

**ATTITUDES TOWARDS HUNTING AND THE DEVELOPMENT OF A
NATIONAL WILDLIFE POLICY IN ST. LUCIA**

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Prepared by
Lyndon John
Forestry Department
Union
Castries
St. Lucia

Acknowledgements

This report is based on the results of a survey to determine the views of the St. Lucian public on matters pertaining to wildlife resources. In essence it reveals a society that has evolved from a standard position of open access and open exploitation of wildlife resources to one of increasing sophistication. This places the institutions that manage our country's natural resources in a position of increasing responsibility. Our decisions should therefore be informed ones. Thanks to Christopher Cox and Donald Anthony for their contributions, also Michael Andrew, Edwin St. Catherine and Dr. James Wiley for their comments.

Abstract

The Forestry Department in December of 1999 undertook an islandwide survey on the public perception and attitudes towards hunting in St. Lucia. Hunting has over the last few decades diminished considerably, in part to a moratorium in effect since 1980 and currently, a three-year moratorium on hunting has been instituted by Cabinet conclusion as of June 19, 2000. However, there are a few individuals who remain interested in re-establishing hunting. Amidst current national policies and the need to effectively manage our wildlife resources, the Forestry Department has seen fit to undertake the formulation of a national wildlife policy. The results of this survey will be a contributing consideration in the development of such a policy.

Five hundred and five (505) people were interviewed in this survey from all over the island. The sampling was statistically representative of the population by age, gender, and socio-economic status. The sample error on the categorical variables measured in this survey is $\pm 3\%$. The majority of individuals ranged from 15-24 and 25-34 years in age. A total of 248 males and 257 females were sampled. The overwhelming majority (78%) thought that wildlife was "extremely important to be saved." St. Lucians consider wildlife conservation to be a national priority 69.9% (353), a small percentage (15.8%) said the importance depended on the species. Of the 505 interviewees, 52% considered wildlife to be threatened, 30% did not consider it so. Of those that thought of wildlife as threatened, 23% (116) say that hunting/killing of wildlife represented the greatest threat and 12.6 (64) said deforestation. The exercise was conducted by the Government's Statistical Department.

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1. Introduction

Hunting of St. Lucia's wildlife has declined dramatically over the past decades. This has been due primarily to an aggressive forest and wildlife conservation programme that was built around conservation of the St. Lucia Parrot (*Amazona versicolor*). Historic scientific literature on the fauna of St. Lucia suggests that hunting of indigenous wildlife for food was a common practice. The dominant animals hunted for food included agouti (*Dasyprocta antillensis*), opossum or maniocou (*Didelphis marsupialis*), iguana (*Iguana iguana*), and the Scaly-naped Pigeon or 'ramier' (*Columba squamosa*). Other species were hunted perhaps more infrequently but in sufficient numbers included the St. Lucia Parrot or 'jacqout' and the Forest Thrush (*Cichlerminia lherminieri*). Hunters have also traditionally sought waterfowl, a group of birds that include ducks and waders. Most of these birds are migratory, and their presence and abundance on the island is directly related to the area of wetland habitat that remains on the island. The effect of hunting on wildlife is typified in the case of the St. Lucia Parrot. This highly prized bird was severely persecuted, large numbers having been taken for food and the pet trade, the practice well documented since the turn of the century (Porter 1929, Danforth 1935, Wingate 1969, Diamond 1973, and Butler 1977). By all accounts, unregulated hunting combined with habitat destruction, primarily for agriculture, resulted in the decline of several species. Documented declines in numbers occurred in the cases of the parrot, agouti, iguana, forest thrush and to a lesser extent with the scaly-naped pigeon and the opossum. To date the forest thrush, described by Semper (1872) as a principal game species, is now one of the rarest birds on the island, with few observations over the last 100 years.

In 1980, the Wildlife Protection Act was passed, replacing the Wild Birds Protection Ordinance of the 1800s. The Act made provisions for the establishment of Wildlife reserves, appointment of wildlife officers, categorized status for the various species within 'schedules' which stipulated whether a species was absolutely protected or may be hunted at specified times of the year. The Act laid the ground for a vibrant public conservation programme that continues today, with an underlying message of absolute protection of all species. Changes in cultural practices and public attitudes in recent years have reduced the demand for 'wild meat' and this has dovetailed with conservation efforts. In addition, the rise to prominence of nature-oriented tourism has helped in promotion of non-exploitive management of forest and wildlife resources. Today, St. Lucia is a model for forest and wildlife conservation and hunting of wildlife is currently minimal. Several islands in the region have taken cue from St. Lucia in review of their policy on hunting. Dominica has now instituted an indefinite ban on hunting to allow recovery of several species that have succumbed to poorly regulated hunting. Dominica's move to ban hunting was also motivated by recent emphasis on ecotourism, which is promoted on the basis of non-consumptive use of wildlife resources. Grenada has recently developed and tabled before Cabinet a forestry policy that makes provision for improved wildlife management. In Grenada where the taste for wild meat remains strong, numerous species have dropped to the brink of extinction, at least two having gone extinct- the Grenada Parrot and the Agouti.

Hunting pressure on St. Lucia is at an all time low, however, there is a small sector of the population that wishes to continue the practice. With the success of Jounen Kweyol festivities in recent years, the demand for traditional dishes that include opossum and agouti has been rising. At this point however, the demand remains confined to the timing of this event. The Ministry of Agriculture has entertained the concept of ranching local species such as the agouti to meet demand. The only group that has been vocal in reinstating hunting has been the St. Lucia Hunters Association. In the aftermath of hurricane Allen (1980), when several species were deemed at risk of survival, a 3-year moratorium was placed on hunting to allow species to recover. Since then the Hunters Association has lobbied the Forestry Department for re-opening of the hunting season, and on a few occasions have been allowed to hunt for short periods.

The Forestry Department has adopted a cautious approach to the reinstatement of hunting primarily due to the fact that far reaching gains have been made in promoting conservation of forest and wildlife resources through non-consumptive utilization. Testimony to this approach has been the increased interest in nature-oriented tourism, reduced infractions against the Wildlife Protection Act, and the decline in the demand for wildmeat. More importantly, the Department is not in a position at this present time, to effectively deal with the management demands that may be required with the reinstatement of hunting.

This wildlife survey revealed the level of success achieved with the Forestry Department's environmental education program and its conservation efforts. The majority of those surveyed did not approve of hunting. This attitude prevailed regardless of age, gender, religion, education, occupation and distribution.

2. Methodology

The survey was conducted by the Government Statistics Department in March 1999. The quota sampling or subjective sampling method was used. A sample size of 505 individuals was established based on this method. The sample error on the categorical variables measured in this survey is $\pm 3\%$. This method involved the incorporation of the characteristics of the population *a priori*. Age, gender, and socio-economic status are controlled to reflect similar characteristics in the general populace. The extent to which the sample categories reflect the general characteristics of the population provides evidence of sampling accuracy.

A questionnaire was prepared by the Forestry Department (Appendix), and reviewed by the Statistical Department. The questionnaire first sought to profile the individual by seeking information on age, religion, gender, occupation, residence, and education. It then attempts to assess the individual's level of awareness on wildlife issues. This was done by seeking answers to questions relating to personal importance placed on wildlife conservation, knowledge of wildlife conservation agencies, economic development impacts on wildlife, habitat importance, and wildlife legislation. The interviewee was then asked questions which sought to establish

personal attitude or interaction with wildlife either through hunting, pet trade or other experiences.

2.1 Method of Analysis

Data analysis was done with the SPSS 9.0 statistical software package and Integrated Microprocessing Systems (IMS) used for data processing. Responses to all questions were first analyzed by frequency and percentage. Subsequent to these, various question correlations were investigated to examine possible significant relationships in responses (e.g. attitudes towards hunting versus gender or age, importance of habitats versus age or gender). Chi-Square tests (χ^2) were used for these analyses, (Pearson Chi-Square, likelihood ratio, and linear by linear association).

3 **Demographics**

A total of 505 people were interviewed from throughout the island (Table 1). The sampling was statistically representative of the population by age, gender, religion, occupation and distribution. The majority of individuals ranged from 15-24 (25.3%) and 25-34 years (24 %) in age (Table 2). These two age groups accounted for 49.3 % of the sample. Two hundred and forty eight (248) males and two hundred and fifty seven (257) females were sampled (Table 3). Most of those sampled also claimed some religious persuasion, 60.6% were Catholic. This helps validate the surveys findings as Catholics were not controlled in the sample but the percentage ($\pm 3 %$) represented is accurate when compared to past surveys and censuses. A total of nine religious denominations were represented and a minority of 5.3 % gave no religious association. The others include Anglican, Pentecostal, Baptist, Seventh Day Adventist, Methodist, Church of God, Jehovah's Witness, and Rastafarian. The sample also gave a wide representation of occupations. A general breakdown of occupational backgrounds consisted of approximately 13 % professionals, 17% clerical workers, 28% trade workers (agriculture sector included), and 11% housewives or otherwise self-employed.

Table 1. Distribution and sample size of survey conducted in St. Lucia concerning wildlife issues, March 1999.

District	People surveyed	
	Frequency	Percent
Castries City	47	9.3
Castries Sub-urban	63	12.5
Castries Rural	80	15.8
Anse-La- Raye	27	5.3
Soufriere	32	6.3
Choisuel	24	4.8
Laborie	27	5.3
Vieux Fort	49	9.7
Micoud	56	11.1
Dennerly	49	9.7
Gros-Islet	51	10.1
Total	505	100

Table 2: Age groups and gender of people surveyed in St. Lucia, March 1999, concerning wildlife issues.

Age groups of persons	Number of people		
	male	female	total
7-14	25	20	45
15-34	120	129	249
35-54	64	64	128
55+	39	44	83
Total	248	257	505

The sample also accounted for education backgrounds. Primary and secondary levels were divided into two categories, namely, complete and incomplete. The other categories were tertiary, university, and other. Out of the 505 interviewees, 25.5 % had a complete primary level, 15 % had an incomplete primary. At the secondary level, 25 % had a complete secondary

level and 17.4 incomplete. The categories of university and tertiary had 12.9 % and 1.2% respectively (Table 3).

Table 3. Level of education attained by gender of sampled persons in St. Lucia, March 1999.

Level of education	Number of persons		
	Male	Female	Total
None	10	5	15
Primary	101	104	205
Secondary	101	113	214
Tertiary	23	27	50
University	10	5	15
Other	3	3	6
Total	248	257	505

4. Results

4.1 Wildlife conservation awareness

The island has several institutions involved in natural resource management on a variety of fronts. Forestry Department has vigorously campaigned in the past using the national bird, the St. Lucian Parrot, as the focal point for wildlife conservation. The Department still wished to understand the common perception of what constitutes “wildlife” to the average person. The categories which ranked high as “wildlife” regardless of age were, birds, reptiles, wild goats, fish, plants and insects.

Table 4. Responses to the question as to what constitutes wildlife in St. Lucia, March 1999.

		Total	Q2 age of person					Total
			7 - 14	15 - 24	25 - 34	35 - 44	45 - 54	
Q7	Not Stated	1628	141	469	372	236	166	244
What do you regard as wildlife	domestic animals	59	10	14	15	10	3	7
	birds	255	25	46	66	47	25	46
	fish	187	21	38	50	28	18	32
	pets	42	5	5	12	9	2	9
	plants	173	11	33	48	29	19	33
	man	13		3	4	3	1	2
	wild goats	198	15	34	54	33	18	44
	insects	100	9	26	22	12	11	20
	reptiles	202	20	37	52	31	26	36
	all ot the above	173	13	63	31	24	17	25
Total		505	45	128	121	77	51	83

When questioned on whether they knew of any activities conducted to protect wildlife, 34% of the respondents knew of activities, 33% said no activity is being conducted and 32% did not know of any activities. The activity identified by the majority of interviewees was the enactment of laws protecting wildlife. When asked about awareness of the laws protecting wildlife, 57.4% were aware of these laws. Interestingly, the St. Lucia National Trust was singled out for a greater role in public education than the Forestry Department on the subject of wildlife protection. Many of the respondents felt that not enough was being done to educate school children on issues concerning wildlife. Seventy percent stated that wildlife conservation should be a national priority. Of the 505 interviewees, 52% considered wildlife to be threatened. This question is statistically significant when correlated to age of respondents (Table 5a, 5b.) and gender (Table 6.). Of those that thought of wildlife as threatened, 116 targeted hunting or killing of wildlife as representing the greatest threat, while 64 said deforestation. When analyzed by age there is statistical significance apparently due to the age range 7-34 targeting habitat destruction generally as the main threat to wildlife ($\chi^2 = 0.006$). When analyzed by gender, more females gave “don’t know” as to the threatened status of wildlife compared to their male counterparts ($\chi^2 = 0.006$).

Table 5a. Responses to the question on threatened status of wildlife in St. Lucia, March 1999.

Crosstab

		Q2 age of person						Total
		7 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 +	
Count								
Q11A is	Not Stated	1	1		1		2	5
wildlife being	yes	18	77	63	39	26	38	261
threatened	no	13	11	16	19	14	17	90
	dont know	13	39	42	18	11	26	149
Total		45	128	121	77	51	83	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.739 ^a	15	.031
Likelihood Ratio	28.426	15	.019
Linear-by-Linear Association	.014	1	.906
N of Valid Cases	505		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is .45.

Table 5 b. Responses to the question on reasons for threatened status of wildlife in St. Lucia, analyzed by age range, March 1999.

Crosstab

Count		Q22 Younger versus Older persons		Total
		7 - 34	35 and over	
Q11B	0	145	110	255
if yes	Hunting of wildlife	11	18	29
say	People Kill wildlife	49	38	87
why	Constant abuse of our resources	3	2	5
	Deforestation/cutting down of trees	48	16	64
	Housing Development/local coal mining/timber production	3	6	9
	Using toxic chemicals the wrong way	2	5	7
	Tourism	3		3
	Lack of education about wildlife	9	3	12
	Other	10	9	19
	Not Stated		2	2
	Not Applicable	1		1
	Destroying of habitat	10	2	12
Total		294	211	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.867 ^a	12	.006
Likelihood Ratio	30.841	12	.002
Linear-by-Linear Association	2.838	1	.092
N of Valid Cases	505		

a. 11 cells (42.3%) have expected count less than 5. The minimum expected count is .42.

Table 6. Responses by gender to the question on threatened status of wildlife in St. Lucia, March 1999.

Crosstab

Count		Q3 sex of person		Total
		male	female	
Q11A is	Not Stated	3	2	5
wildlife being	yes	145	116	261
threatened	no	44	46	90
	dont know	56	93	149
Total		248	257	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.498 ^a	3	.006
Likelihood Ratio	12.599	3	.006
Linear-by-Linear Association	12.274	1	.000
N of Valid Cases	505		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.46.

When asked if they experienced any ill effects of wildlife, the majority said no. When the question was cross-tabulated with the age of individuals responding, there was statistical

significance ($\chi^2 = 0.021$), this was not found when correlated to gender. Of those who responded positively to the question, a greater percentage of them were males from the age range 35-55+. They would be the ones to most likely experience crop destruction from wildlife activities.

The Forestry Department was readily identified by most as the lead government agency responsible for management of the island's wildlife. The age group 7-14 showed that 58% of the youngsters were aware of laws protecting wildlife. The majority (64%) of this age group felt that there was insufficient education on wildlife issues. Ninety six percent of everyone interviewed said that wildlife should be saved, ranking it from important to extremely important. They also considered that wildlife conservation should be a national priority by 70% (Table 7.).

Table 7. Response to the question on wildlife conservation as a national priority in St. Lucia, March 1999.

Crosstab

Count		Q2 age of person						Total
		7 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 +	
Q27 should	Not Stated		1	2	1	1	2	7
wildlife	yes	36	93	75	57	31	61	353
conservation	no	1	4	7	3	3	4	22
be given	Depends on wildlife	3	16	28	12	9	12	80
priority	species							
	Depends on	5	14	9	4	7	4	43
	conservation methods							
Total		45	128	121	77	51	83	505

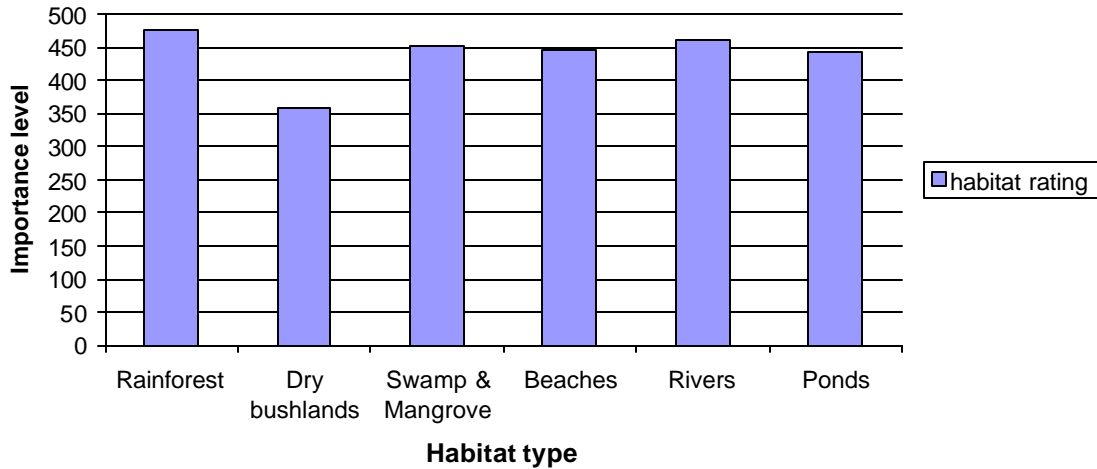
On the question of ownership, most St. Lucians believed that wildlife first belonged to a supreme being (i.e., God/Jah) and next, to St. Lucians. This response was statistically significant in correlation to the age of the respondents ($\chi^2 = 0.039$). The younger age range 7-34 and those in the 55+ category were inclined to ascribing ownership to God/Jah. The age group 35-54 gave propriety to St. Lucians.

4.2 Importance of Habitat

The integrity of habitat is essential to the survival of our wildlife. The survey sought to find out the public perception to different habitat types and the value they ascribed to these types for importance to wildlife conservation. In terms of assessing critical habitats for wildlife, interviewees gave priority to the rainforest followed by swamps, rivers and mangroves, next were beaches and coastal areas, ponds and lastly dry bush lands (Fig. 1). There was no statistical significance in responses when correlated to age or the education of the interviewee. Statistical significance arose when habitat importance was correlated to the question on approval of hunting for consumption, for the rainforest ($\chi^2 = 0.013$), and the swamp and mangrove category ($\chi^2 = 0.022$).

Habitat importance was also correlated to the location of the respondent (i.e. the north or south of the island) for analysis. Three hundred and seventeen (62.7%) came from the north and 188 (37.2%) from the south. The percentages responding to the categories “important”, “very important” and “extremely important” were compared. There was little difference in the degree of importance given to the habitat categories ($r = 0.2-3.4$) with the exception of when beaches and coastal habitat are included ($r = 0.2-28.8$). In the north 87.4% rated it important to extremely important compared to the south where 58.6% ranked it in those categories. Interestingly, 165 (33%) of the 505 interviewed said that they would contribute money for securing habitat for wildlife while 143 (28%) said “maybe,” showing that they may consider contributing given a particular set of circumstances.

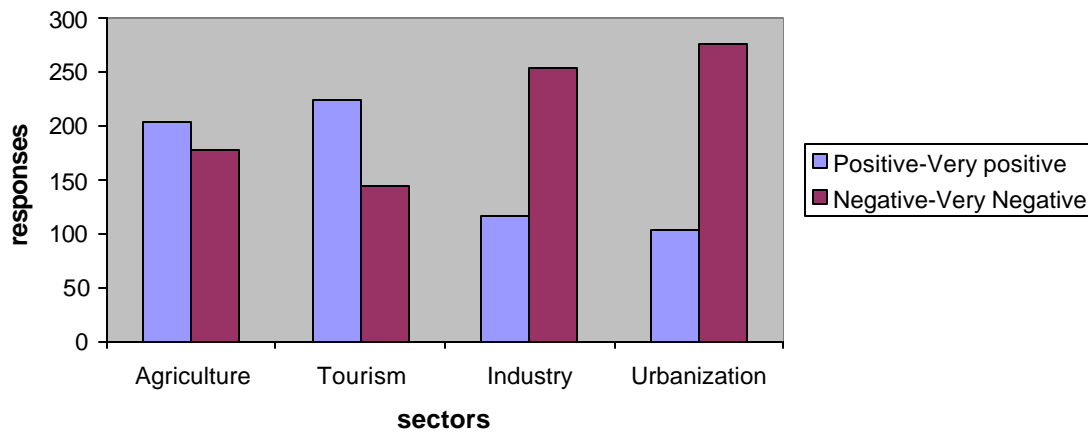
Fig.1. Survey responses to habitat importance in St. Lucia



4.3 Economic Development and Wildlife

Interviewees were asked to give their impressions on the development sectors that posed a risk to wildlife survival. The majority perceived the greatest threat from urbanization followed by industry. Conversely, they saw some sectors as having a fairly positive impact on wildlife. Sectors such as tourism and agriculture were considered as having a positive impact. There was no statistical significance when correlated to age, gender or location (i.e. north and south) to the impact of agriculture. There was statistical significance when the impact of tourism was analyzed by location ($\chi^2 = 0.007$). The south viewed its impact as being more positive.

Fig. 2: Perceived impacts by development sectors on wildlife survival in St. Lucia, March 1999.

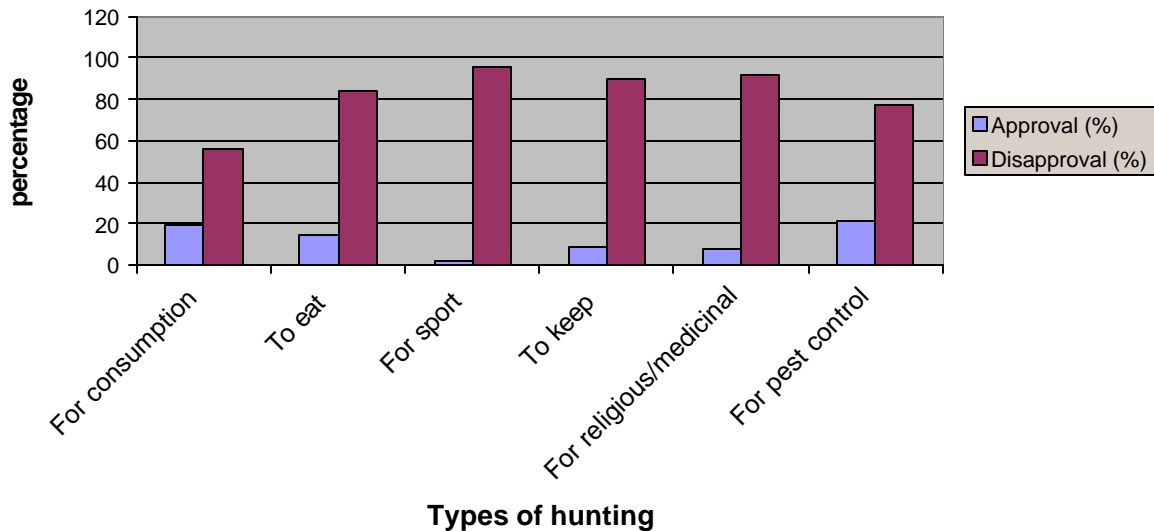


Respondents were asked directly whether they recognized certain activities as deleterious to habitat on which wildlife was dependant. Activities such as charcoal production, sand mining, wetland reclamation, and deforestation were readily identified as having adverse impacts. When asked whether farming had a negative impact, 63.6 % conceded that it does, 33.9% said that it did not. A similar situation was observed in attitudes towards residential development, 78.6% stated negative impact but 19.4% said it did not destroy habitat. There was no statistical significance when correlated to location (i.e. north or south) of the interviewee. Charcoal production was noted as destructive generally but there was significance when correlated to age ($\chi^2 = 0.001$). The age group 35-55+ was less inclined to see it as harmful to habitat. The same relationship exists for sand mining activity ($\chi^2 = 0.035$) and farming ($\chi^2 = 0.009$). When the responses were analyzed by gender on the issue of residential development being harmful, 82% of the females felt it was harmful versus 75% of the males, ($\chi^2 = 0.048$). No significance was found between all the activities and location.

4.4 Hunting

Generally, St. Lucians do not condone hunting. Attitudes to various forms of hunting ranged from partial tolerance to strongly intolerant, particularly for sport hunting (Fig. 3) regardless of location. This sentiment held out when correlated to age through all types of hunting even regarding pest control. This is in strong contrast to the prevalence of its practice in the past.

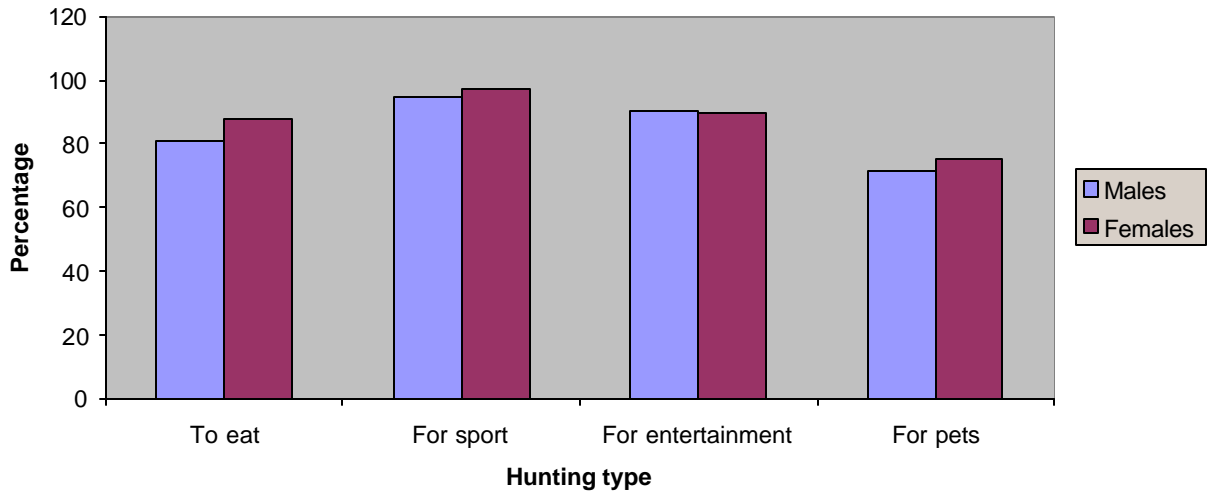
Fig.3 Attitudes towards hunting in St. Lucia, March 1999



However, in contrast to the results presented in Figure 2, when asked if they had ever consumed wild animals, 39.6 said “yes” and 59% said “no”. This result should be considered with caution since there was no time frame placed on the question. Most of the consumers were in the 15-34 age range and in the 55+ category. Consumption consisted of mainly meat and eggs. Consumption of wildlife by men was significantly greater than by females ($\chi^2 = 0.021$) in comparison. When districts were correlated to approval of hunting for consumption there was significance ($\chi^2 = 0.003$). The Castries region (city, sub-urban and rural) had 35 % of those who approved, 34 individuals, whereas Vieux-Fort, Micoud, Dennery and Gros-Islet combined made 49% (48 individuals) of the approval total. There was statistical significance among those who hunt for entertainment and age groups; it tends to be the younger age group 7-34 who are more involved, ($\chi^2 = 0.007$). The statistical significance also shows up when the question on how often does the individual hunt for food ($\chi^2 = 0.008$) and hunting for entertainment ($\chi^2 = 0.039$) is related to north and south location.

While there was generally opposition towards sport hunting and “hunting to keep”, by all age categories. There was leniency towards keeping wildlife as pets. The younger age ranges (7-34) appear to be more interested in keeping wildlife as pets ($\chi^2 = 0.021$). This relationship remains when attitudes of north versus south are compared. The group that admitted to engaging in frequent hunting for sport and for entertainment purposes amounted to 10%. Attitudes towards all forms of hunting, regardless of the gender of the individuals were almost the same with a slightly greater assertion towards disapproval by the female respondents (Fig. 4).

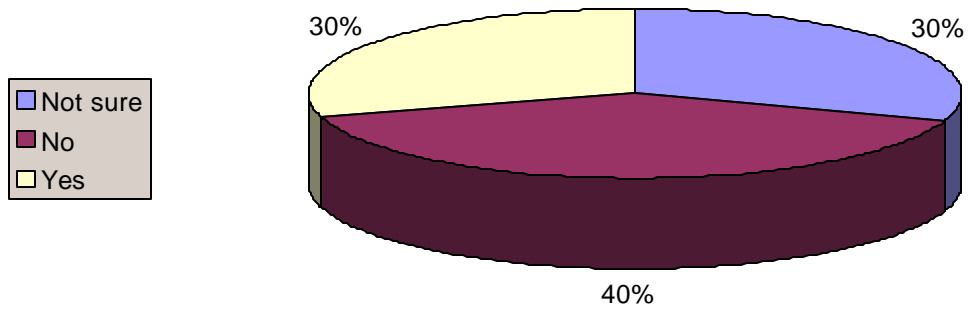
Chart 4. Negative responses to different types of hunting by gender in St. Lucia, March 1999 (N=505).



4.5 Pet Trade

There was clearly a level of ambiguity on the subject of importing exotic wildlife pets into St. Lucia by the respondents (Fig. 3). This ambiguity remains when the question is compared with responses by age groups. Greater interest was shown in acquiring wildlife pets by 20.8%. When the younger age group 7-34 is compared to the 35-55+ group, the younger group is more inclined to keeping wildlife as pets, ($\chi^2 = 0.012$). Respondents from the north districts were more approving of importation than from the south ($\chi^2 = 0.044$). The data suggests that they are also more involved in keeping wildlife as pets, than the south ($\chi^2 = 0.000$). Forty seven percent of those interviewed in the north withheld a response to the question of how often do they keep wildlife as pets versus 33% in the south.

**Fig. 3. Survey responses to the importation of wildlife to St. Lucia
(N=505)**



5. Discussion

St. Lucia has done something revolutionary in terms of wildlife conservation in the Caribbean. Few regional states can claim the results attained in St. Lucia by effective public education, protection, monitoring, restoration of wildlife stocks and the recovery of highly endangered species. In fact, those countries currently facing diminishing wildlife resources are paying attention to the St. Lucia model. Dominica and Grenada have taken a cue from St. Lucia and have implemented policy to regain rapidly diminishing stocks. Technical advice on public conservation education has been sought by Puerto Rico and St. Vincent from the St. Lucia Forestry Department. The program has been applied not only within the region, but also in the islands of the South Pacific and even South Africa under the auspices of RARE Center for Tropical Conservation. The stellar achievements of the conservation program applied in St. Lucia are not easily attained.

The Forestry Department is the only management authority for terrestrial wildlife on St. Lucia. The current policy approach remains oriented towards protection of wildlife in terms of non-consumptive utilization. It is against this approach that the Department seeks to develop a national wildlife policy. Such a policy should embrace a range of concerns and translate into **securing the wildlife resources in the interest of national development**. Issues such as the integrity of wildlife populations, wildlife habitat, biodiversity security, stability of ecosystems, ecotourism, agricultural research and diversification are some concerns that should be embraced in a national policy on wildlife resources. The Forestry Department applauds the decision by the Government of St. Lucia to uphold a three-year moratorium on hunting which has been instituted by Cabinet Conclusion No. 646 as of June 19, 2000.

5.1 Public Awareness and Education

The government, through the Forestry Department, has built a platform of conservation based on protection of most wildlife species with the exception of the rat (*Rattus spp.*), mice (*Musa spp.*) mongoose (*Herpestes auropunctatus*), and the endemic Fer-de-lance (*Bothrops caribbeas*). The survey reveals the extent of the success of the education campaign and legislative action undertaken by the Forestry Department and the Government of St. Lucia. However, the survey revealed ambiguity in the response on awareness of conservation efforts. It reveals that there is work to be done in raising the awareness on wildlife issues in the general public. In the 1980's, there was an all out public education campaign in the form of newspaper articles such as the "Jacqout," a weekend insert in the local paper which reached the general public, mobile presentations with the "Jacqout Express" bus, and officers made presentations to schools and organizations. The survey reveals that many respondents feel that this education thrust particularly by the Forestry Department has slowed down. Interestingly, the St. Lucia

National Trust was singled out for a greater role in public education than the Forestry department on the subject of wildlife protection. However, the Forestry Department was readily identified by most as the lead government agency responsible for management of the island's wildlife. Many of the respondents felt that not enough was being done to educate school children on issues concerning wildlife. The results point to the need for a concerted general environmental awareness education program on a consistent basis. Such a program should go beyond matters of wildlife conservation, and embrace climate change, biodiversity, and solid waste management. Institutional cooperation between environmental agencies would serve to enhance the scope and the impact of such an undertaking.

The single activity aimed at wildlife protection readily identified by the majority of interviewees was the enactment of laws protecting wildlife. The fact that 57.4% were aware of these laws, including the young, stems from the Forestry Department's effective education campaign. Seventy percent stated that wildlife conservation should be a national priority. Fifty two percent considered wildlife to be threatened, 47% either said it was not threatened or they were not sure. Of those who thought that wildlife was threatened, most indicated that hunting or the killing of wildlife was the chief threat. Few selected deforestation as the leading concern. The younger interviewees (7-34) felt that habitat loss was the leading threat. This conclusion may be reached by the fact that little hunting occurs today, however, habitat loss occurs for development purposes. C. James (1991) sums up the ambiguity reflected in concern over the "threatened" status of some species in St. Lucia in this statement:

“ St. Lucia has been very fortunate to have been spared from widespread abuse of its wildlife because of its excellent public awareness efforts over the last ten years. However, the database for wildlife management has been inadequate, and the public accepted guidelines for protection in good faith. As educational standards increase, good faith may be insufficient to stem any negative impacts on wildlife.”

This statement points to the fundamental need to base St. Lucia's wildlife management on the acquisition of data through scientific research above the dispensation of speculation. The survey results suggest that the generally negative view on hunting by the public appears to be more of a popular ethical position than one based on research indicating the threatened status of wildlife. This may have its advantages, but the Department may find itself in a contradictory position on certain management issues (e.g. management of a protected species population that reaches pestiferous levels). Sound decision making on wildlife management can only be founded in the development of a national wildlife policy which combines scientific principles with ethical considerations.

The integrity of habitat is essential to the survival of our wildlife. The public perception to different habitat types and the value they ascribed to these was generally similar through out the island. Interviewees gave priority to the rainforest followed by swamps, rivers and mangroves, next were beaches and coastal areas, ponds and dry bush lands. This is in keeping with the

reported statistics on deforestation rates for scrub forests that have been reduced by 5,162 hectares (GOSL, 1998). With the decline in the banana industry, there has been a general shift from squatting on deforested land. Other sectors of the economy such as tourism and construction have since experienced leading growth. Domestic housing and industrial development with related infrastructure are the leading cause of deforestation in the coastal dry forests and riparian habitat. Additional concern needs to be shown since scrub forests and mangrove primarily occur on private lands (GOSL, 1998).

The public perception of the beach and coastal areas as wildlife habitat differed between the respondents from the north versus those of the south. There was a greater degree of importance placed on it by respondents in the north. The generally accepted view is that coastal resources are of little importance to maintaining water supply and are largely marginal agricultural zones; they are therefore suitable for alternative development options. It is important to note that this region is rich in endemic wildlife resources and has become the last stronghold in St. Lucia for species such as, the endangered White-breasted Thrasher (*Ramphocinclus brachyurus sanctae luciae*), and St. Lucia Nightjar (*Caprimulgus otiosus*) found only in the dry forests of the North east coast, and the St. Lucia house wren (*Troglodytes aedon mesoluecos*) in the dry forests of the North-east and in the scrub forests on the Pitons. Endangered flora that are exploited for commercial purposes gain from this region include Latanyé palm (*Coccothrinax barbadensis*) used in production of the local broom production and Mauby (*Colubrina elliptica*) from which the bark is extracted to be used in the production of a popular fermented drink.

The survey results on perceived threats posed by the development sectors to wildlife survival were insightful. The majority perceived the greatest threat from urbanization followed by industry. Conversely, respondents saw some sectors as having a fairly positive impact on wildlife. Sectors such as tourism and agriculture were considered as having a mainly positive impact on wildlife. This may be due to an association with a thriving ecotourism industry. From 1995-1999, the Forestry Department has successfully generated \$923,205 (EC.), from trail visitation. Some private individuals are seeking to capture some of this by exploring possible trail development on their properties. The St. Lucia Nature Heritage Tourism Programme currently spearheads this effort providing both financial and technical support for such ventures. Such non-consumptive revenue generation offers lucrative possibilities that are currently being recognized. The impact that hunting or other wildlife consumptive options could have on the ecotourism industry must be considered in a national wildlife policy framework.

The survey also revealed public awareness on certain the negative impacts of specific activities on habitats and wildlife. Activities such as charcoal production, sand mining, wetland reclamation, and deforestation were readily identified as having adverse impacts. When asked whether farming had a negative impact, 63.6 % conceded that it does, while 33.9% said that it did not. A similar situation was observed in attitudes towards residential development, 78.6% stated negative impact but 19.4% said it did not destroy habitat.

The survey highlighted an interesting possibility when almost 61% of the 505 interviewed said that they would consider contributing money for securing habitat for wildlife. The possibility exists for a greater level of community involvement in self-help projects and wildlife management. Such a willingness to donate funds could be directed to the promotion of community projects such as trail establishment, community tour guiding, and bird watching guides. Projects are already underway in other countries (e.g. Trinidad & Tobago's- Nature Seekers; Matura Beach Turtle monitoring project based in the Matura community). The Des Barras community has recently secured the support of the St. Lucia Nature Heritage Tourism Programme for a similar project on turtle monitoring on Grand Anse beach. Direct benefit to the community is a great incentive to developing such schemes.

5.2 The Pet Trade

There was clearly a level of ambiguity on the subject of exotic pets by the respondents. This generally suggests a lack of public information on the subject. The survey results indicated interest by the younger age range in keeping wildlife as pets. The exotic pet trade has recently been on the increase in St. Lucia. Exotic birds such as psittacines (parrots, parakeets, macaws), finches, and snakes are enjoying rising popularity. St. Lucia as a signatory state to the CITES (Convention on International Trade in Endangered Species) is under international obligations which regulate trade in wildlife, particularly species which fall under Appendix I and II. Many of St. Lucia's wildlife are listed under those two appendices. Therefore international trade in St. Lucian endemic species (Appendix I) such as the St. Lucia Parrot (*Amazona versicolor*), and St. Lucia Boa constrictor (*Constrictor orophias*) are strictly prohibited except under scientific agreements.

The Forestry Department has been cautious in allowing exotic wildlife into St. Lucia for the pet trade. This is due to a number of risks associated with the trade that include:

1. Disease

There is the risk posed by some of the imported wild species introducing exotic diseases to local wild and domestic animal stock. Exotic wildlife can present a disease risk to the agricultural sector. Diseases such as Newcastle's disease that affects poultry can be spread by exotic psittacines (parrots) who have been exposed to the disease in other countries. Such an incident could prove disastrous to our fledgling livestock industry. The North America and European livestock industry have been plagued recently by outbreaks of B.S.E.-"mad cow disease", foot and mouth disease, and have had to resort to draconian measures to regain control which included measures against wildlife movement.

2. Ecological threat

There also exists the possibility for competition with local wildlife species if exotic species escape and become prevalent, such a situation could cause the demise of endemic species. The African green monkey (*Cercopithecus aethiops*) is well established and has attained pest status on St. Kitts and Barbados. In Hispaniola and Puerto Rico, a variety of exotic birds have successfully established breeding populations. Such species can effectively compete with native species for food and habitat if not out compete them in some instances.

The possibility of local use of native wildlife species in the general pet trade should be investigated. There is a lower associated risk of problems to local ecosystems through disease outbreaks or escape into the wild. Locals have expressed interest in acquiring the native boa constrictor, the red-kneed tortoise (*Geochelone carbonaria*), Iguana (*Iguana iguana iguana*) and different local pigeons and doves as pets (e.g. Ramier (*Columba squamosa*), Zenaida dove “Toutrelle” (*Zenaida aurita*). The Forestry Department has arranged a licensing system that has been implemented on a limited basis. This system needs to be reviewed for effective operation. Wildlife ranching is another option that could be considered using local species. The agouti (*Dasyprocta antillensis*) is a potential small livestock option.

5.3 Hunting

The hunting season in St. Lucia has been officially closed since 1980. Illegal hunting still occurs, primarily for Red-neck pigeon “Ramier” and feral pigs in the forests, and duck hunting in the wetlands (e.g. Mankoté mangrove). The traditional hunting season in St. Lucia is usually from October to December, however, during the organized hunting season little or no data was collected from authorized hunters by the Forestry Department. Hunting had a significant impact on wildlife populations in the past. According to Keith (1997), the reduction in the population of the St. Lucia parrot in 1910 was mainly due to hunting for food and to some degree trapping of pets (GOSL 1998).

The existing wildlife legislation provides total protection for all wildlife that falls under the first schedule (protected wildlife) but does not provide the same for wildlife that fall under the second schedule (partially protected wildlife). From this standpoint, the existing Wildlife Legislation (1980) is weak in the area of hunting and the issuing of hunting licenses. The only means of controlling hunting of the partially protected wildlife species is by the Minister of Agriculture, Forestry and Fisheries declaring a close season for any of the species of wildlife specified in the second schedule, stipulating where hunting should occur and identifying the bird species and other fauna species that can be hunted (M. Andrew, *Forest Ecosystems*, GOSL 1998).

The survey results indicate a radical shift in the attitude to hunting by St. Lucians and the results are very explicit. A summary of survey results reveal that;

- (a) regardless of education, distribution, age and gender, most St. Lucians do not favor most types of hunting.
- (b) They are particularly opposed to sport or entertainment hunting
- (c) They are well aware of the laws governing wildlife in St. Lucia
- (d) They feel that there is insufficient education on the subject particularly for the young
- (e) Some (particularly the young) favor keeping wildlife as pets

While most respondents clearly did not favor hunting, quite a few acknowledged consuming wildlife at some time. Most of the consumers were in the 15-34 age range and in the 55+ category. The group that admitted to engaging in frequent hunting for sport and for entertainment purposes amounted to 10%. Higher consumption among the older individuals would be expected on the basis that it was a past tradition whereas for the young, it may be the inclination to experiment with new experiences. Consumption consisted of mainly meat and eggs. Members of the middle age range (35-54) are probably more mature, better educated and better informed on general environmental matters. There was strong opposition against sport hunting and hunting to keep by all age categories. There is some surprise at the level of disapproval shown for hunting as a means of pest control, its level of approval is almost similar to approval levels of hunting for consumption. These were the two forms of hunting that were viewed judged most leniently. On a gender basis it was noted that females generally disapprove

of hunting more so than males. In effect, currently there is a general lack of social approval for hunting. If hunting were to be re-instituted the following considerations are necessary:

Hunting and Institutional Management Capacity: The effective management of a hunting programme calls for a significant effort in establishing institutional structures, establishment of an adequate legal framework, monitoring and regulating of the associated activities. The following summarizes the concerns of the Forestry Department if hunting were to be institutionalized once more.

Specific aspects include development of and maintenance of a proper certification program for hunters, regulation of the numbers of hunters, stepped-up patrols within the designated hunting areas and determination of annual harvest levels (Bag limits) for game species. The latter requires a dedicated research programme to monitor game species populations. At present the Forestry Department is poorly equipped to meet the demands of instituting a hunting programme given the present level of staffing and resources available. This is particularly in light of the potential that may exist for abuse based on local historic experience and the current situation in neighbouring islands in the Caribbean. To properly manage hunting, the institutional capacity of the Department will need to be strengthened.

To regularize hunting, an education campaign would need to be developed to inform the public on the various issues related to the activity, and how it may fit into current wildlife management initiatives. Public outreach issues can be summarized as:

- (1) Public acceptance
- (2) Conservation ethic
- (3) Effectiveness of all programs (Hunter education, outreach, research etc.)

Environmental education targeting children, re: wise resource use

5.4 Hunting Legislation Issues

The public generally views use of guns in an open environment with some degree of apprehension. There already exist strict regulations on the acquisition of firearms in St. Lucia, however, monitoring of trafficking in weapons remains a troubling problem to the police. This by no means suggests that the hunters may use such weapons in a dangerous manner or be unduly irresponsible around other persons. Other hunting methods employing slingshots and cross-bows are generally perceived as being less dangerous, while live trapping may be considered relatively benign. Such perceptions influence the type of game that may be harvested. For instance, fast moving birds such as ducks and ramier may only be effectively hunted with guns while opossum may be hunted using live traps. A public that may not view gun hunting favourably may by extension, not support hunting of birds by this method. The Department is particularly concerned about a re-emergence of the 'catapult culture' in which wanton, poorly regulated hunting becomes commonplace, should hunting be re-opened. Issues to be dealt with under a proper legislative framework should include:

- (1) Determine the existence of adequate legislative authorities
- (2) Authority over who can hunt
- (3) Authority over what is hunted
- (4) Authority to establish bans
- (5) Authority over when hunting takes place
- (6) Authority over where hunting can occur
- (7) Authority over hunting methods
- (7) Authority over penalties
- (8) Authority to regulate firearms, permits and licenses
- (9) Authority to regulate resident vs. foreign hunters
- (10) Have a process for preparing regulations
- (11) Assure compliance with treaties and conventions
- (12) Establish mechanisms for public input
- (13) Fees

Law Enforcement aspects:

- (1) Patrols
- (2) Recovery of fines and penalties
- (3) Follow up of prosecutions and citations
- (4) Train agents (Laws, Regulations, identification)
- (5) Adequate authority and staffing
- (6) Postings
- (7) Infrastructure

- (8) Firearms permit
- (9) Firearms skill testing

5.5 Cross Sectoral Issues

Tourism has become the leading income generator in St. Lucia's economy. The Government through implementation of its tourism policy has propelled eco-tourism industry. Organizations such as the Department of Forestry, St. Lucia Nature Heritage Tourism Programme and the St. Lucia National Trust are promoting eco-tourism programs at the community level. Initiatives involving the Des Barras Community and its Grand Anse nature tourism package and the Aupicon Agriculture and Charcoal Producers Group of Vieux Fort use of Mankoté mangrove are two examples. It is realized that wildlife exploitation through hunting is generally incompatible with the precept of nature heritage tourism. The public may perceive the reinstatement of hunting as a step towards a policy that is contradictory to the current position of the Government / Forestry Department on the issue that has been molded through environmental education programmes. Institution of a properly managed hunting programme will require a significant mobilization of resources in the establishment of protocols (on the basis of the existing legislation and amendments) research, monitoring and public education.

Summary of costs, organization and infrastructure:

- (1) Coordination
- (2) Data management
- (3) Tap existing efforts and resources (including International)
- (4) Focal point (single contact for information)
- (5) Funding
- (6) Exchange of information and experiences
- (7) Training

5.6 Game Populations and Sustainability of Hunting

From historic records, hunting on St. Lucia has had dramatic effects on some species of wildlife, notwithstanding the fact that habitat destruction has contributed to the decline of these species. Due to the small size of the island and its respective natural habitat areas, the carrying capacities (maximum population size) for many species are small. This is the case for many of the would-be game species such as, iguana, ramier and ducks. While there have been no long term population surveys of indigenous wildlife, observations suggest that populations of most of the game species (partially protected species) listed in Schedule II of the Wildlife Protection Act are relatively small in number. In most countries where regulated hunting is permitted, (e.g. Trinidad), game species populations are typically on the order of several thousand in given habitats. In the case of St. Lucia sustainable hunting would therefore need to be restricted on the basis of population numbers versus numbers of hunters. A system to limit the numbers of hunters would therefore need to be devised where only a few would be allowed to hunt at any particular time. The following lists areas of concern that should be addressed by the research mandate within the wildlife policy:

- (1) Species abundance
- (2) Species distribution
- (3) Breeding season
- (4) Population demographics (survivorship and mortality)
- (5) Impact on other species
- (6) Sensitive areas
- (7) Trend analysis
- (8) Local movements
- (9) Migration
- (10) Assure continuity of research
- (11) Sustainable harvest/carrying capacity
- (12) Criteria to determine which species to hunt
- (13) Pre-hunting species survey
- (14) Hunt monitoring
- (15) Post-hunt species survey
- (16) Level of illegal hunting
- (17) Habitat evaluation
- (18) Species/habitat conservation and improvement

5.7 Designated Hunting Areas and Protected Habitats

In most countries, regulated hunting is restricted to specific tracts of land with defined borders where contact with other users (farmers, recreationists, etc.) is limited for safety reasons. Gun hunting methods in particular, presents a potential threat of conflicts and poses a danger in areas that are frequented by other individuals. In the case of St. Lucia, large expanses of accessible but uninhabited forest outside the forest reserve are limited. It has been a policy of the Forestry Department in instances when hunting has been allowed, the Forest Reserves are off-limits. Should hunting be regularized, designated hunting areas should be identified to make monitoring easier and to minimize conflicts between users. As is customary in other countries, revenue from hunters licenses are often recycled into habitat management to ensure maintenance of viable populations. This type of arrangement has been successful in North America where wetlands are conserved and rehabilitated in interest of sustaining duck populations. The Government should therefore give consideration to creation of reserves to allow for safety vis-à-vis gun hunting and provide refuge for wildlife to proliferate.

6. **Conclusion**

In light of all the above, the Forestry Department is not in a position to sanction re-opening of hunting on St. Lucia until the broad issues are critically reviewed and analyzed. The complexities of the issues involved have urged the Department to recommend caution on the subject of hunting. This is heightened by the difficulty neighbouring islands are experiencing in managing the practice which is culturally entrenched. The international community has acknowledged the significance of the achievements of St. Lucia in the following;

“ The primary causes of the decline [in St. Lucia Parrot populations] were a combination of habitat destruction, shooting for food and sport and the pet trade. Currently the forest is well protected, as is the parrot. Hunting of all native species is currently banned, but this legislation is in the form of a temporary moratorium that is reinstated annually....The recent history of the St. Lucia parrot has been one of the great success stories in wildlife conservation and has brought together important changes in legislation, education of native St. Lucians, development of ecotourism, and scientific exploration. To allow hunting for a few individuals at this time would be a most unfortunate reversal of this tremendous success.”- I.U.C.N. 2000

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