987 the surveys were carried out by the Conservation Officer (Mr. B. Lettsome) and the Director of the National Parks Trust (Dr. N. Clarke). Nests were confirmed at Long Bay Lambert, Josiahs Bay, Rogues Bay and Trunk Bay; a total of nine leatherback nests were recorded between April and July 1987. The incidence of nesting suggested 3-4 animals nesting. However, this could not be verified due to interference from local fishermen, who had erased tracks. One animal was caught and killed illegally at Josiahs Bay, Lettsome (1987), Eckert (1988).

In 1988, regular beach surveys were conducted by the Conservation Officer (Mr. B. Lettsome) and the Conservation Assistant (Mr. H. Lima). Surveys were conducted from mid-March to mid-June on the northeast coast of Tortola. One leatherback turtle nested once at Long Bay Lambert on 17th May, 1988.

In addition in 1988, it was reported that one leatherback turtle nested on the southwestern coast of Anegada, Lettsome (1989). However, after nesting, the turtle was attracted to a street lamp, she became disorientated and dehydrated and subsequently died.

In 1989, regular beach surveys were conducted by the Conservation Assistant (Mr. H. Lima) and the Fisheries Assistant (Mr. S. Davies). Surveys were conducted during April and May, Cambers and Lima (1989). No leatherback tracks were seen. One of the recommendations from the 1989 survey, Cambers and Lima (1989), was that future surveys should have a wider geographical coverage so as to cover all potential nesting sites especially those in Anegada.

5. 1990 LEATHERBACK SURVEY

5.1 Methodology

Three different methods were used in the survey so as to ensure that any tracks occurring would be seen. These methods were :

- (1) Aerial surveys,
- (2) Beach walk surveys,
- (3) Ground truth surveys.

5.1.1 Aerial Surveys

These surveys were carried out twice weekly from March -July, 1990. The aircraft used was a wing over cockpit, single engine, 4-seater Cessna piloted by Mr. W.H.L. Bullimore, a Tortola resident.

Beaches on Tortola, Beef Island, Peter Island, Sandy Cay, Sandy Spit, Virgin Gorda and Anegada were surveyed. Table 1 shows the list of beaches surveyed and the order in which they were flown. Figure 1 shows the islands surveyed and the general flight path. Surveys were flown early in the morning, usually between 0700 and 0830 hours. This was the best time to observe turtle tracks due to the shadows cast and due to the fact that there was little human disturbance on the beaches at this time.

The aerial surveys were carried out twice weekly, although there were some gaps particularly at the beginning of March and the end of June due to unavailability of the aircraft. Table 2 shows the dates on which surveys were flown.

During each aerial survey an officer from the Conservation and Fisheries Department was present to observe and record any tracks. The officers were :

Mrs. J. Blok-Meeuwig	Conservation Biologist,
Miss A. Morris	Conservation Trainee,
Mr. E. Smith	Environmental Awareness Officer.

A specialised data sheet was used to note relevant observations, see Table 3.

5.1.2 Beach Walk Surveys

In addition to the aerial surveys, beach walk surveys

Table 1 List of Beaches Surveyed Aerially and the Flight Order

START Beef Island Airport

Peter Island Beaches

1. Deadmans Bay

2. Sandy Cay

3. Sandy Spit

Tortola Beaches

4. Trunk Bay

5. Rogues Bay

6. Josiahs Bay

7. Long Bay Lambert

8. Little Bay Lambert

Beef Island Beaches

9. Long Bay

Virgin Gorda Beaches

10. Trunk Bay

11. Savannah Bay

12. Pond Bay

13. Mahoe Bay

14. Plumtree Bay

15. Mt. Trunk Bay

16. Long Bay

Anegada Beaches

17. Pomato Point

18. West End

19. Cow Wreck

20. Bones Bight

21. Windlass Bight

22. Soldier Wash

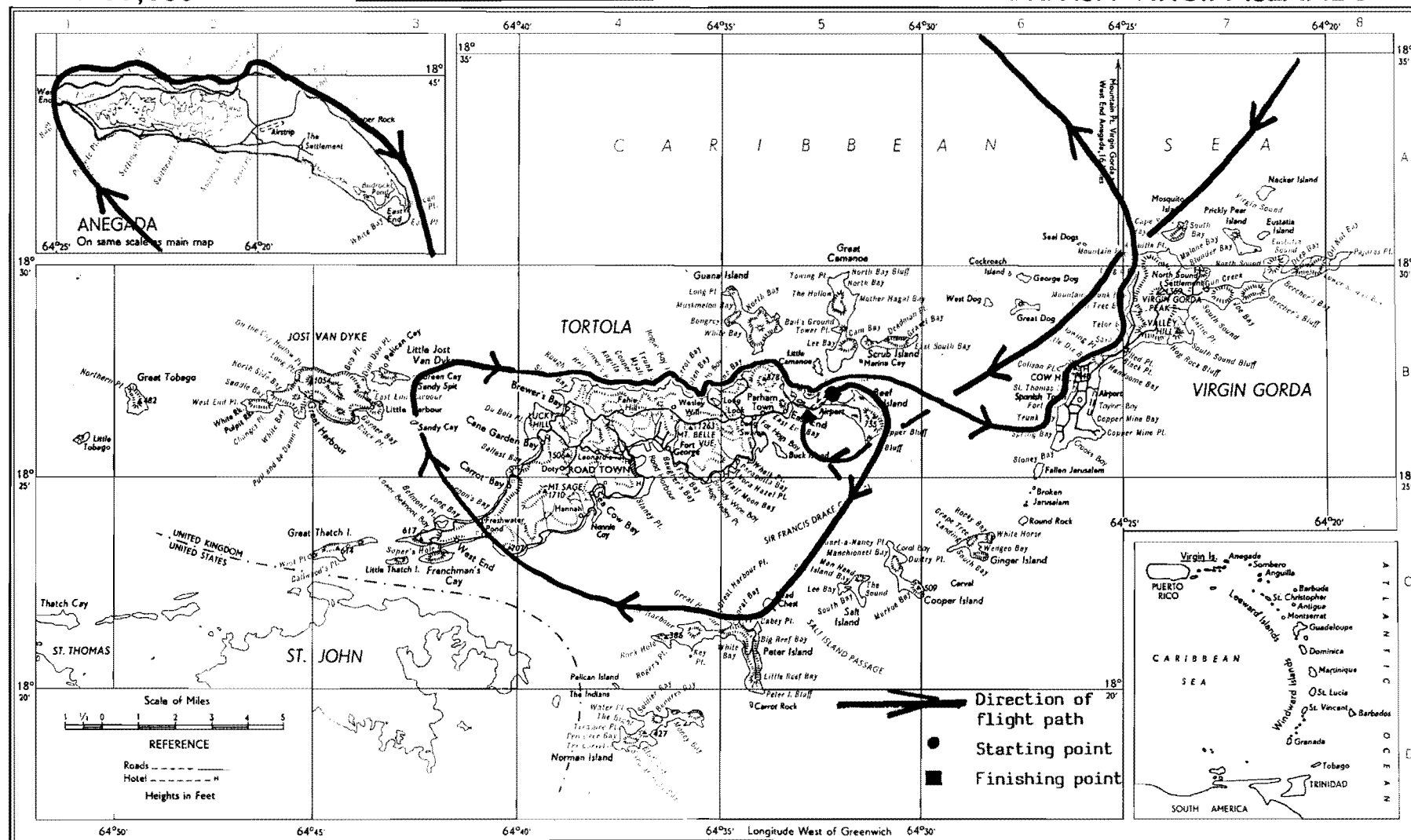
23. Loblolly Bay

END Beef Island Airport

1:200,000

FIGURE 1 TURTLE FLIGHT PATH

BRITISH VIRGIN ISLANDS



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DOS 346, Sheets 2(1984), 3(1984), 4(1984), 5(1984), 6(1977).

Agents for the sale of this map are:-
Ordnance Survey, Romsey Road, Southampton, England SO9 4DH
Copies can also be obtained from the Survey Department, P.O. Box 142
Road Town, Tortola, British Virgin Islands.

Table 2 Aerial Survey Record

Date of Aerial Survey	Conservation & Fisheries Department Observer
02.03.90	J.Blok-Meeuwig
29.03.90	J.Blok-Meeuwig
12.04.90	J.Blok-Meeuwig, A.Morris
17.04.90	J.Blok-Meeuwig
19.04.90	J.Blok-Meeuwig, E.Smith
24.04.90	A.Morris
27.04.90	A.Morris
01.05.90	J.Blok-Meeuwig
04.05.90	J.Blok-Meeuwig, E.Smith
08.05.90	J.Blok-Meeuwig
11.05.90	A.Morris
15.05.90	J.Blok-Meeuwig
18.05.90	A.Morris
22.05.90	A.Morris
25.05.90	A.Morris
29.05.90	A.Morris
06.06.90	E.Smith
08.06.90	E.Smith
12.06.90	E.Smith
18.07.90	E.Smith
20.07.90	E.Smith
24.07.90	E.Smith

TABLE 3 AERIAL SURVEY DATA SHEET

SEA TURTLE AERIAL BEACH SURVEY

Form 2: FLIGHT DATA RECORDS

Page 1 of 1

Flight #: 16 COUNTRY B.V.I. State --- Zones --- DATE 15 May '90

Observer 1 J. Blok Observer 2 - _____ Recorder J. Blok Pilot B. Bullimore

Aircraft Cessna Time: S 7:05 F 8:20 Speed 70 Altitude 150

Weather: Current pt. cloudy Prior 24 Hrs. rainy Tidal State low Sea State 3ft. swell

Ground Truth Survey Made yes Zone Record on File yes

[illegible]

were carried out three times a week during April and May, and twice a week during June. These surveys covered three beaches on Tortola and Beef Island, namely Josiahs Bay, Long Bay Lambert and Long Bay Beef Island. These were known and accessible nesting beaches and the purpose of these surveys was to ensure that any turtle tracks were observed before there was any possibility of their being erased by poachers. (Leatherback tracks can remain visible on the surface of the beach for several days provided they are not deliberately erased). Thus these beach walks were conducted early in the mornings, at first light, 0530 - 0600 hours. Data sheets were completed, see Table 4 for a sample data sheet. The beach walks were conducted by officers from the Conservation and Fisheries Department :

Dr. G. Cambers	Conservation Officer,
Mr. H. Lima	Conservation Assistant,
Miss A. Morris	Conservation Trainee.

In addition during March when the plane was not available, beach walks were carried out on the three above named beaches in Tortola and Beef Island, the west coast of Virgin Gorda, the western coast (around Pomato Point) and northern coast of Anegada. These surveys were conducted once a week by staff from the Conservation and Fisheries Department :

Mrs. J. Blok-Meeuwig	Conservation Biologist,
Miss A. Morris	Conservation Trainee.

In the case of Anegada, the surveys were conducted by Mrs. Searles.

The major purpose of the beach walks was to supplement the aerial surveys.

5.1.3 Ground Truth Surveys

If any tracks were seen during the aerial surveys, then a ground truth survey was conducted immediately after the sighting. These ground truth surveys were conducted by :

Mrs. J. Blok-Meeuwig	Conservation Biologist,
Mr. S. Davies	Assistant Fisheries Officer
	(Surveillance),
Mr. H. Lima	Conservation Assistant.

If the track seen was on an accessible beach, then the ground truth was conducted by car. However, if the track seen was on an inaccessible beach or island, then the Fisheries Patrol boat was used to complete the survey. Once on the beach, the species of the turtle was confirmed, measurements and photographs were taken of the tracks and any nest, and a map

TABLE 4 COMPLETED BEACH SURVEY SHEET

SEA TURTLE NESTING ACTIVITY

DATE: 13th May 1990

OBSERVOR: Gillian Cambers

WEATHER: Clear

TIDE: Mid

SEA STATE: Swell (wave height 3ft.)

SITE	TIME START	TIME END	TRACK	SPECIES	TRACK WIDTH	HWM	HWM- VEG	HUMAN ACTIVITY
Josiahs Bay	05:30	05:40	No	-	-	-	-	Tyre tracks from sand mining pit.
Long Bay Lambert	06:05	06:15	No	-	-	-	10m	None
Long Bay Beef Island	06:25	06:40	No	-	-	-	7m	None

MAP OF NEST IF FOUND:

None found

was drawn, see sample completed form, Table 5.

5.1.4 Review of the Methodology

It was found that, out of the different methods used to survey the relevant beaches, the aerial survey was superior to the other methods used. There were several reasons for this, and they included:-

- (i) The area that could be covered by the aerial survey included all of the beaches considered important to leatherback nesting. Using a boat or a car for surveys limited the number of beaches that could be surveyed.
- (ii) Due to the speed with which the aerial survey could be conducted, it was possible to survey all the known nesting beaches twice a week. This ensured that, barring human interference, no tracks were missed.
- (iii) When conducting a ground truth survey on a track that was seen from the air, it was found that, during periods of moderate to high seas, the track could not be seen at all from the boat. It is thus possible that in previous years, when a boat survey has been conducted, tracks may have been overlooked.

However, in the B.V.I., the oil from the leatherback turtle is still a much sought after product, thus poaching is still a very real possibility. It is therefore felt that the aerial surveys combined with the beach surveys provides the best means of monitoring the populations of leatherback turtles in the B.V.I. The Conservation and Fisheries Department also sought to work with the local trunkers.

5.2 Results

Table 6 shows that three leatherback tracks were observed in 1990. The three tracks were all observed at Trunk Bay on the north coast of Tortola. The first track was observed on 15th May, 1990 at Trunk Bay, this was first seen during the aerial survey and was later confirmed by a ground truth survey. The second track was observed at the same beach one week later on 22nd May, 1990, again this was seen first during an aerial survey and was confirmed with a ground truth survey. The size of the tracks were similar in each case and it would appear that the tracks could have been made by the same individual.

On 14th June, 1990, a local trunker, Mr. A. Freeman,

TABLE 5 COMPLETED GROUND TRUTH SURVEY SHEET

SEA TURTLE NESTING ACTIVITY

DATE: 22nd May 1990

OBSERVOR: Halstead Lima

WEATHER: Clear

TIDE: Low

SEA STATE: Swell (wave height 2ft.)

SITE	TIME START	TIME END	TRACK	SPECIES	TRACK WIDTH	HWM	HWM-VEG	HUMAN ACTIVITY
Trunk Bay	2:30pm	3:00pm	Yes	Trunk	1.96m	21m	30m	None

MAP OF NEST IF FOUND:

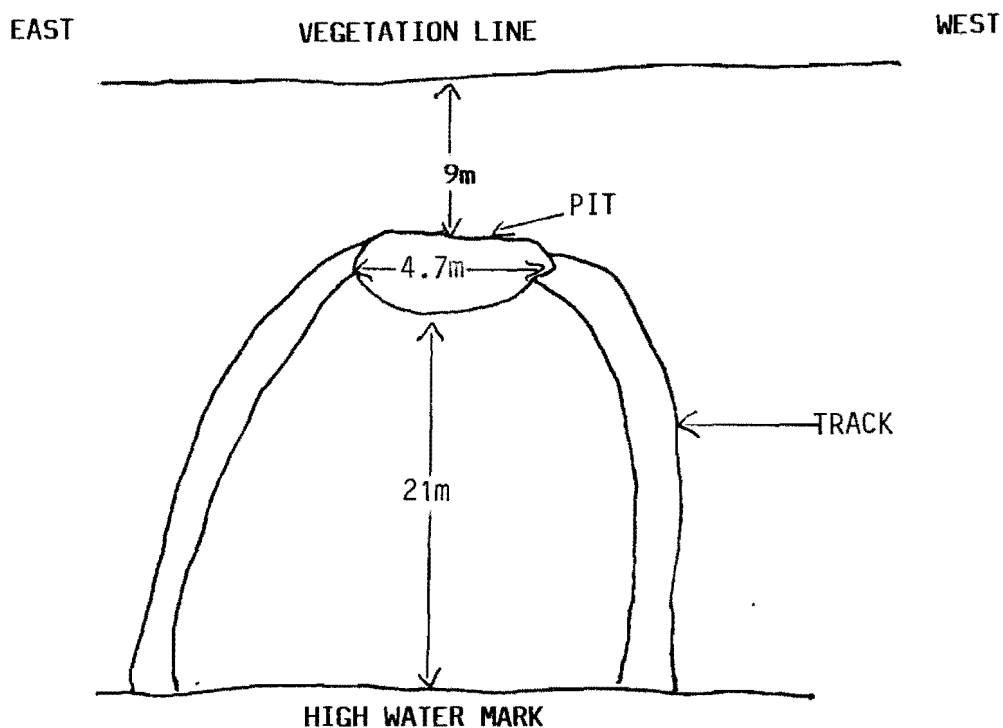


Table 6 Confirmed Leatherback Track Sightings in 1990
Nesting Season

Date Track Observed	Location	Observer	Track Width (metres)
15.05.90	Trunk Bay, Tortola.	Mrs. Blok-Meeuwig (CFD) during aerial survey. Confirmed with ground truth survey.	2.07
22.05.90	Trunk Bay, Tortola.	Miss Morris, (CFD) during aerial survey. Confirmed with ground truth survey.	1.96
14.06.90	Trunk Bay, Tortola.	Mr. A. Freeman (local trunker). Confirmed by CFD with ground truth survey	2.13

reported that he had observed tracks at Trunk Bay, this was checked and confirmed with a ground truth survey. Again the size of the tracks indicated that this was possibly the same female.

Thus the detailed survey work showed that between the period 2nd March and 24th July, 1990, three tracks were observed. All the tracks were on one beach, and it is possible that this represents only one female. Although nests were observed on each occasion, these were left undisturbed and there is no information as to whether nesting was successful or whether the eggs hatched and the hatchlings reached the sea.

There was an unconfirmed report that a turtle (possibly leatherback) was slaughtered on the north coast of Tortola in May 1990. There was also an unconfirmed report of leatherback hatchlings at Long Bay, Beef Island on 2nd February 1990. There was another unconfirmed report of leatherback hatchlings being sighted in Biras Creek, Virgin Gorda in July 1990. However, none of these reports could be verified by the Conservation and Fisheries Department.

6. DISCUSSION AND RECOMMENDATIONS

From the survey results for the years 1987 to 1990, and the reports of fishermen regarding historical nesting numbers, it can be seen that there has been a dramatic decrease in numbers of leatherback turtles nesting in the B.V.I. during the latter part of this century.

Table 7 summarises the data for Tortola and Beef Island over the last four nesting seasons (1987-1990).

Table 7 Leatherback Turtle Nests Recorded Between 1987 and 1990 in Tortola and Beef Island

Year	Number of Nests Recorded	Location of Nests
1987	9	Long Bay Lambert Josiahs Bay Rogues Bay Trunk Bay
1988	1	Long Bay Lambert
1989	0	-
1990	3	Trunk Bay

Even allowing for long term nesting patterns, the data collected over the past four years indicates a significant and precipitous decline. Indeed, over the past three years it appears that there may have been only one female nesting in Tortola and Beef Island.

The surveys for 1987 to 1989 were not as complete as in 1990. However, the 1990 survey, which was a thorough, exhaustive survey, clearly showed that the species is seriously endangered and may be nearly extinct in the B.V.I.

During the 1990 survey the Conservation and Fisheries Department worked closely with a local trunker, Mr. A.

Freeman, who shared his information and knowledge. Mr. Freeman applied to the Ministry of Natural Resources & Labour to catch one leatherback turtle in 1990 and in each subsequent year. The application received careful attention and while the primary recommendation of the Conservation & Fisheries Department was to recommend refusal on the grounds of survey results showing depletion and near extinction of the species, it was recognized that continual surveillance of all the potential nesting beaches by Conservation & Fisheries Department staff was a practical impossibility. For this reason an exception was made and special permission was granted in June 1990 for Mr. Freeman to catch one leatherback turtle on condition that he shared all his information on leatherback turtles with the Conservation and Fisheries Department. However, no leatherback turtle was caught. The permission expressly referred to 1990 alone and stressed that in the future applications would be considered in the light of proven nestings.

Only the 1990 survey covered the out islands, and it is significant to note that no tracks were observed. However, since these islands were not covered in previous surveys, it is not possible to make generalisations about these nesting beaches except for the year 1990.

With only one confirmed leatherback turtle nesting in the B.V.I. in 1990, there are certain measures that must be taken immediately in order to ensure that this seriously endangered species does not become extinct in these waters. These measures include:

- (i) The declaration of an indefinite moratorium on leatherback turtle fishery until stocks recover to an acceptable level.
- (ii) Continuation of nesting site surveys in future years, with possible extensions of the survey to include Guana Island and Great and Little Camanoe. A valuable data base is being built up which must be continued.
- (iii) Work closely with the trunkers to show them how numbers have declined and how essential it is for the species survival and ultimately the fisheries survival to allow time (years) for stocks to recover.
- (iv) Work closely with the politicians and decision makers to emphasise the need to protect leatherback turtles.
- (v) Ensuring that no licences are issued to leatherback fishermen for the take of either turtles or eggs.
- (vi) Increasing enforcement of existing legislation to ensure that no leatherbacks are illegally slaughtered.
- (vii) Increasing public awareness work so as to ensure that the plight of the leatherback turtle is known to as many people as possible throughout the B.V.I.

7. CONCLUSION

In the light of these survey results an amendment has been drafted to the Turtles Ordinance in December, 1990, declaring a total moratorium on leatherback turtle fisheries. It is hoped this amendment will be passed into law early in 1991.

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