

ATTITUDES TO THE ENVIRONMENT IN JAMAICA, 1998

by

Peter Espeut

**Caribbean Coastal Area Management Foundation,
7 Lloyds Close, Kingston 8, JAMAICA**

June, 1999

*Report of a survey conducted for the
Natural Resources Conservation Authority (NRCA), Jamaica,
by the
Caribbean Coastal Area Management (CCAM) Foundation
funded by the
Environmental Action (ENACT) Programme,
a joint venture of the Government of Jamaica and the Government of Canada.*

EXECUTIVE SUMMARY AND RECOMMENDATIONS

This study is a report of a national survey of attitudes towards environmental issues in Jamaica commissioned by the Natural Resources Conservation Authority (NRCA), funded by the Environmental Action (ENACT) Programme, a joint effort of the governments of Jamaica and Canada. The project was initiated by the South Coast Conservation Foundation (SCCF) and completed by the Caribbean Coastal Area Management (C-CAM) Foundation.

The author and principal investigator of this study – Peter Espeut – conducted and authored a similar project in 1993 entitled *Attitudes to the Environment in Jamaica 1991* which was commissioned and funded by the Commonwealth of Learning (COL), Vancouver, British Columbia, Canada and conducted by the Institute of Social and Economic Research (ISER), University of the West Indies, Mona, Jamaica, where he was a Research Fellow. The COL compared the findings for Jamaica with similar studies done in Canada and Malaysia¹.

This survey was designed to be compared with the earlier Jamaican study to determine whether there has been any change in attitudes towards the environment in Jamaica between 1991 and 1998. The questions were substantially the same, and the sample was selected in a similar manner. Using the 1991 National Population Census of Jamaica as the sample frame, a nationally representative sample of 1,200 persons over eighteen years old was selected from sixty (60) Enumeration Districts, stratified into three groups: the Kingston Metropolitan Area (KMA), other urban areas, and rural areas. Face-to-face interviews were conducted by specially trained interviewers. In all 1,192 valid questionnaires were analyzed on a PC using SPSS.

3.2 Concern for the Environment

The respondents were asked to rate their level of concern about the environment, and these were grouped into three categories. In 1991, about one-quarter (25.3%) of the respondents fell in the middle, while 39.5% expressed concern and 35.3% were relatively unconcerned; more persons reported no concerns (20.2%) than extreme concerns (15.4%). By 1998, opinion had shifted away from “no concerns” towards the centre (27.3%), while the relative numbers of concerned (38.9%) and unconcerned (31.1%) remained relatively stable.

In 1998, the youngest age group (18-24 years) showed the greatest concern (44.6%) and the second lowest unconcern (27.3%). The lowest unconcern (26.2%) was shown in the 45-54 year age category, which also had the second highest level of concern (42.4%). In general, the increases in concern over the period 1991-1998 seem strongest among the younger respondents.

As in 1991, in 1998 the highest educational institution attended was a strong correlate of level of concern for the environment. Level of concern was higher for persons exposed to higher education. Interestingly, rural people are more concerned about the environment than persons in the KMA, with residents of rural towns having the highest level of concern (45.5%). Persons from the KMA show the highest level of unconcern for the environment (39.9%) suggesting that more efforts in environmental education need to be placed there.

3.3 Change in Levels of Concern about the Environment

In 1998 the respondents were asked whether their concerns about the environment had changed over the last five years. More than half the respondents (54.4%) said their levels of environmental concern have remained the same over the last five years; 36.1% said their concern

¹ CHIANG, Chan Huan and Harun DIN, April 1993.

had increased, while only 5.6% said that it had decreased. The data in the last section – which suggest a slight shift in concern towards the centre – do not match these results which suggest a much larger shift. Other results presented below are consonant with the trends suggested here. Increased concern was strongest among younger respondents, and those with tertiary education.

Respondents were asked what contributed most to the change in their level of concern for the environment over the last five years. Most factors mentioned were external: media attention; people talking; respondents experiencing various environmental problems which impinge on their consciousness. Some responses indicated internal factors: new awareness, learnt more, read more. Some responses indicated that respondents were drawing conclusions from observations: deforestation leading to less rainfall; air pollution leading to atmospheric haze.

3.4 The Major Issue facing the Jamaican Environment

Without any prompting, and without any previous question which might suggest an answer (loading), the respondents were asked to name the major issue they see facing the Jamaican environment. Only one answer was permitted.

In 1991 the most common answer was a generic “pollution” (11.4%); with more specific answers (e.g. air and water), pollution accounted for 18.2% of the concerns. Garbage disposal was another big issue (11.0%). Deforestation, which leads to soil erosion, watershed destruction and water shortages, attracted 13.8%. Another significant suggestion was that human beings and their lifestyles were a major source of environmental degradation (9.0%), while half that number felt that insufficient government funds were at the root of Jamaica's environmental problems.

In 1998 the pattern of concerns was similar, but the degree of feeling was stronger. Although the generic “pollution” was quite small (3.2%), there were more specific types of pollution mentioned: air pollution (5.6%), auto exhaust (3.5%), water pollution (2.6%), marine pollution (1.8%), beach pollution (1.4%) and industrial pollution (1.0%); together they add to 19.1%. Specific concerns about air pollution remain high. Garbage disposal was the biggest single concern (17.6%). The impact of poverty on the environment as a single issue came in a strong second (13.6%). Deforestation, soil erosion and water shortage was the concern of 13.7% of respondents. Issues to do with sewage, urban management (roads, drains, gullies) and lack of government action also came in for significant mention.

3.5 Other Issues facing the Jamaican Environment

Respondents were given the opportunity to name as many as four other issues facing the Jamaican environment (other than the major one named above). In 1991 relatively few advanced any other opinions; only 35% suggested a second issue, 11.3% a third and 3.8% a fourth. The dearth of responses suggests a lack of depth in the awareness of environmental issues in 1991. In 1998, the number naming other issues increased substantially: 65.1% named a second issue, 38.6% a third, 17.9% a fourth and 6.8% a fifth. This suggests that the 1998 respondents were more environmentally aware than the 1991 respondents.

3.6 The Full List of Issues facing the Jamaican Environment

Principal and subsidiary concerns were combined to produce a comprehensive list obtained without prompting. In 1991, the most commonly mentioned environmental concern was garbage disposal, mentioned by 18.2%. By 1998, this concern had almost doubled to 35.9%. The concern is not just garbage collection, but its ultimate disposal in unsightly dumps.

In 1991, air pollution was the second most frequently mentioned environmental concern (16.9%), which had risen to 23.6% by 1998 if automobile exhaust is included. Indeed concern

about all forms of pollution is quite strong, particularly where public health is affected (garbage, sewage, clean water, clean air, clean beaches and the marine environment).

In 1998, deforestation was ranked second (24.2%), up from third in 1991 (14.1%). Issues surrounding soil erosion (deforestation, landslides, poor drainage) were also appreciated.

Wildlife and biodiversity issues (hunting, habitat/reef/wetland destruction) received very little concern. This could be due to the fact that many people still connect the concept of the environment with their immediate surroundings and infrastructure.

Overall the responses show that only a small segment of the Jamaican population are aware of a broad range of environmental issues. Environmental consciousness in Jamaica lacks depth, and an environmental awareness campaign in the mass media should be quite successful in raising both the breadth and depth of environmental consciousness.

3.7 The Most Threatened Aspect of Jamaica's Environment

Again without any prompting, the respondents were asked to name the most threatened area of Jamaica's environment, and only one response from each person was permitted. In 1991 just less than half of the sample offered an answer; in 1998 this increased to just under 70%, suggesting an increase in environmental awareness.

In 1991, the three top responses were "land", "water" and "atmosphere", which together accounted for two-thirds of the responses. By 1998 opinions had shifted considerably. Concern for the forests, mountains and watersheds which in 1991 had ranked fifth, was top of the list in 1998. Concern for rivers and fresh water sources remained in second place with increased support (the two issues are, of course, linked). The feeling that human beings – part of the biosphere – were under threat because of environmental degradation was ranked third, up from fourth in 1991. Of note is that in 1998 compared to 1991, concern for the marine environment increased ten-fold, while concern about urban environments almost doubled.

3.8 Sources of Negative Impact on the Jamaican Environment

All the issues above were raised by the respondents themselves without any prompting by the interviewer, which is a sort of baseline indication of their personal awareness. Respondents were then prompted with ten factors, and asked to evaluate their negative impacts on the Jamaican environment on a scale of one to ten (one having no effect; ten having tremendous effect). Persons with no opinion or who did not know were asked to indicate as such (score = 0).

As in 1991, all the modal responses were either 0 (don't know) or 10 (maximum negative impact). Whereas in 1991 seven of the ten factors had a modal response of 0, in 1998 this was reduced to 5. Indeed, the mean scores for all ten factors increased, suggesting that there has been an increase in environmental awareness. Also, the standard deviations for all the factors decreased, suggesting that public opinion is solidifying around the mean values. Except for the fishing industry and toxic waste, all means were over 5.0, and for six of the ten factors, the means were under six. Although there has been an increase in environmental awareness between 1991 and 1998, there is more to be done, especially with respect to these six factors.

As in 1991, the three factors believed to most negatively impact the Jamaican environment were **Household Garbage, Auto Exhaust and Sewage Pollution**. In 1998, belief in the negative impact of the forestry industry and individual residents had significantly increased, suggesting growth in awareness about these sectors. The high incidence of "don't know" answers, points to a still high level of ignorance about the environment in Jamaica.

3.9 The Most Negative Impact on the Jamaican Environment

Respondents were asked to identify which of the ten factors above impacted most negatively on the Jamaican environment; only one answer was permitted.

In 1991, sewage disposal was highest on the list (18.8%), followed by household garbage disposal (17.6%) and auto exhaust (10.2%). Please note that when an equivalent question was asked without any prompting, the figures for the same concerns were all much lower.

In 1998, household garbage was at the top of the list with 22.4%, followed by sewage (14.7%) and the forestry industry (14.0%). This reflects a significant increase in awareness about forests and deforestation. Without prompting, the same concerns scored lower: garbage (17.6%), sewage (3.8%), and deforestation (11.8%).

3.10 Index of Awareness about the Jamaican Environment

A composite Awareness Index for negative impacts on the Jamaican environment was created by adding for each person the scores for the ten factors above, and dividing the result by 10. If these data are collapsed into three categories (aware, middle and unaware), in 1991 32.7% scored between 1-4 and were rated in the "Unaware" range (36.1% if the 0 category is added in), while 38.9% scored between 7-10 and were rated in the "Aware" range. By 1998, all the unaware categories (0-4) decreased and all the middle and aware categories (5-10) increased their share; in particular, increases in the "Very Aware" category were sharp: from 10.3% to 17.8%. This supports the conclusion of an increase in environmental awareness over the period.

In both 1991 and 1998, the most aware respondents were to be found in rural towns; whereas in 1991 the second most aware respondents were those in the KMA, by 1998 the second most aware Jamaicans were those in rural areas. The data clearly shows that there has been a substantial increase in environmental awareness among rural people. The data also show that between 1991 and 1998 there has been a reduction in "lack of awareness" in rural towns and rural areas, but a sharp increase in "lack of awareness" seems to have occurred in the KMA.

According to the Awareness Index in 1991 the parishes with the most aware persons were St. Elizabeth (83.3%), Westmoreland (73.8%), Clarendon (51.1%) and St. Andrew (45.9%). The parishes with the most unaware persons were Hanover (68.3%), St. Mary (65.0%), St. Catherine (58.0%), St. Ann (47.5%), Trelawny and Manchester (45.0%) and St. James (40.0%). In 1998, the most aware persons were to be found in the parishes of Portland (90.0%), St. James (82.9%), St. Ann and St. Mary (74.4%), and Westmoreland (73.9%). The most unaware respondents were to be found in Kingston and St. Thomas (50.0%), followed by St. Andrew (31.2%), Clarendon (25.9%) and St. Catherine (25.7%). Portland had no unaware respondents, and all the respondents who scored zero in the index (who said they knew nothing about any of the issues) were to be found in the most urbanized parishes: Kingston, St. Andrew and St. Catherine.

In both 1991 and 1998, the level of education attained was the strongest correlate of both awareness and unawareness of local environmental issues. In 1991, more than half of those with only primary education were unaware; by 1998 this had decreased to 32.4%. In both years, lack of awareness tended to zero across the education gradient from primary to post-graduate training. The higher levels of Jamaica's formal education system do expose students to environmental issues. It should be possible to introduce environmental concepts to students much earlier.

There does appear to be a relationship between awareness/unawareness and occupation, probably due to the fact that occupation is highly correlated with education. In 1991 the most unaware occupational groups were the unemployed (52.8%), domestic helpers (51.2%), those out of the labour force (47.6%), and the self-employed (petty traders, farmers, fishers, etc. – 45.8%). The most aware occupational groups were professionals and managers (71.4%), the semi-professionals (56.4%), and those in personal services (56.1%).

By 1998 environmental awareness had decreased in the higher status occupational groups and increased in the lower status groups. Lack of awareness decreased in all groups except among the Professional/Managerial and the Manual-Skilled groups. The most unaware occupational groups were domestics (34.5%), Self-Employed and Manual-Skilled (30.3%), and Manual-Unskilled (30.2%). The most aware groups were Professional/Managerial (58.1%), Clerical (51.2%), and Self-Employed and Domestic (48.3%).

3.11 Environmental Concerns compared to other National Concerns

To determine how important environmental concerns are in comparison to other issues, respondents were asked to rank eight environmental and socioeconomic concerns in order of priority (1 = most important and 8 = least important). This question was not asked in 1991.

Socioeconomic issues far outweighed environmental issues in terms of importance to the respondents. Crime, Unemployment, and the High Cost of Living were far and away the issues of most concern. The environmental issues of most concern were garbage disposal, sewage and overpopulation. Air Pollution and Deforestation were the least important issues. The data suggests that unless some way can be found to link environmental issues to development issues, environmental concerns will be left behind.

3.12 Awareness of Jamaican Environmental NGOs

Respondents were asked to name Jamaican ENGOs they knew to be protecting the environment. Four answers each were permitted; 112 persons (9.4%) gave one answer, ten persons gave a second, and one person gave a third. In all thirty-six (36) different organizations were named, but not all were NGOs, even using a broad definition: several government agencies, private companies, service clubs and community organizations were named. The best known ENGO was the Portland Environmental Protection Association (PEPA). It has to be said that the names of Jamaican environmental non-government organizations (NGOs) are not well known.

4.1 Major Problems facing the World's Environment

The last open question (before prompting) asked for views on the major problems facing the world's environment; no limit was placed on the number of responses. In 1991, 44.9% gave an answer, 15.1% gave a second, and 4.1% gave a third. In 1998, 53.5% gave an answer, 25.3% gave a second, and 11.3% gave a third. The number of responses to this question are fewer than for the similar question on Jamaica, suggesting less familiarity or less confidence with this subject; but the numbers are higher for 1998 than 1991, suggesting that there has been an increase in environmental awareness about global issues over the period.

In both 1991 and 1998, Pollution of some sort was the most common answer by far, followed by Deforestation. Poverty and Overpopulation came in for strong mention, showing appreciation for the social causes of environmental degradation. Although some had knowledge of global issues like marine pollution, the greenhouse effect, ozone depletion and reduction in biodiversity, the data generally indicated that there was much room for improvement.

4.2 Sources of Negative Impact on the World's Environment

Using the same 1-10 scale (DK = 0) as for the Jamaican data above, respondents were asked to evaluate the impact of eight factors on the world's environment. The level of "Don't Know" responses was greater than for the Jamaican situation, indicating a greater level of unawareness or lack of confidence about the global environment.

In 1991, the modal answers for all questions but one was “Don't Know”. Least was known about the impact of chlorofluorocarbons (CFCs). Nevertheless, for half of the issues the mean score was 5 or more. Overpopulation had the highest mean score (6.2) and a mode of 10. Industrial pollution and the cutting of forests were weakly supported as impacting negatively on the global environment, while opinion was evenly divided on the effect of automobile emissions.

By 1998, four of the eight factors had modal answers of 10, and there was noticeable improvement in all the mean scores (except burning of fossil fuels and overpopulation), suggesting an increase in awareness. However, the scores are much below the typical values for awareness of the Jamaican environment, which themselves could do with some improvement. There is clear need for more public awareness on global environmental issues, particularly about CFCs, threats posed by ships carrying potentially damaging cargo and about global warming and the greenhouse effect. It is likely that many have interpreted “auto exhaust” as the dense smoke often billowing from trucks and buses rather than the emission of carbon monoxide and dioxide into the atmosphere; this issue received more support as a local issue than as a global issue.

4.3 Greatest Threat to the World's Environment

There was an increase of sixteen percentage points between 1991 and 1998 in those who offered an opinion as to which of the factors named was the greatest threat to the world's environment, suggesting an increase in awareness. In 1991 the major issue was felt to be overpopulation followed by industrial pollution, while in 1998 their positions were reversed. The numbers supporting deforestation and individual lifestyles increased substantially over the period while the numbers of those supporting overpopulation declined.

4.4 Index of Awareness about the World Environment

As before, a composite Awareness Index for negative impacts on the world environment was created. In both 1991 and 1998 about 14-15% professed unawareness about all 8 global issues. For easier analysis the data was collapsed into three categories. Those unaware declined from about 39% in 1991 to about 27% in 1998, while those aware increased from about 42% to about 52%. In both 1991 and 1998, both awareness and lack of awareness were slightly stronger for the global than for the national issues.

In contrast to the findings on awareness of conditions in Jamaica, in 1991 the respondents most aware and least unaware about global environmental issues were those in the KMA. Again in contrast, deep rural residents were both least aware and most unaware of global issues. This suggests that the awareness of rural people of Jamaican environmental issues might have more to do with their closeness to the local environment than possession of book knowledge.

The indices crosstabulated by parish showed that in 1991, persons most aware of global environmental issues lived in St. Elizabeth (81.7%), Westmoreland (75.0%) and St. Andrew (54.8%), while the most unaware were from Hanover (70.0%), St. Catherine (63.0%), Manchester (60.0%), St. Mary (58.0%), St. Thomas (55.0%) and St. James (48.0%). In 1998, the respondents most aware of global environmental issues were to be found in Portland (100%), St. James (78.0%), Westmoreland (74.7%) and St. Mary (74.4%), while the most unaware were from St. Thomas (52.5%), Kingston (51.7%), Hanover (37.5%) and St. Catherine (36.5%).

In 1991, there was a six percentage-point difference between the genders in global awareness, which narrowed to one point by 1998. Females were also more unaware about global environmental issues than males (ten percentage points). The eleven-point difference between the genders in lack of awareness in 1991 had narrowed to four points by 1998. Gender differences in these matters seem to be becoming less important. In both 1991 and 1998, older

age groups are less aware than younger ones. The increase in awareness of global environmental issues which has taken place is more pronounced among younger age groups.

Higher levels of awareness and lower levels of un-awareness in 1998 compared to 1991 are further evidence of increases in environmental awareness. As before, education was the strongest correlate of both awareness and unawareness of global environmental issues. Beginning at 60% (1991) and 42% (1998) among those with only primary education, un-awareness decreased gradually to zero for those with post-graduate training. Awareness increased dramatically with high school and tertiary-level education and for post-graduate training. Environmental concepts should be introduced into the formal education system much earlier, which would promote an even higher level of environmental awareness later on.

As before, there does appear to be some relationship between awareness/unawareness and occupation, probably due to the fact that occupation is highly correlated with education. In 1991 the most unaware occupational groups were the unemployed (57.7%), domestic helpers (57.1%), those not in the labour force (51.0%), and the self-employed (46.5%). The most aware occupational groups were professionals and managers (78.6%), the semi-professionals (61.5%), the manual skilled (54.5%) and those in personal services (53.7%). By 1998 the most unaware occupational groups were domestics (44.8%), Manual-Skilled (33.8%), Self-Employed (32.7%), and Clerical-Technical (27.1%). The most aware groups were Semi-Professional (62.7%), Professional/Managerial (61.4%), and Personal Services (60.2%).

5.0 Effectiveness of the Government

Respondents were asked to assess the effectiveness of the Jamaican government in passing legislation to protect the environment on a scale of 1-10 (1 = totally ineffective, 10 = extremely effective). The environmental achievements of the government were not well known. "Don't Know" was the modal response for seven out of the ten factors in 1991, and for all ten in 1998. The mean scores in 1991 were low; only four areas had a score higher than 3. Mean scores in 1998 were even lower, with all under 3. All scores declined between 1991 and 1998 except Mining and Household Garbage which both increased by one-tenth of a percentage point.

The fact that in 1998 fewer people than in 1991 claim to know enough to offer an opinion about the effectiveness of the government in passing environmental legislation indicates an increasing lack of awareness in this area. The vast majority of those who express an opinion believe the government is not very effective in passing legislation to protect the environment.

5.1 Government Effectiveness Index

In similar manner as above, a composite Effectiveness Index for the government was created. In 1991, 13.9% claimed ignorance of the government's record in passing environmental legislation; this rose to 24.2% by 1998. In 1991, 57.7% rated the government's performance as ineffective, which decreased to 53.8% in 1998. Those who believe that the government is effective in this area increased from 9.2% in 1991 to 10.7% in 1998. If the government has been effective in passing environmental legislation, this fact is not well known.

5.2 Knowledge about the Government

A new question was to "name the government agency which has the major responsibility for the environment in Jamaica". Only 274 respondents (22.9%) offered answers, of which 229 (83.6%) may be considered correct, which means that only 19.2% of the sample knew that the NRCA in the Ministry of the Environment was the government agency with the major

responsibility for Jamaica's environment. This reflects quite a low level of environmental awareness, and could indicate that the NRCA needs to publicize itself more.

6.1 The Effectiveness of Individual Action

If people do not believe that activism can be effective in achieving environmental goals, then, even if they are aware of the problems, they may not try to effect a change. Respondents were asked to indicate how much of an effect they believe individuals like themselves can have. In 1991, only 7% felt that the effect would be extremely large, and only 19% felt it could be large. On the other hand, 19% felt that individuals could have no effect at all, while 25% felt they could have very little effect. So 26% believe individuals like themselves can make a difference while 43% feel they can make little difference. By 1998, 29% believe that individuals like themselves can make a difference, while 32% feel that they can make little difference. This pessimism, this fatalism, should lead to a relatively low level of environmental activism.

6.2 Environmental Action taken by Individuals

In 1991 and 1998, 58.8% and 56.4% outlined things they had done which they considered helped to protect the Jamaican environment. In both years, the three most common answers were: cleaning my yard/road/work area (21.2% and 13.4%), planting trees and flowers (11.6% and 11.7%); and proper disposal of garbage (10.2% and 11.2%). In 1998 there was a wider range of valid answers, but the numbers are small, indicating much room for improvement.

In 1991 and 1998 several answers advanced qualify as good public health practices or extractions of value from the environment, but not necessarily as environmental protection: keeping the yard/road/work area clean (21.2% and 13.8%), farming/gardening (5.5% and 3.1%) and burning of garbage (3.4% and 2.6%). The concept of the environment in use by many of the respondents is revealed by the fact that so many answers relate to personal and household space.

6.3 The Environmental Lifestyle of the Individuals

Both in 1991 and 1998, the level of environmental activism is low. The data suggests that environmental activism over the period has decreased for certain actions and increased for others. Those decreasing by more than ten percentage points were returning glass bottles, planting trees, and not buying lobster in the closed season. Those increasing by a similar margin were buying products in appropriate packaging, and switching to unleaded gasoline². The increase in the use of compost heaps, phosphate-free detergents and bio-degradable products, and the avoidance of aerosols is also worthy of mention. Of special interest is the decline in membership of environmental organizations, in the support offered in money and time, and in the reading of environmental articles to become more aware.

The respondents who said they were members of an environmental organization were asked to name it. Only 24 persons (2.0%) responded to this question. Most of the organizations were connected to church, school or community and not dedicated specifically to environmental matters. The survey reveals that membership in environmental organizations is low.

The respondents who said they had read an environmental article to become more aware were also asked to name the article they had read. No specific article was mentioned. The type of literature most read were newspapers (9.1%) and magazines (2.3%).

6.4 Index of Individual Environmental Activity

² The Jamaican government has now completely phased out the use of leaded gasoline.

An **Individual Environmental Activity Index** was created to provide an indication of the overall picture of the individual's expressed commitment to the environment. Respondents from neither group impress as being active. In each year only one respondent (0.1%) fell into the "very active" category, and only 1-3% were classified as "active". The number of totally environmentally inactive respondents increased from 6.5% in 1991 to 18.6% in 1998; large numbers of the sample were rated as "very inactive" and "inactive".

In both years, respondents from "other towns" were more active than those in the KMA and rural areas. In 1998 rural residents were the largest group in the "middle" active category. In both years, residents of the Kingston Metropolitan Area³ were the most inactive. In 1991, the most active respondents (and middle) were in Clarendon (5%, 22%), Westmoreland (3%, 13%), St. James (3%, 10%) and St. Ann (3%, 8%). In 1998 the largest number of active respondents by far (27.5%) were found in the parish of Portland, a tribute to the work of Jamaica's oldest parish-based environmental NGO, the Portland Environmental Protection Association (PEPA). Other parishes with active respondents were St. Mary (7.7%), and St. Elizabeth (5.0%). All (100%) the Kingston residents were inactive, and no resident of Kingston or St. James was active.

Education appears to be the strongest of the weak determinants of environmental activity. In 1991, the following were rated as "active" and "middle" respectively: Post-Graduate Training (14%, 71%), Teacher/Nursing College (9%, 17%), University First Degree (6%, 19%) and Some High School (5%, 14%). In 1998, only those with tertiary education show any substantial levels of environmental activity: Post-Graduate (20%), University First Degree (9%), and Teacher/Nursing College (7%). Whereas formal education is relatively successful in providing information, it is not as successful at transmitting the norms and values which lead to action.

Occupational groups with higher educational requirements contain highly active persons. In 1991 the "active" or "middle" were: Professional/Managerial (10%, 14%), Semi-Professional (4%, 19%) and Clerical/Technical (3%, 13%). In 1998 they were: Professional/Managerial (5.3%, 18.7%), Semi-Professional (5.1%, 11.9%) and Self-Employed (4.7%, 9.3%).

The awareness indices suggest that knowledge about the environment is, by itself, not the determinant of environmental activity. For both the Jamaican and world environments 78% of the "aware" were "inactive". The common view that "people are inactive because they lack awareness, and if only they were 'educated' they would become more active and 'do the right thing'" must be viewed with some suspicion. People's actions are governed by the norms and values they hold dear, not by the information they have, and those interested in increasing environmental activism need to make interventions which will impact at the normative level.

6.5 The Need for Environmental Education

Asked whether they had enough information on actions they personally could take to protect the environment, 45.4% in 1991 and 61.1% in 1998 said they did. Previous answers show that, in fact, Jamaicans are in need of environmental information to a much greater extent than this. Clearly they do not know that they do not know, and the first task of environmental education must be to convince the public that they need environmental information.

6.6 Consumer Goods and the Environment

In 1991 and 1998, 389 (34%) and 486 (41%) persons named products they felt should be removed from the shelves, but in this writer's opinion the answers given by about one-tenth and one quarter of them were not valid. The valid answers reflected packaging concerns, with

³ The Kingston Metropolitan Area (KMA) includes all of the small parish of Kingston and part of the parish of St. Andrew.

objections being raised about cans (13%, 4%) and plastic containers (2%, 11%); some respondents wanted aerosols (8%, 6%) and insecticides (4%, 5%) removed from the shelves. The irrelevant answers mostly reflected religious and health concerns (cigarettes and alcohol, artificial flavours, date expired). In 1998, the largest irrelevant answer was for foreign imported food to be removed from supermarket shelves, reflecting the downturn in the agricultural sector due to competition from imports.

In both 1991 and 1998, large proportions of the samples (43% and 46%) say they expect environmentally friendly products to be cheaper than other products. In reality this is not the usual situation. Environmentally unfriendly packaging materials tend to be cheaper than biodegradable and reusable ones. In 1991 about 18% of the sample seem to be aware of this, but this declined to 14% by 1998. One could speculate that the response "lower priced" is a plea for lower prices generally rather than a response to the question.

Interestingly, in both 1991 and 1998, about 41% of the sample say they would be willing to pay more for environmentally friendly products. Some might say that this is the bottom line, the final test of personal commitment to environmental health. The level of unawareness which the rest of the data indicate, would suggest that not many people should be so committed.

In 1991, more than half of KMA respondents (58%) indicated willingness to pay more for environmentally friendly products. This tendency came from St. Andrew (61%) rather than Kingston (46%), and was least strong in rural towns (44%) and weakest in rural areas (35%). Parishes with the strongest willingness were St. Ann (70%) and Hanover (55%). By 1998, willingness had significantly declined in the KMA and in rural towns by eleven and eight percentage points respectively, and slightly increased for rural areas. In 1998 the parishes with the strongest willingness were Portland (88%) and St. Mary (80%); the rest were below 50%. Parishes with the least willingness were Hanover (23%) and Clarendon (28%).

In 1991, willingness to pay more was stronger among men (47%); the gender which does most of the purchasing was less willing (39%). By 1998, the percentages were almost reversed, but closer together. Since it is females who are becoming more willing to purchase environmentally friendly products, if this trend continues, it could actually affect the market.

In both 1991 and 1998 there is a noticeable relationship between willingness to pay more for environmentally friendly products and the Individual Activity Index, which became more pronounced in 1998. Of those found to be active, 73% in 1991 and 85% in 1998 were willing to pay more, with correspondingly lower figures for Middle and inactive persons. Despite what might be expected, in 1991, environmental awareness as measured by the Jamaica and World indices described above does not seem strongly correlated with willingness to pay more for environmentally friendly products. The 1998 data, however, suggest a strong correlation. Nevertheless, large numbers of persons judged to be aware are not willing to pay more for environmentally friendly products. Clearly, people's behaviour is not always linked to the information they possess, and more is required for knowledge to be translated into action.

6.7 Harming the Environment

Respondents were asked to name one thing they do or did recently which could harm the environment (not asked in 1991). About 28% of the sample (328 persons) confessed to committing such an action. Some actions admitted to were not actually environmentally inappropriate, such as smoking cigarettes, and disposal of plastic in domestic garbage. The majority of valid harmful actions, (181 – 62%) had to do with improper disposal of personal and domestic garbage; others included improper disposal of chemicals and waste oil, deforestation, driving an untuned motor vehicle, and purchase of too many non-biodegradable items.

6.8 Willingness to Change Lifestyle

In 1992, about 62% said they were willing to change to a more environmentally-friendly lifestyle; 17% said they might; 8% flatly said that they were unwilling to change. By 1998, the numbers willing to change had decreased to 56%, but those who “probably” would, increased to 30%; the numbers who refused were about the same as in 1991. Overall this is indeed a positive sign, and augurs well for the success of the environmental movement in Jamaica, as nowhere will the condition of the environment improve unless there is a change of personal culture.

More than 50% said they were willing to act, and 94% said that if given seedlings, they would plant them and care for them. Those who would give time promised 3,348 hours annually at an average of 5.35 hours each. Those who would give money promised J\$172,457 annually at an average of J\$276.82 each. The environmental effort will not prosper unless persons are prepared to give much more time and money.

7.0 Detailed Knowledge about Special Topics

New questions tested the detailed knowledge of the public on specific environmental topics: air pollution in general and motor vehicle exhaust in particular; the pollution of fresh water resources; and the disposal of household garbage. The results showed that although many respondents are concerned about air and water pollution, they are not familiar with the details, which could be remedied by an appropriate environmental education programme.

A scenario concerning a choice between retaining a healthy stand of mangroves and a project bringing fifty jobs was presented. About one-quarter of the sample said they would immediately approve the project; another quarter said they would approve it if no other suitable site could be found. This answer indicates a significant level of commitment to the environment, where about half of the Jamaican population is prepared to forego economic benefits – including jobs – in favour of mangrove wetlands even in economically difficult times.

The age group 65+ years old was by far the most willing to approve the project asking no environmental questions. Those 45-54 were the most willing to reject, even if there is no alternative; those 55-64 were the least willing. Indeed, those born after 1945 are noticeably more environmentally committed than those born before.

Those with no schooling or with only primary education were most willing to accept the project out-of-hand. The vast majority of those with tertiary education were prepared to reject the project even if there was no alternative. Education remains the strongest explanatory variable for environmental awareness and commitment.

Interestingly, fewer residents of the KMA were willing to accept the project out-of-hand, wanting some environmental investigation. But it was those in the rural towns who were most willing to reject, even if no alternative was apparent. St. James (73.2%) and Portland (64.1%) were the parishes most willing to reject, while no-one in Portland was willing to accept without an environmental study. Residents of St. Elizabeth and St. Ann (40.0%) were the strongest believers that the project should be accepted without question.

8.0 Public Education and the Media

In 1991, only 36% reported they had read a newspaper in the past week compared to 46% in 1998. Jamaica is not a very literary society.

In 1991, 69% said they had watched television during the past week, and this increased to 82% in 1998. Television is clearly a better medium for communication with (and therefore for education of) Jamaicans than the print media. In 1991, 41% reported they had watched

television for more than five hours during the past week compared with 61% in 1998. Even with narrowing the target group, television reaches substantially more people than the print media.

In 1991, as many as 88% reported that they had listened to the radio in the last week, while in 1998 the figure was 90%. Radio has long been recognized as the best medium for communication and education in Jamaica. In 1991, 62% reported they had listened to the radio for more than five hours during the past week, compared with 68% in 1998. The effective listening public is still significantly higher than the effective watching public.

In the event the same intervention is made in all three media (which would be expensive), would all Jamaicans be reached? The data indicates that about 10% of Jamaicans neither read the print media nor listened to the radio nor watched television during the week preceding the survey. The best that can be hoped for is 90% coverage. Just over one-quarter of the sample would have the message reinforced twice over, as they experienced all three of the mass media in the week preceding the survey. Not using radio would exclude 13% of the sample, who only use that medium. Not using print or television would each exclude a different 4-5% of the sample.

Using radio alone will reach 75% of the population. Adding television to radio (which might more than double the cost) will increase the coverage by 12% to 87%; adding print to radio will increase the coverage by 13% to 88% (for the additional cost). Adding the third medium will only add 4-5% coverage for the additional cost. Print and radio with a total coverage of 88% is probably the most cost effective, with the additional advantage of the persistence of old newspapers which continue to inform and educate over time (as opposed to radio and television which only have their impact once at the time they are broadcast).

RECOMMENDATIONS

1. Another similar attitude survey should be conducted in 2005 to see if the trends continue.
2. Jamaicans could benefit from more information on environmental issues and potential actions, such as could come from an education programme, and from the good example of active environmental groups. A campaign of environmental awareness in the mass media should be quite successful in raising both the breadth and depth of environmental consciousness.
3. The first task of environmental education must be to convince the public that they need to be educated on the environment.
4. In environmental education, no special effort needs to be made to target any particular gender. The emphasis needs to be kept on the young, but a special effort must be made to target older people. Environmental awareness efforts should still be conducted islandwide. Special efforts must be made to increase the environmental awareness of persons in the KMA.
5. One of the first tasks of any environmental education programme should be to broaden the understanding of the term "environment" to include the natural environment: air, water and land, forests, wetlands and the sea, and all the animals and plants living in Jamaica's ecosystems.
6. More information about deforestation, soil erosion and sedimentation should be made available.
7. There is clear need for more public awareness on global environmental issues, particularly to do with CFCs, the threats posed by ships carrying potentially damaging cargo and matters to do with global warming and the greenhouse effect.

8. Greater efforts should be made to link environment and development issues.
9. There should be more emphasis on environmental education in primary school. It should be possible to introduce environmental concepts to students much earlier.
10. Every primary and secondary school should have an environmental club.
11. The environmental education/awareness programme should sensitize persons to the impact their own actions have on the environment.
12. Those interested in increasing environmental activism need to make interventions which will impact at the normative level. Clearly, more is required for knowledge to be translated into action. What is needed is a strategy to motivate people to give more time and money to environmental causes.
13. People need to be empowered and to feel empowered to deal with environmental issues.
14. Opportunities for more persons to volunteer their time in ENGOs need to be provided.
15. ENGOs which focus on activities for their members need to be strengthened.
16. ENGOs which focus on public education and sensitization need to be formed and strengthened.
17. Jamaican environmental non-government organizations need to project themselves more.
18. Already existing organizations – e.g. church organizations, citizens’ associations and youth clubs should be encouraged to adopt an environmental agenda. Establishing this network of organizations with an environmental focus should be the work of both the NRCA and the more established ENGOs.
19. The NRCA and the government needs to do more and to publicize itself more.
20. Policymakers need to be advised of the significant level of commitment to the environment, where about half of the Jamaican population is prepared to forego economic benefits – including jobs – in favour of mangrove wetlands even in economically difficult times.
21. Environmental education material should be prepared on different topics on different media.
22. Print and radio with a total coverage of 88% is recommended for environmental education programmes.

TABLE OF CONTENTS

Executive Summary and Recommendations	page 2
Table of Contents	page 15
Index of Tables	page 17
Glossary of Acronyms	page 20
Chapter 1: Introduction	page 20
1.1 Background	page 21
1.2 Objectives and Project Description	page 21
1.3 Methodology	page 21
Chapter 2: Characteristics of the Sample	page 24
2.1 The Age-Sex Ratio	page 24
2.2 The Parish Distribution	page 24
2.3 Urban-Rural Distribution	page 25
2.4 Highest Educational Levels	page 25
2.5 Marital Status	page 26
2.6 Occupational Groups	page 27
2.7 Income Groups	page 28
Chapter 3: Local Environmental Issues	page 29
3.1 Understanding about the Environment	page 29
3.2 Level of Concern about the Environment	page 30
3.3 Changes in Level of Concern about the Environment ...	page 32
3.4 The Major Issue Facing the Jamaican Environment	page 34
3.5 Other Issues Facing the Jamaican Environment	page 36
3.6 The Full List of Issues Facing the Jamaican Environment ...	page 38
3.7 Most Threatened Aspect of Jamaica's Environment	page 38
3.8 Sources of Negative Impact on the Jamaican Environment ...	page 39
3.9 Most Negative Impact on the Jamaican Environment ...	page 41
3.10 Index of Awareness about the Jamaican Environment ...	page 41
3.12 Environmental Concerns compared to other National Concerns	page 44
3.13 Awareness of Jamaican Environmental NGOs	page 46
Chapter 4: Global Environmental Issues	page 47
4.1 Major Problems facing the World's Environment	page 47
4.2 Sources of Negative Impact on the World Environment	page 48
4.3 Greatest Threat to the World Environment	page 49
4.4 Awareness Index for the World Environment	page 49

Chapter 5: The Effectiveness of the Government page 52

- 5.1 Government Effectiveness Index page 54
- 5.2 Knowledge about the Government page 54

Chapter 6: Environmentally Friendly Behaviour page 56

- 6.1 The Effectiveness of individual action page 56
- 6.2 Environmental Action taken by Individuals page 56
- 6.3 The Environmental Lifestyle of the Respondents page 58
- 6.4 Index of Individual Environmental Activity page 61
- 6.5 The Need for Environmental Education page 63
- 6.6 Consumer Goods and the Environment page 65
- 6.7 Harming the Environment page 70
- 6.8 Willingness to Change Lifestyle page 70

**Chapter 7: Special Topics: Air Pollution, Water Pollution,
Garbage Disposal, and the Big Choice page 72**

- 7.1 Air Pollution page 72
- 7.2 Water Pollution page 73
- 7.3 The Disposal of Domestic Garbage where there is no collection . page 74
- 7.4 The Choice between Economic Development & the Environment page 74

Chapter 8: Public Education and the Media page 77

- 8.1 The Print Media page 77
- 8.2 Television page 79
- 8.3 Radio page 81
- 8.4 Overall Media Reach page 84

Chapter 9: Conclusions and Recommendations page 84

Bibliography page 90

Appendix I: The Questionnaire page 91

INDEX OF TABLES

Table 1.1: Distribution of EDs by Urban-Rural Status by Parish, STATIN Sample and Project Sample	page 22
Table 1.2: Gender and Age Criteria for Quota Sampling	page 23
Table 2.1: Age by Sex, 1998	page 24
Table 2.2: Parish by Sex, 1998	page 24
Table 2.3: Parish by Rural-Urban Distribution, 1998	page 25
Table 2.4: Highest Educational Institution Attended by Sex, 1991, 1998	page 26
Table 2.5: Marital Status by Sex, 1991, 1998	page 26
Table 2.6: Occupational Status by Sex, 1991, 1998	page 27
Table 2.7: Annual Family Income by Sex, 1991	page 28
Table 2.8: Annual Family Income by Sex, 1998	page 28
Table 3.1: Understanding about the Environment, Jamaica, 1998	page 29
Table 3.2: Understanding about the Environment, by Sex, Age, Highest Education Attained, Jamaica, 1998	page 30
Table 3.3: Level of Concern about the Environment, Jamaica, 1998	page 30
Table 3.4: Level of Concern about the Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Jamaica, 1991, 1998	page 31
Table 3.5: Changes in Level of Concern about the Environment, Jamaica, 1998	page 32
Table 3.6: Changes in Level of Concern about the Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Jamaica, 1998 .	page 33
Table 3.7: What Respondent feels has contributed most to his/her Change in Level of Concern about the Environment, Jamaica, 1998	page 34
Table 3.8: Major Issue Facing the Jamaican Environment, 1991, 1998	page 35
Table 3.9: Other Issues Facing the Jamaican Environment, 1991, 1998	page 36
Table 3.10: All Issues Facing the Jamaican Environment, 1991, 1998	page 37
Table 3.11: Most Threatened Aspect of the Jamaican Environment, 1991, 1998	page 39
Table 3.12: Sources of Negative Impact on the Jamaican Environment, 1991 ...	page 39
Table 3.13: Sources of Negative Impact on the Jamaican Environment, 1998 ...	page 40
Table 3.14: Sources of Negative Impact on the Jamaican Environment, 1991, 1998: Some Statistical Indicators	page 40
Table 3.15: Most Negative Impact on the Jamaican Environment, 1991, 1998 ...	page 41
Table 3.16: Index of Awareness about the Jamaican Environment, 1991, 1998 ..	page 42
Table 3.17: Index of Awareness about the Jamaican Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, Jamaica, 1991, 1998.....	page 43
Table 3.18: Ranked Importance of various National Issues, Jamaica, 1998	page 44
Table 3.19: Statistical Indicators for Ranked Importance of various National Issues, Jamaica, 1998	page 44
Table 3.20: Environmental Non-Government Organizations known to the Respondent, Jamaica 1998	page 45

Table 4.1: Major Problems facing the World's Environment, 1991, 1998	page 47
Table 4.2: Sources of Negative Impact on the World Environment, 1991	page 48
Table 4.3: Sources of Negative Impact on the World Environment, 1998	page 48
Table 4.3: Sources of Negative Impact on the world Environment, 1998: Some Statistical Indicators	page 49
Table 4.5: Greatest Threat to the World Environment, 1991, 1998	page 49
Table 4.6: Index of Awareness about the World Environment, 1991, 1998	page 50
Table 4.7: Index of Awareness about the World Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, Jamaica, 1991, 1998.....	page 51
Table 5.1: Effectiveness of Government in Passing Legislation, 1991	page 53
Table 5.2: Effectiveness of Government in Passing Legislation, 1998	page 53
Table 5.3: Effectiveness of Government in Passing Legislation, 1998: Some Statistical Indicators	page 54
Table 5.4: Awareness Index for the Effectiveness of the Jamaican Government in Passing Environmental Legislation, 1991, 1998	page 54
Table 5.5: Government Agency Respondents believe has the major responsibility for the Environment in Jamaica, 1998	page 55
Table 5.6: Activities Respondents believe are carried out by the Natural Resources Conservation Authority (NRCA) and the Ministry of the Environment, Jamaica, 1998	page 55
Table 6.1: How much of an Effect can Individuals have on Protecting the Environment, Jamaica, 1991, 1998	page 56
Table 6.2: Most recent thing you did which you considered helped to Protect the Environment, Jamaica, 1991, 1998	page 57
Table 6.3: Actions taken in the last Year to protect the Environment, Jamaica, 1998	page 59
Table 6.4: Environmental Organization of which Respondent is a Member, Jamaica, 1998	page 59
Table 6.5: Environmental Article Recently Read by the Respondents, Jamaica, 1998	page 60
Table 6.6: Time contributed to work for the Environment, Jamaica, 1998	page 60
Table 6.7: Money contributed to work for the Environment, Jamaica, 1998	page 61
Table 6.8: Individual Activity Index, 1991, 1998	page 61
Table 6.9: Individual Activity Index, by Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998	page 62
Table 6.10: Do you have enough Information on Actions You Personally could Take to Protect the Environment, Jamaica, 1991, 1998	page 63
Table 6.11: Information you feel you need to better be able to Protect the Environment, Jamaica, 1991, 1998	page 64
Table 6.12: Environmentally-Damaging products which should be Removed from the Shelves, Jamaica, 1991, 1998	page 66
Table 6.13: Price Expectations of Environmentally-Friendly Products, Jamaica 1991, 1998	page 67
Table 6.14: Willingness to Pay More for Environmentally-Friendly Products, Jamaica, 1991, 1998	page 67

Table 6.15: Willingness to Pay More for Environmentally-Friendly Products, by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998	page 68
Table 6.16: Actions taken by the Respondent which they believe Harms the Environment, Jamaica, 1998	page 69
Table 6.17: Willingness to change One's Lifestyle, Jamaica, 1998	page 70
Table 6.18: Actions which the Respondent is Prepared to Take to Protect the Environment, Jamaica, 1998	page 71
Table 6.19: Time Respondent would Contribute to Work for the Environment, Jamaica, 1998	page 71
Table 6.20: Money Respondent would Contribute to Work for the Environment, Jamaica, 1998	page 71
Table 7.1: The Degree to which Certain Factors contribute to Air Pollution, Jamaica, 1998.....	page 72
Table 7.2: Whether the Respondent is of the Opinion that the Following are Components of Motor Vehicle Exhaust, Jamaica, 1998	page 73
Table 7.3: The degree to which Certain Factors affect Negatively the Quality or Quantity of Fresh Water, Jamaica, 1998	page 73
Table 7.4: The Propriety of Disposal methods for Domestic Garbage, Jamaica, 1998	page 74
Table 7.5: Mangroves or Fifty Jobs: A Choice between the Natural Environment and Economic Development, Jamaica, 1998	page 75
Table 7.6: Mangroves or Fifty Jobs: A Choice between the Natural Environment and Economic Development by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1998	page 76
Table 8.1: Read a Newspaper in the Last Week, Jamaica, 1991, 1998	page 77
Table 8.2: Read a Newspaper in the Last Week, by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998 .	page 78
Table 8.3: Watched Television During the Past Week, Jamaica, 1991, 1998 ...	page 79
Table 8.4: Watched Television for more than five hours during the Past Week, Jamaica, 1991, 1998	page 79
Table 8.5: Watched Television for more than five hours Last Week, by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998	page 80
Table 8.6: Listened to the Radio During the Past Week, Jamaica, 1991, 1998 ..	page 82
Table 8.7: Listened to the Radio for more than five hours during the Past Week, Jamaica, 1991, 1998	page 82
Table 8.8: Listened to the Radio for more than five hours Last Week, by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998	page 82
Table 8.9: Media Reach: Radio and Television for more than five Hours, and Print, Jamaica, 1998	page 84

GLOSSARY OF ACRONYMS

CAST	College of Arts, Science and Technology (now UTECH)
C-CAM	Caribbean Coastal Area Management Foundation
CFCs	Chlorofluorocarbons
COL	Commonwealth of Learning, Vancouver, Canada
DK	Don't Know
ED	Enumeration (Census) District
ENACT	Environmental Action Programme
ENGO	Environmental Non-Governmental Organization
ISER	institute of Social and Economic Research
JIS	Jamaica Information Service
KMA	Kingston Metropolitan Area
NA	Not Available
NR	Non-Response
NGO	Non-Governmental Organization
NILF	Not in Labour Force
NRCA	Natural Resources Conservation Authority
PEPA	Portland Environmental Protection Association
SCCF	South Coast Conservation Foundation
SPSS	Statistical Package for the Social Sciences
STATIN	Statistical Institute of Jamaica
STEPA	St. Thomas Environmental Protection Association
UTECH	University of Technology (formerly CAST)
UWI	University of the West Indies

CHAPTER 1: INTRODUCTION

1.1 Background

This study is a report of a national survey of attitudes towards environmental issues in Jamaica commissioned by the Natural Resources Conservation Authority (NRCA), funded by the Environmental Action (ENACT) Programme, a joint effort of the governments of Jamaica and Canada. The project was initiated by the South Coast Conservation Foundation (SCCF) and completed by the Caribbean Coastal Area Management (C-CAM) Foundation.

The author and principal investigator of this study – Peter Espeut – conducted and authored a similar project in 1993 entitled *Attitudes to the Environment in Jamaica 1991* which was commissioned and funded by the Commonwealth of Learning (COL), Vancouver, British Columbia, Canada and conducted by the Institute of Social and Economic Research (ISER), University of the West Indies, Mona, Jamaica, where he was a Research Fellow. The COL compared the findings for Jamaica with similar studies done in Canada and Malaysia⁴.

This survey was intended to be compared with the earlier Jamaican study to determine whether there has been any change in attitudes towards the environment in Jamaica between 1991 and 1998.

1.2 Objectives and Project Description

The Contract between the NRCA and the SCCF outlines the following objective:

To design and conduct a survey, the major objective of which is to ascertain the current attitudes and perceptions of Jamaicans towards the environment.

The Terms of Reference for the project contain the following Project Description:

In 1991 a survey was conducted on Jamaican attitudes towards environmental matters. This project will involve a follow-up survey to assess what attitudinal changes have occurred, and the likely factors contributing to those changes that are identified.

1.3 Methodology

In the 1991 survey, the questionnaire supplied by the COL had been previously used in a Canada-wide telephone survey. Because the use of telephones is not widespread in Jamaica, especially in the rural areas, a telephone survey such as the one used in Canada would not produce a representative sample, or even a fair approximation; such a survey would under-represent the views of the lower segments of society which constitute the majority of the population. Instead of telephone interviews, in 1991 face-to-face administration of questionnaires was employed. Interviewers were specially trained to locate interviewees with the right profile in all areas including the remotest areas, and to obtain the necessary information. The face-to-face element of interviews permitted the interviewers to better judge the validity of the data collected.

In 1998, the questions were substantially the same as in 1991, and the sample was selected in a similar manner, as described below. In all 1,200 persons were interviewed, but upon examination, eight (8) questionnaires were rejected because they were improperly

⁴ CHIANG, Chan Huan and Harun DIN, April 1993.

completed, leading to a final sample of 1192. The questionnaires were analyzed on a PC using SPSS.

1.3.1 The Technical Advisory Committee

A committee to advise on the technical aspects of the project was formed and met several times. Among the subjects about which they gave advice were questionnaire design and sample selection. The members were as follows:

Dr. Mark Figueroa, Department of Economics, UWI
 Dr. Ian Boxill, Department of Sociology and Social Work, UWI
 Dr. Dale Webber, Department of Life Sciences, UWI
 Ms. Susan Otuokan, Jamaica Conservation and Development Trust
 Dr. Rob McWilliam, NRCA/CIDA/ENACT
 Ms. Helen Ann Brown, NRCA/CIDA/ENACT

1.3.2 Questionnaire Modification for the 1998 Survey

Generally low levels of education in Jamaica (especially in science) and the absence of “scientific language” in the local English-based creole⁵ led this researcher in 1991 to suspect that there would be a communication gap while administering the questionnaire. Terms like “CFCs”, “fossil fuels” and “bio-degradable products” would not be familiar to the average Jamaican. In fact, a pilot survey revealed that even the word “environment” was unfamiliar to most. “Translating” technical terms into the Jamaican Creole often was not possible as in most cases even the concept was alien. Therefore when respondents were not familiar with the terms in the question, it was assumed that they did not know about the concept.

The advisory committee agreed with the principle that the 1991 questionnaire should be left intact so that a fair comparison could be made; but it nevertheless recommended the addition of a number of questions. When the new ENACT team arrived in 1997 the questionnaire was reviewed again and further questions were added.

1.3.3 Sample Selection

Table 1.1: Distribution of EDs by Urban-Rural Status by Parish, STATIN Sample and Project Sample						
Parishes	STATIN Sample			Project Sample		
	KMA	Other Towns	Rural	KMA	Other Towns	Rural
Kingston	21			3		
St. Andrew	92		17	10		
St. Thomas		7	11			2
Portland		8	8		1	1
St. Mary		5	17			2
St. Ann		8	20		2	4
Trelawny		2	12		1	1
St. James		18	13		2	
Hanover		2	12		1	1
Westmoreland		5	21			6
St. Elizabeth		3	21		1	2
Manchester		8	20		1	3
Clarendon		14	25			6
St. Catherine	35	13	8	7	3	

⁵ Standard English (sometimes called “the Queen’s English”) is not the most prevalent language in Jamaica. See Cassidy and LePage (1980).

TOTAL	148	93	205	20	12	28
--------------	------------	-----------	------------	-----------	-----------	-----------

The island of Jamaica is divided into 14 civil parishes and 60 political constituencies. For census purposes it is further divided into about 2,000 enumeration districts (EDs) of roughly equal population. To obtain a sample of 1,200, 20 persons from each of 60 EDs were selected.

The Statistical Institute of Jamaica (STATIN) – the Jamaican state agency responsible for censuses and surveys – provided the project with a national sample of 459 EDs based on the 1991 population census, in three strata: the Kingston Metropolitan Area (KMA)⁶, other towns and rural areas. The sixty EDs required were selected randomly from these strata in roughly the same ratios. The distribution of EDs obtained from the random selection is shown in Table 1.1. No “other towns” were selected for St. Thomas, St. Mary, Westmoreland and Clarendon and no “rural” EDs in St. Andrew, St. James and St. Catherine were chosen.

Maps showing the geographical boundaries of each selected ED were obtained from STATIN, and the interviewers were trained and dispatched. Only persons aged 18 years and over were included in the sample. Each interviewer was instructed to obtain 20 respondents from each ED (quota sampling) fitting the following age and gender criteria which approximate those characteristics of the Jamaican population:

Age Cohort	Male	Female	Total
18-24	3	3	6
25-34	2	2	4
34-44	2	2	4
45-54	1	1	1
55-64	1	1	2
65+	1	1	2
TOTAL	10	10	20

1.3.4 Questionnaire Administration and Analysis

Some selected EDs were remote making travel difficult. In addition, many ED boundaries were “imaginary lines” from one point to another which were not easy to identify on the maps or on the ground. The interviewers reported that the respondents – especially in rural areas – were most willing to be interviewed, although several demonstrated disappointment when the questions were “only” about trees and garbage, and not about “really important” matters like the economy and their quality of life. Little difficulty was reported in obtaining the quota for each ED.

The major thrust towards bridging the communication gap was in the interviewing process itself. As a part of their training, each interviewer was provided with a standard definition of “the environment” as follows:

The environment may be defined as the whole world around us: the air, water and land, forests, wetlands and the sea, and all the animals and plants living about us.

For several other terms in the survey, the interviewers were instructed to take time to explain the concepts to each respondent. Interviewers were instructed to make sure that “Don't Know” (DK) was not selected by respondents because they “Don't Understand”.

⁶ The KMA comprises the civil parish of Kingston, those parts of St. Andrew which are considered suburban, and Portmore in St. Catherine.

The number of valid questionnaires analyzed was 1,192 or 99.3% of the target sample. The questionnaires were coded manually, and the data were analyzed using SPSS for on a PC.

CHAPTER 2: CHARACTERISTICS OF THE SAMPLE

2.1 The Age-Sex Ratio

The age-sex ratio of the sample by design approximates that of the Jamaican population between 18 and 65. Because of incomplete questionnaires, men are slightly over-represented.

Table 2.1: Age by Sex, 1998			
Age	Male	Female	Total
18-24	124 (20.8%)	124 (20.8%)	248 (20.8%)
25-34	178 (29.8%)	172 (28.9%)	350 (29.4%)
35-44	118 (19.8%)	119 (20.0%)	237 (19.9%)
45-54	63 (10.6%)	62 (10.4%)	125 (10.5%)
55-64	58 (9.7%)	57 (9.6%)	115 (9.6%)
65+	56 (9.4%)	61 (10.3%)	117 (9.8%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

2.2 The Parish Distribution

Table 2.2: Parish by Sex, 1998			
Parishes	Male	Female	Total
Kingston	30 (5.0%)	30 (5.0%)	60 (5.0%)
St. Andrew	99 (16.6%)	98 (16.5%)	197 (16.5%)
St. Thomas	20 (3.4%)	20 (3.4%)	40 (3.4%)
Portland	19 (3.2%)	20 (3.4%)	39 (3.3%)
St. Mary	19 (3.2%)	20 (3.4%)	39 (3.3%)
St. Ann	60 (10.1%)	60 (10.1%)	120 (10.1%)
Trelawny	20 (3.4%)	20 (3.4%)	40 (3.4%)
St. James	20 (3.4%)	20 (3.4%)	40 (3.4%)
Hanover	20 (3.4%)	20 (3.4%)	40 (3.4%)
Westmoreland	60 (10.1%)	59 (9.9%)	119 (10.0%)
St. Elizabeth	30 (5.0%)	30 (5.0%)	60 (5.0%)
Manchester	40 (6.7%)	38 (6.4%)	78 (6.5%)
Clarendon	60 (10.1%)	60 (10.1%)	120 (10.1%)
St. Catherine	100 (16.8%)	100 (16.8%)	200 (16.8%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

These results reflect the quota sampling method used to select the sample.

2.3 Urban-Rural Distribution

The parish of Kingston is 100% urban while part of St. Andrew is within the KMA and part is rural. All other parishes have rural (other) towns and deep rural areas. Unlike in 1991, in 1998 the Portmore part of St. Catherine is considered part of the KMA. As mentioned above, in 1998, no “other towns” were selected from St. Thomas, St. Mary, Westmoreland and Clarendon and no “rural” EDs in St. Andrew, St. James and St. Catherine were chosen.

Parishes	KMA	Other Towns	Rural	Total
Kingston	60 (15.1%)			60 (5.0%)
St. Andrew	197 (49.6%)			197 (16.5%)
St. Thomas			40 (7.2%)	40 (3.4%)
Portland		19 (8.0%)	20 (3.6%)	39 (3.3%)
St. Mary			39 (7.0%)	39 (3.3%)
St. Ann		40 (16.9%)	80 (14.3%)	120 (10.1%)
Trelawny		20 (8.4%)	20 (3.6%)	40 (3.4%)
St. James		40 (16.9%)		40 (3.4%)
Hanover		20 (8.4%)	20 (3.6%)	40 (3.4%)
Westmoreland			119 (21.3%)	119 (10.0%)
St. Elizabeth		20 (8.4%)	40 (7.2%)	60 (5.0%)
Manchester		18 (7.6%)	60 (10.8%)	78 (6.5%)
Clarendon			120 (21.5%)	120 (10.1%)
St. Catherine	140 (35.3%)	60 (25.3%)		200 (16.8%)
TOTAL	397 (33.3%)	237 (19.9%)	558 (46.8%)	1192 (100%)

2.4 Highest Educational Levels

Jamaica has a complex education system highly differentiated by status, curriculum and quality. Fundamentally, the system is divided into three levels – primary, secondary and tertiary – but there is a multiplicity of types of institution at each level – some public and some private.

At the primary level (grades 1-6) the government operates Primary Schools (grades 1-6) and All-Age Schools (grades 1-9) and Primary and Junior High Schools (grades 1-9); the private sector operates Preparatory Schools (grades 1-6). At the secondary level the government operates All-Age Schools (grades 1-9) and Primary and Junior High Schools (grades 1-9), New Secondary Schools (grades 7-11), Technical Schools (grades 8-11/13)⁷, Comprehensive Schools (grades 7-11/13) and Grammar (or Traditional) High Schools (grades 7-11/13); the private sector operates Grammar Schools (grades 7-11/13).

To enter a government technical, comprehensive or grammar school the primary-level student from the public or private sectors must “pass” an entrance examination⁸. Those who do not “pass” either remain in their All-Age or Junior High School, go to a New Secondary School (if there is one nearby), or pay high fees at a private high school.

⁷ Secondary school ends at Grade 11 (5th Form); some schools offer two years of Sixth Form (Grades 12-13) which is at the pre-University level.

⁸ A “pass” in the Common Entrance Examination allows entrance to grammar and comprehensive schools; technical schools have their own entrance examination. There is no fixed pass mark for these exams; the number of “passes” is determined by the number of spaces available.

Passing this entrance examination is very important for the life-chances of a child; their very future is in the balance. Only at technical, comprehensive and grammar schools are students prepared for examinations which permit educational mobility or access to white-collar jobs. Graduates of all-age or secondary schools can look forward to manual or blue-collar jobs. The dropout level from these types of school is high.

Exposure to environmental science in primary school is very basic. All-Age, Junior High and Secondary schools teach general or integrated science, which results in fewer classroom hours than technical, comprehensive and grammar schools which have separate science subjects in science streams. The degree of exposure to environmental issues will vary accordingly.

HIGHEST EDUCATION	1991 SURVEY			1998 SURVEY		
	Male	Female	Total	Male	Female	Total
No Schooling	n.a.	n.a.	n.a.	2 (0.3%)	8 (1.3%)	10 (0.8%)
Primary/All-Age	243 (43.6%)	227 (41.8%)	470 (42.7%)	208 (34.8%)	201 (33.8%)	409 (34.3%)
Some New Secondary	160 (28.7%)	163 (30.0%)	323 (29.4%)	129 (21.6%)	116 (19.5%)	245 (20.6%)
Some Tech/Comp./Gram	43 (7.7%)	37 (6.8%)	80 (7.3%)	53 (9.4%)	53 (8.9%)	109 (9.1%)
Done Tech/Comp/Gram.	65 (11.7%)	39 (7.2%)	104 (9.5%)	131 (21.9%)	100 (16.8%)	231 (19.4%)
Teacher-Nurse College	4 (0.7%)	31 (5.7%)	35 (3.2%)	13 (2.2%)	58 (9.7%)	71 (6.0%)
Some University/CAST	11 (2.0%)	17 (3.1%)	28 (2.5%)	20 (3.4%)	29 (4.9%)	49 (4.1%)
Done University/CAST	27 (4.8%)	26 (4.8%)	53 (4.8%)	22 (3.7%)	12 (2.0%)	34 (2.9%)
Post-Graduate	4 (0.7%)	3 (0.6%)	7 (0.6%)	5 (0.8%)	5 (0.8%)	10 (0.8%)
Non-Response	n.a.	n.a.	n.a.	11 (1.8%)	13 (2.2%)	24 (2.0%)
TOTAL	557 (50.6%)	543 (49.4%)	1100 (100%)	597 (50.4%)	596 (49.6%)	1192 (100%)

In 1991 over 40% of men and women in the sample had received no more than a basic primary education, while a further 30% received their highest education in government New Secondary Schools, from where there is little possibility of educational (or social) mobility. Only about 28% of the sample had received any grammar school education (or higher). By contrast, in 1998 only 35% of men and women in the sample received no more than a basic primary education; a further 21% received their highest education in government New Secondary Schools, and 43% of the sample had received grammar school education (or higher). The 1998 sample is better educated than the 1991 sample, which suggests that they should be better informed about environmental issues.

2.5 Marital Status

MARITAL STATUS	1991 SURVEY			1998 SURVEY		
	Male	Female	Total	Male	Female	Total
Single	303 (53.4%)	286 (52.0%)	589 (52.7%)	232 (38.9%)	225 (37.8%)	457 (38.3%)
Married	225 (39.7%)	226 (41.1%)	451 (40.4%)	164 (27.5%)	166 (27.9%)	330 (27.7%)
Common Law	<i>Combined</i>	<i>with</i>	<i>married</i>	160 (26.8%)	147 (24.7%)	307 (25.8%)
Widowed	14 (2.5%)	26 (4.7%)	40 (3.6%)	24 (4.0%)	46 (7.7%)	70 (5.9%)
Separated	16 (2.8%)	8 (1.5%)	24 (2.1%)	5 (0.8%)	6 (1.0%)	11 (0.9%)
Divorced	9 (1.6%)	4 (0.7%)	13 (1.2%)	9 (1.5%)	2 (0.3%)	11 (0.9%)
Non-Response	n.a.	n.a.	n.a.	3 (0.5%)	3 (0.5%)	6 (0.5%)
TOTAL	567 (50.8%)	550 (49.2%)	1117 (100%)	597 (50.1%)	595 (49.9%)	1192 (100%)

In Jamaica the incidence of legal marriage is lower than in Europe and North America. Typically, persons participate in “visiting” relationships while in their parents' home, which may bear fruit in children. Later persons may establish residential common-law unions of increasing stability, which may culminate in marriage later in life. The numbers of separated, divorced or widowed are small since they depend upon legal marriage to have taken place. Those reporting “single” will include those in visiting relationships. This variable was not important in explaining the environmental data, and is not used in the analysis.

2.6 Occupational Groups

The distribution of occupations gives a clue to the social and class structure of Jamaican society. Only a small fraction (less than 4% in 1991 and about 6% in 1998) practice traditional middle-class occupations like the professions and various levels of managerial responsibility. In 1991 about 7% are nurses, teachers, policemen and the like (semi-professionals), which increased to 10% by 1998. In 1991 about 30% of the sample were involved in skilled or unskilled manual labour including domestic service, which had reduced by 1998 to 21%. About one-quarter (in 1991) and one-fifth (in 1998) of the sample fall into what has come to be called the “informal sector”: small-scale self-employed activities like petty-trading which are responses to the closed nature of the formal economy. In 1991, about 11% report that they are unemployed, and another 13% are not in the labour force⁹; by 1998 the unemployed had increased to 21% while those not in the labour force remained stable at about 12%.

MARITAL STATUS	1991 SURVEY			1998 SURVEY		
	Male	Female	Total	Male	Female	Total
Prof. & Man.	23 (4.1%)	19 (3.4%)	42 (3.8%)	38 (6.4%)	37 (6.2%)	75 (6.3%)
Semi-Professional	33 (5.9%)	45 (8.2%)	78 (7.0%)	23 (3.9%)	95 (16.0%)	118 (9.9%)
Personal Services	8 (1.4%)	33 (6.0%)	41 (3.7%)	52 (8.7%)	29 (4.9%)	81 (6.8%)
Clerical & Tech.	35 (6.2%)	55 (10.0%)	90 (8.1%)	69 (11.6%)	59 (9.9%)	128 (10.7%)
Self-Empl'd (Petty)	182 (32.3%)	89 (16.2%)	271 (24.3%)	152 (25.5%)	92 (15.5%)	244 (20.5%)
Manual skilled	169 (30.0%)	44 (8.0%)	213 (19.1%)	80 (13.4%)	10 (1.7%)	90 (7.6%)
Manual unskilled	28 (5.0%)	1 (3.4%)	29 (2.6%)	41 (6.9%)	2 (0.3%)	43 (3.6%)
Domestics	9 (1.6%)	75 (13.6%)	84 (7.5%)	2 (0.3%)	27 (4.5%)	29 (2.4%)
Unemployed	51 (9.1%)	72 (13.1%)	123 (11.0%)	77 (12.9%)	170 (28.6%)	247 (20.7%)
Not in Lab. Force	25 (4.4%)	118 (21.4%)	143 (12.8%)	63 (10.6%)	74 (12.4%)	137 (11.5%)
TOTAL	563 (50.5%)	551 (49.5%)	1,114 (100%)	597 (50.1%)	595 (49.9%)	1192 (100%)

The occupational distribution of males and females in the sample reflect a certain level of gender inequality. There are proportionately more males in the Professional/Managerial, Self-Employed and both manual labour categories. Females dominate the other occupational categories, including the unemployed and those not in the labour force. Females are clearly in a more vulnerable position with 35% in 1991 (41% in 1998) being either unemployed or out of the labour force, and another 20% in 1991 (9% in 1998) working as domestics or in personal services.

⁹ Housewives, students, and the elderly.

2.7 Income Groups

A look at reported income levels of families in the sample confirms the sharp class stratification indicated above. In 1991 about one-half of the families in the sample earn less than J\$15,000 per annum (US\$2,727), and two-thirds earn less than J\$35,000 (US\$6,364). About 4% earn over J\$70,000 per annum (US\$12,727). Less than 20% of the sample refused to answer the question. In 1991 about 46% did not or could not answer the question, and so no conclusions can be drawn about this variable.

ANNUAL FAMILY INCOME	1991 SURVEY		
	Male	Female	Total
Under \$15,000	283 (52.3%)	268 (50.8%)	551 (50.5%)
\$15,000 - < \$25,000	60 (11.1%)	48 (9.1%)	108 (9.9%)
\$25,000 - < \$35,000	37 (6.8%)	30 (5.7%)	67 (6.1%)
\$35,000 - < \$45,000	24 (4.4%)	21 (4.0%)	45 (4.1%)
\$45,000 - < \$50,000	9 (1.7%)	6 (1.1%)	15 (1.4%)
\$50,000 - < \$60,000	6 (1.1%)	8 (1.5%)	14 (1.3%)
\$60,000 - < \$70,000	5 (0.9%)	2 (0.4%)	7 (0.6%)
\$70,000 and over	25 (4.6%)	21 (4.0%)	46 (4.2%)
DK	92 (17.0%)	124 (23.5%)	216 (19.8%)
TOTAL	541	550	1,091

N.B. In 1991, US\$1.00 = J\$5.50

ANNUAL FAMILY INCOME	1998 SURVEY		
	Male	Female	Total
Under \$50,000	105 (17.6%)	86 (14.5%)	191 (16.0%)
\$ 50,000 - < \$100,000	45 (7.5%)	43 (7.2%)	88 (7.4%)
\$100,000 - < \$150,000	38 (6.4%)	43 (7.2%)	81 (6.8%)
\$150,000 - < \$200,000	42 (7.0%)	29 (4.9%)	71 (6.0%)
\$200,000 - < \$250,000	34 (5.7%)	31 (5.2%)	65 (5.5%)
\$250,000 - < \$300,000	32 (5.4%)	26 (4.4%)	58 (4.9%)
\$300,000 - < \$350,000	14 (2.3%)	14 (2.4%)	28 (2.3%)
\$350,000 and over	28 (4.7%)	28 (4.7%)	56 (4.7%)
DK	218 (36.5%)	267 (44.9%)	485 (40.7%)
NR	41 (6.9%)	28 (4.7%)	69 (5.8%)
TOTAL	597 (51.1%)	595 (49.9%)	1,192 (100%)

N.B. In 1998, US\$1.00 = J\$36.00

In 1991, on average the families of the males interviewed appear to earn slightly more than those of females, but with 20% of the sample reporting that they don't know the average income of their families, this data must be considered incomplete. This variable was not used to stratify the environmental data.

CHAPTER 3:

LOCAL ENVIRONMENTAL ISSUES

Several sets of questions were asked in an effort to measure the respondents level of awareness of environmental issues. The first questions were open, asking the respondents to tell what they know. The later questions prompt the respondents by asking for opinions on specific environmental issues.

Both open and closed questions are sources of error. Open questions may under-represent what respondents really know, as they may not be able to recall essential details in the interview situation. On the other hand, when prompted for an opinion, respondents may furnish an answer which they may not have previously held, or indeed which they do not hold at all. The pressure to give an answer so as not to appear ignorant may over-represent what the respondents really know. Having lodged these caveats, let us examine the findings.

3.1 Understanding about the Environment

After the 1991 survey, the interviewers reported that many of the respondents did not appear fully aware of the meaning of the word “environment”. Some had a very narrow understanding of the term, applying it only to their immediate surroundings (e.g. their back yards). In the 1998 survey, the respondents were asked to explain their understanding of the term “environment”, and then their response was coded according to whether their understanding accorded with the definition used by the survey, which was:

The environment may be defined as the whole world around us: the air, water and land, forests, wetlands and the sea, and all the animals and plants living about us.

Table 3.1 summarizes the results.

Table 3.1:	
Understanding about the Environment, Jamaica, 1998	
Understand	588 (49.3%)
Don't Understand	392 (32.9%)
Non-Response	214 (17.8%)
TOTAL	1,194 (100%)

Just about half of the sample had an adequate understanding of the concept of the environment; non-response to this question may be taken as equivalent to a lack of understanding. Of all the stratifying variables, age and education appeared to be the most useful in explaining a correct understanding. Persons over 55 years old least understood the concept, while persons who had attended a comprehensive, technical or traditional high school were most likely to understand the term “environment”. Gender was not an important factor, but more persons from rural towns understood the concept than persons from deep rural areas.

**Table 3.2:
Understanding about the Environment,
by Sex, Age, Highest Education Attained, Jamaica 1998**

		Understand	Don't Understand	Non-Response	Total
Gender	Male	309 (51.8%)	202 (33.8%)	86 (14.4%)	597 (51.1%)
	Female	279 (46.9%)	190 (31.9%)	126 (21.2%)	595 (49.9%)
	Total	588 (49.3%)	392 (32.9%)	212 (17.8%)	1,192
Age	18-24	137 (55.2%)	80 (32.3%)	31 (12.5%)	248 (20.8%)
	25-34	181 (51.7%)	110 (31.4%)	59 (16.9%)	350 (29.4%)
	34-44	122 (51.5%)	79 (33.3%)	36 (15.2%)	237 (19.9%)
	45-54	63 (50.4%)	41 (32.8%)	21 (16.8%)	125 (10.5%)
	55-64	43 (37.4%)	50 (43.5%)	22 (19.1%)	115 (9.6%)
	65+	42 (35.9%)	32 (27.4%)	43 (36.8%)	117 (9.8%)
	Total	588 (49.3%)	392 (32.9%)	212 (17.8%)	1,192
Highest Education Attained	No Schooling	2 (20.0%)	2 (20.0%)	6 (60.0%)	10 (0.8%)
	Prim./All-Age	137 (33.5%)	144 (35.2%)	128 (31.3%)	409 (34.3%)
	Some NewSec	100 (40.8%)	105 (42.9%)	40 (16.3%)	245 (20.6%)
	Some T/C/G	70 (64.2%)	26 (23.9%)	13 (11.9%)	109 (9.1%)
	Done T/C/G	143 (61.9%)	76 (32.9%)	12 (5.2%)	231 (19.4%)
	Tch/Nrse Col	54 (76.1%)	16 (22.5%)	1 (1.4%)	71 (6.0%)
	Some U/CAST	37 (75.5%)	10 (20.4%)	2 (4.1%)	49 (4.1%)
	Completed U/CAST	29 (85.3%)	5 (14.7%)	-	34 (2.9%)
	Post-Grad	9 (90.0%)	1 (10.0%)	-	10 (0.8%)
	NR	7 (29.2%)	7 (29.2%)	10 (41.7%)	24 (2.0%)
	Total	588 (49.3%)	392 (32.9%)	212 (17.8%)	1,192
	Rural-Urban Status	KMA	203 (51.1%)	120 (30.2%)	74 (18.6%)
Oth Tns		132 (55.7%)	86 (36.3%)	19 (8.0%)	237 (19.9%)
Rural		253 (45.3%)	186 (33.3%)	119 (21.3%)	558 (46.8%)
Total		588 (49.3%)	392 (32.9%)	212 (17.8%)	1,192

n.b. Except for the totals column, the percentages indicated are calculated across the rows.

3.2 Level of Concern about the Environment

Table 3.3: Level of Concern about the Environment, 1991, 1998		
LEVEL OF CONCERN	1991	1998
No Concerns	221 (19.5%)	147 (12.3%)
Few Concerns	165 (14.6%)	224 (18.8%)
Some Concerns	277 (24.4%)	326 (27.3%)
Quite Concerned	264 (23.3%)	282 (23.7%)
Extremely Concerned	169 (14.9%)	181 (15.2%)
NR	37 (3.3%)	32 (2.7%)
Un-Concerned	386 (34.1%)	371 (31.1%)
Some Concerns	277 (24.4%)	326 (27.3%)
Concerned	433 (38.2%)	463 (38.9%)
NR	37 (3.3%)	32 (2.7%)
TOTAL	1,133 (100%)	1,192 (100%)

The respondents were first asked to place their level of concern about the environment on a five point Likert Scale; for analytical purposes, the "Level of Concern" variable was collapsed into three categories. In 1991, about one-quarter (25.3%) of the respondents fell in the middle, while 39.5% expressed concern and 35.3% were relatively unconcerned; more persons reported

no concerns (20.2%) than extreme concerns (15.4%). By 1998, opinion had shifted away from “no concerns” towards the centre (27.3%), while the relative numbers of concerned (38.9%) and unconcerned (31.1%) remained relatively stable.

**Table 3.4:
Level of Concern about the Environment,
by Sex, Age, Highest Education Attained, Rural-Urban Status,
Jamaica 1991, 1998**

		1991 Data				1998 Data			
		Not Concerned	Some Concerns	Concerned	Total	Not Concerned	Some Concerns	Concerned	NR
Gender	Male	33.6%	24.9%	41.5%	51.6%	29.7%	29.6%	38.2%	2.5%
	Female	37.5%	25.9%	36.6%	48.4%	32.6%	25.0%	39.5%	2.9%
	Total	35.5%	25.3%	39.1%	100%	31.1%	27.3%	38.9%	2.7%
Age	18-24	32.4%	28.9%	38.7%	28.1%	26.6%	27.4%	43.5%	2.4%
	25-34	35.8%	24.7%	39.5%	19.0%	33.1%	28.6%	35.7%	2.6%
	34-44	35.5%	20.9%	43.6%	18.6%	30.8%	25.3%	41.3%	2.5%
	45-54	33.6%	23.6%	42.7%	9.7%	25.6%	31.2%	40.8%	0.4%
	55-64	34.5%	30.0%	35.5%	9.7%	37.3%	27.0%	33.1%	2.6%
	65+	40.9%	24.5%	34.5%	9.7%	35.1%	23.9%	36.7%	4.3%
	Total	35.5%	25.3%	39.1%	100%	31.1%	27.3%	38.9%	2.7%
Highest Education Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	50.0%	20.0%	20.0%	10.0%
	Prim/All-Age	48.0%	24.1%	27.9%	38.2%	42.6%	25.4%	29.6%	2.4%
	Some NewSec	38.1%	25.3%	36.5%	26.1%	31.9%	28.6%	37.9%	1.6%
	Some T/C/G	25.9%	19.8%	54.3%	6.8%	34.0%	28.4%	33.9%	3.7%
	Done T/C/G	14.9%	32.4%	52.9%	8.5%	18.7%	32.0%	46.3%	3.0%
	Tch/Nrse Col	2.9%	11.4%	85.7%	2.9%	15.5%	28.2%	56.3%	-
	Some U/CAST	17.4%	27.6%	55.2%	2.4%	12.2%	26.5%	59.2%	2.0%
	Done U/CAST	1.9%	26.4%	71.7%	4.4%	11.8%	29.4%	53.0%	5.9%
	Post-Grad			100%	0.6%	10.0%	-	90.0%	-
	NR	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	50.0%	8.3%	29.1%	12.5%
Total	35.5%	25.3%	39.1%	100%	31.1%	27.3%	38.9%	2.7%	
Rural-Urban Status	KMA					36.7%	27.0%	30.4%	5.8%
	Oth Tns	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	19.8%	34.2%	44.7%	1.3%
	Rural					31.9%	24.7%	42.3%	1.1%
	Total					31.1%	27.3%	38.9%	2.7%

n.b. Except for the totals column, the percentages indicated are calculated across the rows.

In the 1998 survey, the youngest age group (18-24 years) showed the greatest concern (44.6%) and one of the lowest levels of unconcern (27.3%). The lowest lack of unconcern (26.2%) was shown in the 45-54 year age category, which also had the second highest level of concern (42.4%). In general, the increases in concern over the period 1991-1998 seem strongest among the younger respondents.

As in 1991, in 1998 the highest educational institution attended was a strong correlate of level of concern for the environment. Level of concern was higher for persons exposed to higher education. With increasing education, persons gain more information about the environment and so become more aware and more concerned. It is also possible that with more education,

persons learn that it is expected of them that they should be more concerned about the environment, and answer as such.

Interestingly, rural people are more concerned about the environment than persons in the Kingston Metropolitan Area (KMA), with residents of rural towns having the highest level of concern (45.5%). Persons from the KMA show the highest level of unconcern for the environment (39.9%) suggesting that more efforts in environmental education need to be placed there. It is also possible that because there is more infrastructure in the KMA (garbage collection and piped water supply) however irregular, residents show less concern for the environment (which they often see in these terms).

3.3 Change in Levels of Concern about the Environment

In the previous section, changes in levels of concern were estimated (objectively) by comparing the answers to the same question in 1991 and 1998, inquiring of the respondent their level of concern about the environment. In 1998 the respondents were also asked (subjective) whether their concerns about the environment had increased or decreased over the last five years. The responses are contained in Table 3.5 below.

Table 3.5: Changes in Level of Concern about the Environment, Jamaica, 1998	
Change in Level of Concern	Frequency
Increased significantly	199 (16.7%)
Increased somewhat	231 (19.4%)
Remains the same	648 (54.4%)
Decreased somewhat	52 (4.4%)
Decreased significantly	14 (1.2%)
NR	48 (4.0%)
Increased	430 (36.1%)
No Change	648 (54.4%)
Decreased	66 (5.6%)
NR	48 (4.0%)
TOTAL	1,192 (100%)

More than half of the respondents (54.4%) said that their levels of environmental concern have remained the same over the last five years; 36.1% said that their levels of concern had increased, while only 5.6% said that their concern had decreased. The data in the last section – which suggest a slight shift in concern towards the centre – do not match these results which suggest a much larger shift. Other results presented below are qualitatively consonant with the trends suggested here.

Two points are not enough of a series which would permit prediction of future levels of environmental awareness. If this survey is repeated in future years such forecasting might be possible.

Table 3.6: Changes in Level of Concern about the Environment, By Sex, Age, Highest Education Attained, Rural-Urban Status, Jamaica 1998						
		Increased	No Change	Decreased	NR	Total
Gender	Male	215 (36.0%)	334 (55.9%)	35 (5.8%)	13 (2.2%)	597 (51.1%)
	Female	215 (36.2%)	314 (52.8%)	31 (5.2%)	35 (5.9%)	595 (49.9%)
	Total	430 (36.1%)	648 (54.4%)	66 (5.6%)	48 (4.0%)	1,192
Age	18-24	99 (39.9%)	126 (50.8%)	10 (4.0%)	13 (5.2%)	248 (20.8%)
	25-34	127 (36.3%)	192 (54.9%)	20 (5.7%)	11 (3.1%)	350 (29.4%)
	34-44	89 (37.6%)	124 (52.3%)	17 (7.2%)	7 (3.0%)	237 (19.9%)
	45-54	55 (44.0%)	61 (48.8%)	6 (4.8%)	3 (2.4%)	125 (10.5%)
	55-64	29 (25.2%)	70 (60.9%)	9 (7.8%)	7 (6.1%)	115 (9.6%)
	65+	31 (26.5%)	75 (64.1%)	4 (3.4%)	7 (6.0%)	117 (9.8%)
	Total	430 (36.1%)	648 (54.4%)	66 (5.6%)	48 (4.0%)	1,192
Highest Education Attained	No Schooling	1 (10.0%)	7 (70.0%)	-	2 (20.0%)	10 (0.8%)
	Prim/All-Age	88 (21.5%)	269 (65.8%)	32 (7.9%)	20 (4.9%)	409 (34.3%)
	Some NewSec	78 (31.8%)	141 (57.6%)	13 (5.3%)	13 (5.3%)	245 (20.6%)
	Some T/C/G	58 (53.2%)	42 (38.5%)	6 (5.5%)	3 (2.8%)	109 (9.1%)
	Done T/C/G	85 (36.8%)	135 (58.4%)	7 (3.0%)	4 (1.7%)	231 (19.4%)
	Tch/Nrse Col	50 (70.5%)	19 (26.8%)	2 (2.8%)	-	71 (6.0%)
	Some U/CAST	35 (71.4%)	9 (18.4%)	3 (6.1%)	2 (4.1%)	49 (4.1%)
	Done U/CAST	25 (73.6%)	9 (26.5%)	-	-	34 (2.9%)
	Post-Grad	8 (80.0%)	2 (20.0%)	-	-	10 (0.8%)
	NR	2 (8.3%)	15 (62.5%)	3 (12.5%)	4 (16.7%)	24 (2.0%)
	Total	430 (36.1%)	648 (54.4%)	66 (5.6%)	48 (4.0%)	1,192
Rural-Urban Status	KMA	130 (32.7%)	206 (51.9%)	29 (7.3%)	32 (8.1%)	397 (33.3%)
	Oth Tns	80 (33.7%)	145 (61.2%)	8 (3.4%)	4 (1.7%)	237 (19.9%)
	Rural	220 (39.4%)	297 (53.2%)	29 (5.2%)	12 (2.2%)	558 (46.8%)
	Total	430 (36.1%)	648 (54.4%)	66 (5.6%)	48 (4.0%)	1,192

n.b. Except for the totals column, the percentages indicated are calculated across the rows.

The respondents were also asked what they felt contributed most to the change in their level of concern for the environment over the last five years. Although about 42% of the sample said their level of concern had changes, only about one-third (33%) offered a response.

Most of the factors mentioned were external: media attention; people talking about it; the respondents encountering and experiencing various environmental problems which impinged on their consciousness. Some responses indicated internal factors: new awareness, learnt more, read more. Some responses indicated that the respondents were drawing conclusions from observations: deforestation leading to less rainfall; air pollution leading to atmospheric haze. It was not clear how some factors (state of the economy, crime, coke-heads, HIV/AIDS) were leading to increases in concern for the environment.

In the end the deciding factor is internal as external factors have to strike an internal chord; but environmental education and awareness programmes in the media are important catalysts in heightening environmental consciousness, and are to be encouraged. It is also important to get people talking about the environment, as some people are greatly affected by peer pressure.

**Table 3.7:
What Respondent feels has contributed most to his/her Change in Level of
Concern about the Environment, Jamaica, 1998**

Factor Contributing most to Change	Male	Female	Total
Media attention	53 (8.9%)	64 (10.8%)	117 (9.8%)
New awareness, learnt more, read more	26 (4.4%)	32 (5.4%)	58 (4.9%)
State of the economy, crime, getting worse	27 (4.5%)	29 (4.9%)	56 (4.7%)
More people talking about it, more topical	14 (2.3%)	11 (1.8%)	25 (2.1%)
Experience problems with garbage disposal	15 (2.5%)	7 (1.2%)	22 (1.8%)
See people cutting trees, and less rain	7 (1.2%)	12 (2.0%)	19 (1.6%)
See more pollution, sewage, burning	11 (1.8%)	4 (0.7%)	15 (1.3%)
Things are harder, and the future looks dim	10 (1.7%)	4 (0.7%)	14 (1.2%)
Observe air pollution, atmospheric haze	6 (1.0%)	6 (1.0%)	12 (1.0%)
Lack of concern by government	6 (1.0%)	2 (0.3%)	8 (0.7%)
People are less caring	1 (0.2%)	4 (0.7%)	5 (0.4%)
People seem so unaware	4 (0.7%)	1 (0.2%)	5 (0.4%)
I feel the increased heat	2 (0.3%)	1 (0.2%)	3 (0.3%)
I experience drought, water problems	1 (0.2%)	2 (0.3%)	3 (0.3%)
State of young persons in my community	-	3 (0.5%)	3 (0.3%)
Poor natural resource management	1 (0.2%)	2 (0.3%)	3 (0.3%)
More people co-operating to clean up, plant	3 (0.5%)	-	3 (0.3%)
See nothing being done	1 (0.2%)	1 (0.2%)	2 (0.2%)
Need proper roads, water, sewage system	2 (0.3%)	-	2 (0.2%)
I experience flooding when it rains	2 (0.3%)	-	2 (0.2%)
My work affiliation has helped	1 (0.2%)	-	1 (0.1%)
I observe changes in the weather patterns	1 (0.2%)	-	1 (0.1%)
Too many coke heads and HIV/AIDS	-	1 (0.2%)	1 (0.1%)
See the small mesh the fishers are using	1 (0.2%)	-	1 (0.1%)
Destruction of marine life	1 (0.2%)	-	1 (0.1%)
Concerns of the farmers	1 (0.2%)	-	1 (0.1%)
I observe improvement in environment	-	1 (0.2%)	1 (0.1%)
I experience soil erosion	-	1 (0.2%)	1 (0.1%)
SUB-TOTAL	197 (33.0%)	188 (31.6%)	385 (32.3%)
NR	400 (67.0%)	407 (68.9%)	807 (67.7%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

3.4 The Major Issue Facing the Jamaican Environment

Without any prompting, and without any previous question which might suggest an answer (loading), respondents were asked to name the major issue they see facing the Jamaican environment. Only one answer was allowed, and in 1998, 82.8% of respondents gave an answer, compared to 63.7% in 1991. This suggests an increase in environmental awareness over the period. Because the answers were not precoded, some of the responses overlap.

In 1991 the most common answer was the generic "pollution" (11.4%); together with more specific answers to do with air and water pollution, pollution counted for 18.2% of the respondents' concerns. Garbage disposal was another big issue (11.0%). Deforestation, which leads to soil erosion, watershed destruction and water shortages, attracted some comment,

totalling 13.8%. Another significant suggestion was that human beings and their lifestyles were a major source of environmental degradation (9.0%), while half that number felt that insufficient government funds were at the root of Jamaica's environmental problems. A number of other issues were also mentioned (see Table 3.8).

In 1998 the pattern of concerns was similar, but the degree of feeling was stronger. Although the generic “pollution” was quite small (3.2%), there were more specific types of pollution mentioned: air pollution (5.6%), auto exhaust (3.5%), water pollution (2.6%), marine pollution (1.8%), beach pollution (1.4%) and industrial pollution (1.0%); together they add to 19.1%. Specific concerns about air pollution remain high. Garbage disposal was the biggest single concern (17.6%). The impact of poverty on the environment as a single issue came in a strong second (13.6%). Deforestation, soil erosion and water shortages was the concern of 13.7% of the respondents. Issues to do with sewage, urban management (roads, drains, gullies) and lack of government action came in for significant mention. See Table 3.8 for the full range of issues.

MAJOR ISSUE	1991	1998
Garbage Disposal	124 (10.9%)	211 (17.7%)
Poverty		163 (13.7%)
Deforestation	78 (6.9%)	141 (11.8%)
Air Pollution	77 (6.8%)	67 (5.6%)
Poor Sanitation (Sewage)	16 (1.4%)	46 (3.9%)
Auto exhaust		42 (3.5%)
Pollution (Non-Specified)	129 (11.4%)	38 (3.2%)
Poor management of towns, cities		34 (2.8%)
Poor Water Quality (tap)	10 (0.9%)	33 (2.8%)
Water Pollution (e.g. rivers)		31 (2.6%)
Poor Government planning, implementation		23 (1.9%)
People, Lifestyles	101 (8.9%)	21 (1.8%)
Marine Pollution		21 (1.8%)
Water availability	62 (5.5%)	18 (1.5%)
Coastline, Beach Pollution		17 (1.4%)
Poor Drainage, Flooding, Clogged Drains	14 (1.2%)	15 (1.3%)
Overpopulation		14 (1.2%)
Industrial Pollution		12 (1.0%)
Lack of Environmental Awareness		11 (0.9%)
People Don't Care		9 (0.8%)
Landslides, Soil Erosion	17 (1.5%)	5 (0.4%)
Mining	3 (0.3%)	4 (0.3%)
Greed, Rapaciousness		4 (0.3%)
Poor farming practices, pesticides, etc.	3 (0.3%)	2 (0.2%)
Ozone Layer	2 (0.2%)	2 (0.2%)
Noise Pollution		2 (0.2%)
Insects (flies, etc.)	22 (1.9%)	1 (0.1%)
Diseases, Public Health Hazards	6 (0.5%)	1 (0.1%)
Coral Reef Degradation		1 (0.1%)
No Money to effect plans	51 (4.5%)	
Wildlife Killed	7 (0.6%)	
SUB-TOTAL	722 (64.1%)	990 (82.8%)

NR	411 (35.9%)	202 (17.2%)
TOTAL	1,133	1,192

3.5 Other Issues Facing the Jamaican Environment

ISSUES	1991	1998
Garbage Disposal	81 (7.1%)	218 (18.3%)
Poor management of towns, cities		169 (14.2%)
Deforestation	81 (7.1%)	148 (12.4%)
Air Pollution	113 (10.0%)	106 (8.9%)
Water Pollution (e.g. rivers)		106 (8.9%)
Poor sanitation (Sewage)	44 (3.9%)	96 (8.0%)
Poverty		72 (6.0%)
Auto exhaust		67 (5.6%)
Marine Pollution		58 (4.9%)
Poor Water Quality (Tap)	56 (4.9%)	57 (4.9%)
Industrial Pollution		53 (4.4%)
Water Shortages, Drought	37 (3.3%)	52 (4.4%)
Coastline, Beach Pollution		42 (3.5%)
Poor Drainage, Flooding, Clogged Drains	12 (1.1%)	31 (2.6%)
Poor Government planning, implementation		30 (2.5%)
Poor farming practices, Pesticides, etc.	5 (0.4%)	29 (2.4%)
Landslides, Soil Erosion	13 (1.1%)	28 (2.3%)
Overfishing		21 (1.8%)
Pollution (Non-Specified)		19 (1.6%)
People, Lifestyles	56 (4.9%)	19 (1.6%)
Insects (mosquitoes, flies, etc.)	7 (0.6%)	12 (1.0%)
Mining, Quarrying	33 (2.9%)	12 (1.0%)
Coral Reef Degradation, Removal of Reefs	3 (0.3%)	10 (0.8%)
Lack of environmental knowledge, awareness	25 (2.2%)	10 (0.8%)
People Don't Care		9 (0.8%)
Noise Pollution		9 (0.8%)
Overpopulation		7 (0.6%)
Diseases, Public Health Hazards		7 (0.6%)
Habitat Destruction	6 (0.5%)	5 (0.4%)
Disposal of Plastics, Non-Biodegradables	7 (0.6%)	5 (0.4%)
Misuse of Land, Land Pollution	9 (0.8%)	4 (0.3%)
Greed, Rapaciousness		4 (0.3%)
Disturb Water Table, Change Rivercourses,		3 (0.3%)
Stray Animals		3 (0.3%)
Lead poisoning		3 (0.3%)
Not enough Recycling		2 (0.2%)
Import of Environmentally Damaging Items		2 (0.2%)
Oil Spills, Waste Oil Disposal	37 (3.3%)	2 (0.2%)
Global warming, Climate Change		1 (0.1%)
Destroy Mangroves		1 (0.1%)
Asbestos Water Pipes		1 (0.1%)
Wildlife Killed	4 (0.4%)	1 (0.1%)
Ozone Layer	8 (0.7%)	1 (0.1%)
SUB-TOTAL	637 (56.2%)	1,535 (128.8%)

TOTAL	1,133 (100%)	1,192 (100%)
--------------	---------------------	---------------------

TABLE 3.10: ALL ISSUES FACING THE JAMAICAN ENVIRONMENT, 1991, 1998		
ISSUES	1991	1998
Garbage Disposal	205 (18.1%)	429 (35.9%)
Deforestation	159 (14.0%)	289 (24.2%)
Poverty		235 (19.3%)
Poor Management of Towns, Cities		203 (17.0%)
Air Pollution	190 (16.8%)	173 (14.5%)
Poor Sanitation (Sewage)	60 (5.3%)	142 (11.9%)
Water Pollution (e.g. rivers)		137 (11.5%)
Auto Exhaust		109 (9.1%)
Poor Water Quality (tap)	66 (5.8%)	90 (7.5%)
Marine Pollution		79 (6.6%)
Lack, Shortage of Water	99 (8.7%)	70 (5.9%)
Industrial Pollution		65 (5.4%)
Coastline, Beach Pollution		59 (4.9%)
Pollution	129 (11.4%)	57 (4.8%)
Poor Government Planning, Implementation		53 (4.4%)
Poor Drainage, Flooding, Clogged Drains	26 (2.3%)	46 (3.9%)
People, Lifestyles	157 (13.9%)	40 (3.4%)
Landslides, Soil Erosion	30 (2.6%)	33 (2.8%)
Poor Farming Practices, Pesticides, etc.	8 (0.7%)	31 (2.6%)
Overfishing		21 (1.8%)
Lack of environmental knowledge, awareness	25 (2.2%)	21 (1.8%)
Overpopulation		21 (1.8%)
People Don't Care		18 (1.5%)
Mining, Quarrying	36 (3.2%)	16 (1.3%)
Insects (mosquitoes, flies, pests, etc.)	29 (2.6%)	13 (1.1%)
Noise Pollution		11 (0.9%)
Coral Reef Degradation, Removal of Reefs	3 (0.3%)	11 (0.9%)
Diseases, Public Health Hazards	6 (0.5%)	8 (0.7%)
Greed, Rapaciousness		8 (0.7%)
Disposal of Plastics, Non-Biodegradables	7 (0.6%)	5 (0.4%)
Habitat Destruction	6 (0.5%)	5 (0.4%)
Misuse of Land, Land Pollution	9 (0.8%)	4 (0.3%)
Disturb Water Table, Change Rivercourses		3 (0.3%)
Stray Animals		3 (0.3%)
Ozone Layer	10 (0.9%)	3 (0.3%)
Lead Poisoning		3 (0.3%)
Importation of Environmentally Damaging Items		2 (0.2%)
Oil Spills, Waste Oil Disposal		2 (0.2%)
Oil Spills	37 (3.3%)	2 (0.2%)
Not Enough Recycling		2 (0.2%)
Global Warming, Climate Change		1 (0.1%)
Destroy Mangroves		1 (0.1%)
Asbestos Water Pipes		1 (0.1%)
Wildlife Killed	11 (1.0%)	1 (0.1%)
Government has no Money to effect Plans	51 (4.5%)	

SUB-TOTAL	1,359 (119.9%)	2,633 (220.9%)
TOTAL	1,133 (100%)	1,192 (100%)

The respondents were given the opportunity to name as many as four other issues facing the Jamaican environment (other than the major one named above). In 1991 relatively few advanced any other opinions; only 35% of the sample suggested a second issue, 11.3% a third and 3.8% a fourth. The dearth of responses suggests a lack of depth in the awareness of environmental issues in 1991. In 1998, the number naming other issues increased substantially: 65.1% named a second issue, 38.6% a third, 17.9% a fourth and 6.8% a fifth. This suggests that the 1998 respondents were more environmentally aware than the 1991 respondents.

In 1991, air pollution was mentioned by 10% of the sample. Garbage disposal and Deforestation were the second most common answers (7.2%), followed by water pollution and lifestyles (5.0%). A wide range of issues are mentioned but by only a few respondents. Some of the answers overlap. In 1998, the subsidiary issues were garbage disposal (18.2%) and a series of urban issues including the cleaning of public areas, illegal dumping and bad roads. Deforestation, soil erosion and water shortages were mentioned by 19% of the respondents.

3.6 The Full List of Issues Facing the Jamaican Environment

The principal and subsidiary concerns were combined to produce a comprehensive list of concerns about the Jamaican environment (Table 3.9) obtained without any form of prompting.

In 1991, the most commonly mentioned environmental concern was garbage disposal, mentioned by 18.2% of the sample. By 1998, this concern had almost doubled to 35.9%. The concern is not just garbage collection, but its ultimate disposal in unsightly dumps.

In 1991, air pollution was the second most frequently mentioned environmental concern (16.9%), which had risen to 23.6% by 1998 if automobile exhaust is included. Indeed concern about all forms of pollution is quite strong, particularly where public health is affected (garbage, sewage, clean water, clean air, clean beaches and the marine environment).

In 1998, deforestation was the second ranked issue (24.2%), up from third in 1991 (14.1%). There was also an appreciation of issues surrounding soil erosion (deforestation, landslides, poor drainage).

Wildlife and biodiversity issues (hunting, habitat/reef/wetland destruction) received very little concern. This could be due to the fact that many people still connect the concept of the environment with their immediate surroundings and infrastructure – their backyards, streets and water supply. This bias is reflected even in the activities of many parish environmental NGOs which focus almost exclusively on these matters. Those who seek to broaden the national environmental focus would do well to emphasize wildlife and wilderness issues in their programmes and promotional material.

Both in 1991 and 1998 there were some who were very clear that humans and their activities were a big problem (people, lifestyles, people don't care, lack of knowledge). Overall the responses show that only a small segment of the Jamaican population are aware of a broad range of environmental issues. The Jamaican environmental consciousness lacks depth, and a campaign of environmental awareness in the mass media should be quite successful in raising both the breadth and depth of environmental consciousness.

3.7 Most Threatened Aspect of Jamaica's Environment

Again without any prompting, the respondents were asked to name the most threatened area of Jamaica's environment, and only one response from each person was permitted. In 1991

just less than half of the sample offered an answer; in 1998 this increased to just under 70%, suggesting an increase in environmental awareness.

In 1991, the three top responses were “land”, “water” and “atmosphere”, which together accounted for two-thirds of the responses. By 1998 opinions had shifted considerably. Concern for the forests, mountains and watersheds which in 1991 had ranked fifth, was top of the list in 1998. Concern for rivers and fresh water sources remained in second place with increased support (the two issues are, of course, linked). The feeling that human beings – part of the biosphere – were under threat because of environmental degradation was ranked third, up from fourth in 1991. Of note is that in 1998 compared to 1991, concern for the marine environment increased ten-fold, while concern about urban environments almost doubled.

MOST THREATENED	1991	1998
Forests, Watersheds, Mountains	35 (3.1%)	162 (13.6%)
Fresh Water, Rivers	123 (10.9%)	161 (13.5%)
People	47 (4.1%)	131 (11.0%)
Atmosphere	102 (9.0%)	106 (8.9%)
Land, Soil	148 (13.1%)	89 (7.5%)
Marine Life	8 (0.7%)	83 (7.0%)
KMA and Urban	25 (2.2%)	49 (4.1%)
Coastal Areas	21 (1.9%)	28 (2.3%)
Lack of water	10 (0.9%)	10 (0.8%)
Wildlife	5 (0.4%)	5 (0.4%)
Nature	6 (0.5%)	3 (0.3%)
Agriculture	18 (1.5%)	2 (0.2%)
Climate	-	2 (0.2%)
Population Size	7 (0.6%)	1 (0.1%)
Ozone Layer	1 (0.1%)	1 (0.1%)
Everything	4 (0.4%)	-
SUB-TOTAL	560 (49.4%)	833 (69.9%)
DK	n.a.	264 (22.1%)
NR	573 (50.6%)	95 (8.0%)
TOTAL	1,133 (100%)	1,192 (100%)

As in 1991, concerns with pollution and soil erosion dominate the 1998 responses, and the small number of responses to do with wildlife protection, biodiversity and sustainability issues indicate the needed suite of subjects for a public education campaign.

3.8 Sources of Negative Impact on the Jamaican Environment

Sources	DK	1-2	3-4	5-6	7-8	9-10
Household garbage	75 (6.6%)	121 (10.7%)	98 (8.6%)	198 (17.5%)	224 (19.8%)	417 (36.8%)
Auto Exhaust	152 (13.4%)	126 (11.1%)	102 (9.0%)	161 (14.2%)	245 (21.6%)	347 (30.6%)
Sewage Pollution	128 (11.3%)	131 (11.6%)	87 (7.7%)	141 (12.4%)	195 (17.2%)	451 (39.8%)
The Forest Industry	267 (23.6%)	165 (14.6%)	75 (6.6%)	147 (13.0%)	238 (21.0%)	241 (21.2%)
The Fishing Industry	367 (32.4%)	189 (16.7%)	93 (8.2%)	175 (15.4%)	163 (14.4%)	146 (12.9%)
The Mining Industry	382 (33.7%)	123 (10.9%)	94 (8.3%)	158 (13.9%)	179 (15.8%)	197 (17.4%)

Individual Residents	216 (19.1%)	171 (15.1%)	106 (9.4%)	203 (17.9%)	184 (16.2%)	253 (22.3%)
Toxic Wastes	519 (45.8%)	60 (5.3%)	49 (4.3%)	88 (7.8%)	116 (10.2%)	301 (26.6%)
Manufacturing Plants	335 (29.6%)	113 (10.0%)	66 (5.8%)	156 (13.8%)	201 (17.7%)	262 (23.1%)
Pesticides, Herbicides	250 (22.1%)	165 (14.6%)	103 (9.1%)	199 (17.6%)	198 (17.5%)	218 (19.2%)

All the issues above were raised by the respondents themselves without any prompting by the interviewer, which is a sort of baseline indication of their personal awareness. Respondents were then prompted with ten factors, and asked to evaluate their negative impacts on the Jamaican environment on a scale of one to ten (one having no effect; ten having tremendous effect). Persons with no opinion or who did not know were asked to indicate as such (score = 0).

**TABLE 3.13:
SOURCES OF NEGATIVE IMPACT ON THE JAMAICAN ENVIRONMENT, 1998**

Sources	DK	1-2	3-4	5-6	7-8	9-10
Household garbage	39 (3.3%)	29 (2.5%)	69 (5.8%)	223 (18.7%)	322 (27.0%)	510 (42.8%)
Auto Exhaust	63 (5.3%)	33 (2.7%)	113 (9.4%)	270 (22.6%)	320 (26.9%)	393 (32.9%)
Sewage Pollution	78 (6.5%)	71 (5.9%)	111 (9.3%)	242 (20.3%)	270 (22.7%)	420 (35.2%)
The Forest Industry	167 (14.0%)	83 (7.0%)	101 (8.4%)	233 (19.6%)	206 (17.3%)	402 (33.7%)
Individual Residents	143 (12.0%)	84 (7.1%)	159 (13.3%)	292 (24.5%)	222 (18.6%)	292 (24.5%)
The Mining Industry	193 (16.2%)	91 (7.7%)	146 (12.2%)	254 (21.3%)	228 (19.1%)	280 (23.5%)
Manufacturing Plants	212 (17.8%)	101 (8.5%)	114 (9.6%)	256 (21.5%)	258 (21.7%)	251 (21.1%)
Pesticides, Herbicides	192 (16.1%)	115 (9.7%)	171 (14.4%)	241 (20.2%)	209 (17.5%)	265 (22.2%)
Toxic Wastes	350 (29.4%)	159 (13.3%)	122 (10.3%)	96 (8.0%)	125 (10.5%)	340 (28.5%)
The Fishing Industry	258 (21.6%)	158 (13.3%)	193 (16.2%)	273 (22.9%)	160 (13.4%)	150 (12.5%)

As in 1991, for all the factors, the modal responses were either 0 (don't know) or 10 (maximum negative impact). Whereas in 1991 seven of the ten factors had a modal response of 0, in 1998 this was reduced to five. Indeed, the mean scores for all ten factors increased, suggesting that over the period there has been an increase in environmental awareness. Also, the standard deviations for all the factors decreased, suggesting that as environmental awareness increases, public opinion is solidifying around the mean values. Except for the fishing industry and toxic waste, all means were over 5.0, and for six of the ten factors, the means were under six. Although there has been an increase in environmental awareness between 1991 and 1998, there is more to be done, especially with respect to these six factors.

As in 1991, the three factors believed to most negatively impact the Jamaican environment were **Household Garbage**, **Auto Exhaust** and **Sewage Pollution**. By 1998, belief in the negative impact of the forestry industry and individual residents had significantly increased, suggesting growth in awareness about these sectors. The high incidence of "don't know" answers, points to a still high level of ignorance about the environment in Jamaica.

**TABLE 3.14:
SOURCES OF NEGATIVE IMPACT ON JAMAICA'S ENVIRONMENT, 1991, 1998:
Some Statistical Indicators**

Source	1991 Survey				1998 Survey			
	Mean	Median	Mode	SD ¹⁰	Mean	Median	Mode	SD
Household garbage	6.5	7	10	3.3	7.5	8	10	2.6
Auto Exhaust	5.9	7	10	3.6	6.8	7	10	2.8
Sewage Pollution	6.3	7	10	3.6	6.7	7	10	3.0
The Forest Industry	4.8	5	0	3.8	6.1	7	10	3.5
Individual Residents	4.9	5	0	3.6	5.7	6	10	3.3
The Mining Industry	4.1	4	0	3.8	5.4	6	0	3.4
Manufacturing Plants	4.6	5	0	3.7	5.3	6	0	3.4

¹⁰ SD = Standard Deviation.

Pesticides, Herbicides	4.7	5	0	3.6	5.2	5	0	3.4
Toxic Wastes	4.0	2	0	4.2	4.5	4	0	4.1
The Fishing Industry	3.7	3	0	3.6	4.2	4	0	3.3

3.9 Most Negative Impact on the Jamaican Environment

Respondents were asked to identify which of the ten factors above impacted most negatively on the Jamaican environment; only one answer was permitted. In 1991, 85.8% of the sample offered an answer, compared with 63.7% who answered the earlier question with no prompting. In 1998, 87.0% offered an answer, compared to 69.6% without prompting.

TABLE 3.15: MOST NEGATIVE IMPACT ON THE JAMAICAN ENVIRONMENT, 1991, 1998		
Factor	1991 Survey	1998 Survey
Household garbage	199 (17.6%)	268 (22.5%)
Sewage	213 (18.8%)	176 (14.8%)
Forestry Industry	85 (7.5%)	167 (14.0%)
Auto exhaust	115 (10.2%)	138 (11.6%)
Individual Residents	81 (7.1%)	102 (8.6%)
Toxic wastes	85 (7.5%)	84 (7.0%)
Mining Industry	50 (4.4%)	71 (6.0%)
Pesticides,herbicides	56 (4.9%)	51 (4.3%)
Industrial Plants	55 (4.9%)	37 (3.1%)
Fishing Industry	33 (2.9%)	18 (1.5%)
SUBTOTAL	972 (85.8%)	1,041 (87.2%)
DK		15 (1.3%)
NR		65 (5.5%)
TOTAL	972 (85.8%)	1,192 (100%)

In 1991, sewage disposal was highest on the list (18.8%), followed by household garbage disposal (17.6%) and auto exhaust (10.2%). Please note that earlier (see Table 3.5), when an equivalent question was asked without any prompting, in 1991 sewage concerns received 1.4%, garbage disposal received 10.9% and air pollution 6.8%, all much lower figures.

In 1998, household garbage was at the top of the list with 22.4%, followed by sewage (14.7%) and the forestry industry (14.0%). This reflects a significant increase in awareness about forests and deforestation. Without prompting (see Table 3.7) the same concerns scored lower: garbage (17.6%), sewage (3.8%), and deforestation (11.8%).

Which data provides the most accurate views: with or without prompting? Each has its difficulties. Without prompting, on the spur of the moment in an interview a person may forget an important factor, which results in undercounting. Also, local and personal factors may be selected. Prompting promotes guessing or capricious answers so as to avoid being thought stupid, which promotes overcounting. The truth is likely to lie somewhere in between.

3.10 Index of Awareness about the Jamaican Environment

A composite Awareness Index for negative impacts on the Jamaican environment was created by adding for each person the scores for the ten factors named above, and then dividing the result by 10.

In 1991, over 3% professed unawareness about all ten local issues. If these data are collapsed into three categories (aware, middle and unaware), 32.7% scored between 1-4 and were rated in the unaware range (36.1% if the 0 category is added in), while 38.9% scored between 7-10 and were rated in the aware range.

**Table 3.16:
Index of Awareness about the Jamaican Environment, 1991, 1998**

SCORE	INTERPRETATION	1991	1998
0	Don't know anything	38 (3.4%)	32 (2.7%)
1 - 2	Grossly unaware	145 (12.8%)	55 (4.6%)
3 - 4	Unaware	225 (19.9%)	193 (16.2%)
5 - 6	Middle	286 (25.2%)	351 (29.4%)
7 - 8	Aware	324 (28.6%)	349 (29.2%)
9 - 10	Very aware	115 (10.3%)	212 (17.8%)
0 - 4	Unaware	408 (36.0%)	280 (23.5%)
5 - 6	Middle	286 (25.2%)	351 (29.4%)
7 - 10	Aware	439 (38.7%)	561 (47.1%)
TOTAL		1133 (100%)	1192 (100%)

By 1998, all the unaware categories (0-4) decreased and all of the middle and aware categories (5-10) increased their share; in particular, the increases in the “Very Aware” category were sharp: from 10.3% to 17.8%. This supports the conclusion that there has been an increase in environmental awareness over the period.

In both 1991 and 1998, the most aware respondents were to be found in rural towns; whereas in 1991 the second most aware respondents were those in the KMA, by 1998 the second most aware Jamaicans were in the deep rural. The data clearly shows that there has been a substantial increase in awareness among rural people. The data also show that between 1991 and 1998 there has been a reduction in “lack of awareness” in rural towns and rural areas, but a (relative) sharp increase in “lack of awareness” seems to have occurred in the KMA.

According to the Awareness Index in 1991 the parishes with the most aware persons were St. Elizabeth (83.3%), Westmoreland (73.8%), Clarendon (51.1%) and St. Andrew (45.9%). The parishes with the most unaware persons were Hanover (68.3%), St. Mary (65.0%), St. Catherine (58.0%), St. Ann (47.5%), Trelawny and Manchester (45.0%) and St. James (40.0%). In 1998, the most aware persons were to be found in the parishes of Portland (90.0%), St. James (82.9%), St. Ann and St. Mary (74.4%), and Westmoreland (73.9%). The most unaware respondents were to be found in Kingston and St. Thomas (50.0%), followed by St. Andrew (31.2%), Clarendon (25.9%) and St. Catherine (25.7%). Portland had no unaware respondents, and all the respondents who scored zero in the index (who said they knew nothing about any of the issues) were to be found in the most urbanized parishes: Kingston, St. Andrew and St. Catherine.

On the face of it, one could suggest that the reason for the high level of awareness in Portland, St. James, St. Ann and Westmoreland in 1998 might be the activities of strong NGOs there¹¹, but further research is necessary to determine this. The high level of awareness in Westmoreland (which was also high in 1991) and St. Mary could not be similarly explained.

11 The Portland Environmental Protection Association (PEPA) works throughout the parish of Portland. The Montego Bay Marine Park Trust works in the Montego Bay Marine Park and surrounding communities. In St. Ann, the St. Ann Environmental Protection Association (STAEPA) works throughout the parish, while the Friends of the Sea works in coastal areas. The Negril Environmental Protection Trust (NEPT) and the Negril Coral Reef Preservation Society (NCRPS) work in western Westmoreland and Hanover.

In terms of gender, there does not seem to be much difference between the awareness of males and females; both have increased by more-or-less the same extent. Although in 1991 females were significantly more unaware than males, this gap had narrowed by 1998.

In terms of age, in both 1991 and 1998, awareness and unawareness was remarkable only in the upper age groups (55+ years), and was more-or-less evenly spread. Over the period, lack of awareness reduced and awareness increased across all age categories.

Table 3.17: Index of Awareness about the Jamaican Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, Jamaica 1991, 1998							
		1991 Data			1998 Data		
		Unaware	Middle	Aware	Unaware	Middle	Aware
Gender	Male	30.1%	30.2%	39.7%	23.8%	27.6%	48.8%
	Female	42.1%	20.1%	37.8%	22.4%	31.5%	46.0%
	Total	36.1%	25.2%	38.9%	23.5%	29.3%	47.0%
Age	18-24	32.6%	24.9%	42.4%	16.3%	37.0%	46.7%
	25-34	32.4%	30.2%	37.3%	20.9%	26.6%	52.5%
	34-44	33.3%	25.4%	41.2%	23.2%	26.3%	50.4%
	45-54	35.1%	25.4%	39.5%	20.8%	26.4%	52.8%
	55-64	45.0%	19.8%	35.1%	26.2%	32.5%	41.2%
	65+	50.9%	22.3%	26.8%	41.0%	30.8%	28.2%
	Total	36.1%	25.2%	38.9%	23.5%	29.3%	47.0%
Highest Education Attained	No Schooling				60.0%	20.0%	20.0%
	Prim./All-Age	53.1%	20.8%	26.1%	32.4%	27.9%	39.7%
	Some NewSec.	34.7%	28.2%	36.5%	22.1%	23.8%	54.1%
	Some T/C/G	22.2%	25.9%	51.9%	20.4%	21.3%	58.4%
	Done T/C/G	11.5%	33.7%	54.8%	16.9%	36.8%	46.3%
	Tch/Nrse Col	11.4%	22.9%	65.7%	5.6%	46.5%	47.9%
	Some U/CAST	13.8%	27.6%	58.6%	4.1%	36.7%	59.2%
	Completed U/CAST	5.7%	28.3%	66.0%	12.1%	45.5%	42.5%
	Post-Grad	0%	14.3%	85.7%	0%	0%	100%
Total	36.1%	25.2%	38.9%	23.5%	29.3%	47.0%	
Rural-Urban Status	KMA	22.1%	31.8%	46.2%	34.1%	29.8%	36.1%
	Oth Tns	30.5%	19.0%	50.5%	12.3%	31.8%	55.9%
	Rural	44.3%	24.1%	31.5%	19.9%	28.4%	51.7%
	Total	36.1%	25.2%	38.9%	23.5%	29.3%	47.0%
Occupational Category¹²	Prof/Man	2.4%	26.2%	71.4%	20.3%	21.6%	58.1%
	Semi-Prof	20.5%	23.1%	56.4%	11.9%	41.5%	46.6%
	Cler/Tech	21.1%	33.3%	45.6%	19.0%	41.8%	39.3%
	Pers Serv	31.7%	12.2%	56.1%	14.2%	34.6%	51.2%
	Man Skill	18.8%	30.5%	50.7%	30.3%	21.3%	48.3%
	Man Unsk	34.5%	41.4%	24.1%	30.3%	30.0%	47.8%
	Self-Empl	45.8%	22.9%	31.4%	30.2%	25.6%	44.2%
	Domestic	51.2%	25.0%	23.8%	34.5%	17.2%	48.3%
	Unemploy	52.8%	23.6%	23.6%			
NILF	47.6%	21.0%	31.5%	22.6%	36.8%	42.7%	

12 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

	Total	36.1%	25.2%	38.9%	22.0%	30.5%	47.5%
--	--------------	--------------	--------------	--------------	--------------	--------------	--------------

In both 1991 and 1998, the highest level of education attained was the strongest correlate of both awareness and unawareness of local environmental issues. In 1991, more than half of those with only primary education were unaware; by 1998 this had decreased to 32.4%. In both 1991 and 1998, lack of awareness trended to zero from primary to those with post-graduate training. For both years, awareness increased dramatically with high school attendance, again for tertiary-level education, and even higher for post-graduate training. The higher levels of Jamaica's formal education system does expose students to environmental issues. It should be possible to introduce environmental concepts to students much earlier.

There does appear to be some relationship between awareness/unawareness and occupation, but this is probably due to the fact that occupation is highly correlated with education which is the variable most obviously related. In 1991 the most unaware occupational groups were the unemployed (52.8%), domestic helpers (51.2%), those out of the labour force (47.6%), and the self-employed (petty traders, farmers, fishers, etc. – 45.8%). The most aware occupational groups were professionals and managers (71.4%), the semi-professionals (56.4%), and those in personal services (56.1%).

By 1998 the level of environmental awareness had decreased in the higher status occupational groups and increased in the lower status groups. Lack of awareness decreased in all groups except among the Professional/Managerial and the Manual-Skilled groups. The most unaware occupational groups were domestics (34.5%), Self-Employed and Manual-Skilled (30.3%), and Manual-Unskilled (30.2%). The most aware groups were Professional/Managerial (58.1%), Clerical (51.2%), and Self-Employed and Domestic (48.3%).

3.11 Environmental Concerns compared to other National Concerns

Table 3.18: Ranked Importance of various National Issues, Jamaica, 1998									
National Issue	Rank of Importance (1 = most important; 8 = least important)								
	1	2	3	4	5	6	7	8	NR
Garbage Disposal	4.9%	4.5%	8.2%	25.8%	24.5%	15.5%	8.6%	3.9%	3.9%
Unemployment	28.8%	27.3%	20.6%	8.6%	5.8%	3.4%	2.3%	0.5%	2.8%
Crime	28.1%	27.8%	26.7%	6.5%	3.7%	1.3%	1.2%	1.7%	3.0%
Air Pollution	1.2%	1.8%	3.6%	10.2%	14.8%	22.5%	22.8%	18.5%	4.5%
Deforestation	1.3%	2.3%	4.4%	10.2%	13.3%	18.8%	19.5%	25.2%	5.0%
Sewage	1.3%	2.6%	5.8%	11.2%	20.1%	20.6%	23.1%	10.7%	4.6%
Overpopulation	2.3%	5.5%	5.4%	14.5%	8.2%	10.3%	15.9%	33.1%	4.7%
Cost Of Living	29.1%	25.5%	22.4%	9.0%	5.3%	2.3%	1.9%	1.4%	3.0%

Table 3.19: Statistical Indicators for Ranked Importance of various National Issues, Jamaica, 1998				
National Issue	Mean Score	Mode	Variance	Final Rank
Crime	2.45	1	2.12	1
Unemployment	2.56	1	2.42	2
Cost Of Living	2.56	1	2.49	3

Garbage Disposal	4.68	4	2.64	4
Sewage	5.66	7	2.58	5
Overpopulation	5.95	8	4.29	6
Air Pollution	6.01	7	2.58	7
Deforestation	6.08	8	2.97	8

**Table 3.20:
Environmental Non-Government Organizations known to the Respondent,
Jamaica, 1998**

Environmental Non-Government Organizations	Portland Environmental Protection Association (PEPA)	32 (2.7%)
	South Coast Conservation Foundation (SCCF)	6 (0.5%)
	Environmental Foundation of Jamaica (EFJ)	5 (0.4%)
	Jamaica Environment Trust (JET)	5 (0.4%)
	Natural History Society	4 (0.3%)
	Caribbean Coastal Area Management Foundation (C-CAM)	3 (0.3%)
	Gosse Bird Club	3 (0.3%)
	Negril Coral Reef Preservation Society (NCRPS)	3 (0.3%)
	St. Thomas Environment Protection Association (STEPA)	3 (0.3%)
	National Environmental Societies Trust (NEST)	3 (0.3%)
	Montego Bay Marine Park	2 (0.2%)
	Fisheries Improvement Programme (FIP)	1 (0.1%)
	Environment Watch Organization	1 (0.1%)
	South Trelawny Environmental Association (STEA)	1 (0.1%)
	Negril Environmental Protection Trust (NEPT)	1 (0.1%)
	Friends of the Sea	1 (0.1%)
TOTAL	74 (6.2%)	
Government Agencies	NRCA	24 (2.0%)
	Environmental Action Programme (ENACT)	2 (0.2%)
	Urban Development Corporation	1 (0.2%)
	Jamaica Tourist Board (JTB)	1 (0.2%)
	Pesticides Control Authority (PCA)	1 (0.2%)
	Kingston Restoration Company	1 (0.2%)
	TOTAL	30 (2.5%)
Service Clubs	Lions Club	3 (0.3%)
	The Kiwanis Club	3 (0.3%)
	Rotary Club	1 (0.1%)
	TOTAL	7 (0.6%)
Private Sector Companies	Environmental Solutions Ltd.	2 (0.2%)
	Sandals Group of Companies	1 (0.1%)
	NEM	1 (0.1%)
	TOTAL	4 (0.3%)
Schools, Community Groups, Other NGOs	Lime Hall Citizens' Association	1 (0.1%)
	Middleton Meadows Youth Club	1 (0.1%)
	Harry Watch Community Youth Group	1 (0.1%)
	Oracabessa Foundation	1 (0.1%)
	Seven Corners Group	1 (0.1%)
	School Environmental Programme	1 (0.1%)

	Jamaica Agricultural Society (JAS)	1 (0.1%)
	Lick Learning Institute	1 (0.1%)
	TOTAL	8 (0.7%)
	SUB-TOTAL	125 (10.5%)
NR		1080 (90.6%)
	GRAND TOTAL	1192 (100%)

Respondents were asked to rank eight environmental and socioeconomic concerns in order of priority (1 = most important and 8 = least important) to determine how important environmental concerns are in comparison to other issues. This question was not asked in 1991. The results are summarized in Table 3.18 and some statistical indicators are given in Table 3.19.

Socioeconomic issues far outweighed environmental issues in terms of importance to the respondents. Crime, unemployment, and the high cost of living were far and away the issues of most concern. The environmental issues of most concern were garbage disposal, sewage and overpopulation. Air pollution and Deforestation were the least important issues. The data suggests that unless some way can be found to link environmental issues to development issues, environmental concerns will be left behind.

3.12 Awareness of Jamaican Environmental NGOs

The respondents were asked to name one Jamaican environmental non-government organization (ENGO) which they knew to be working to protect the environment. Four answers per respondent were permitted; 112 persons (9.4%) gave one answer, ten persons gave a second, and one person gave a third. In all thirty-six (36) different organizations were named, but not all were NGOs, even with a broad definition: several government agencies, private companies, service clubs and community organizations were named.

The best known ENGO was the Portland Environmental Protection Association (PEPA). It would have to be said that the names of Jamaican environmental non-government organizations (NGOs) are not very well known.

CHAPTER 4: GLOBAL ENVIRONMENTAL ISSUES

4.1 Major Problems facing the World's Environment

The last of the open questions (before any prompted question) asked for views on the major problems facing the world's environment; no limit was placed on the number of responses. In 1991, 44.9% gave an answer, 15.1% gave a second, and 4.1% gave a third. In 1998, 53.7% gave an answer, 25.3% gave a second, and 11.3% gave a third. The number of responses to this question are fewer than for the similar question on Jamaica, suggesting less familiarity or less

TABLE 4.1: MAJOR PROBLEM FACING THE WORLD'S ENVIRONMENT, 1991, 1998		
MAJOR PROBLEM	1991 Survey	1998 Survey
Air Pollution		174 (14.6%)
Industrial Pollution, Toxic Waste	82 (7.4%)	146 (12.2%)
Deforestation	62 (5.6%)	121 (10.1%)
Poverty	99 (8.9%)	85 (7.1%)
Pollution (non-specific)	187 (16.8%)	69 (5.8%)
Water Pollution		61 (5.1%)
Overpopulation	77 (6.9%)	52 (4.4%)
Garbage Disposal, Non-biodegradables	13 (1.2%)	52 (4.4%)
Marine Pollution, Coral Reef Degradation		46 (3.9%)
Ozone Layer	55 (4.9%)	44 (3.7%)
Endangered Species, Wildlife	7 (0.6%)	35 (2.9%)
Auto Exhaust		33 (2.8%)
War	48 (4.3%)	31 (2.6%)
Poor Government Planning, Implementation		24 (2.0%)
Human Beings, Lifestyles		21 (1.8%)
Global Warming, Climate Change		19 (1.6%)
Nuclear Power, Waste	27 (2.4%)	15 (1.3%)
Lack of Care, Facts	20 (1.8%)	14 (1.2%)
Drought		14 (1.2%)
Habitat Loss		13 (1.1%)
Sewage Disposal	6 (0.5%)	12 (1.0%)
Health Hazards		11 (0.9%)
Poor Farming Practices		10 (0.8%)
Land Pollution		10 (0.8%)
Oil Spills	5 (0.4%)	10 (0.8%)
Overfishing		9 (0.8%)
Soil Erosion	5 (0.4%)	6 (0.5%)
Mining		4 (0.3%)
Poor Management of Towns, Cities		4 (0.3%)
Insects, Pests		2 (0.2%)
Floods		2 (0.2%)
Famine	26 (2.3%)	1 (0.1%)
Factories in Bad Spot	7 (0.6%)	
SUB-TOTAL	509 (44.9%)	641 (53.7%)

NR	624 (55.1%)	551 (46.3%)
TOTAL	1133 (100%)	1192 (100%)

confidence with this subject; but the numbers are higher for 1998 than 1991, suggesting that there has been an increase in environmental awareness about global issues over the period.

In both 1991 and 1998, Pollution of some sort was the most common answer by far, followed by Deforestation. Poverty and Overpopulation came in for strong mention, showing appreciation for the social causes of environmental degradation. Although some had knowledge of global issues like marine pollution, the greenhouse effect, ozone depletion and reduction in biodiversity, the data generally indicated that there was much room for improvement.

4.2 Sources of Negative Impact on the World Environment

Using the same 1-10 scale (DK = 0) as for the Jamaican data above, respondents were asked to evaluate the impact of eight factors on the world's environment. The level of "Don't Know" responses was greater than for the Jamaican situation, indicating a greater level of unawareness or lack of confidence about the global environment.

Sources	DK	1-2	3-4	5-6	7-8	9-10
CFCs	598 (52.8%)	137 (12.1%)	59 (5.2%)	114 (10.1%)	114 (10.1%)	111 (9.8%)
Auto exhaust	340 (30.0%)	88 (7.8%)	52 (4.6%)	123 (10.9%)	210 (18.5%)	320 (28.2%)
Fossil Fuels	296 (26.1%)	142 (12.5%)	73 (6.4%)	158 (13.9%)	214 (18.9%)	250 (22.0%)
Ship transport of Oil	429 (37.9%)	139 (12.3%)	96 (8.5%)	143 (12.6%)	166 (14.7%)	160 (14.1%)
Industrial Pollution	342 (30.2%)	51 (4.5%)	40 (3.5%)	105 (9.3%)	185 (16.3%)	410 (36.2%)
Overpopulation	234 (20.7%)	87 (7.7%)	36 (3.2%)	96 (8.5%)	152 (13.4%)	526 (46.4%)
Cutting Forests	313 (27.6%)	91 (8.0%)	36 (3.2%)	129 (11.3%)	193 (17.0%)	371 (32.7%)
Individual Lifestyles	326 (28.8%)	105 (9.3%)	75 (6.6%)	172 (15.2%)	184 (16.3%)	271 (22.1%)

Sources	DK	1-2	3-4	5-6	7-8	9-10
CFCs	743 (62.3%)	32 (2.7%)	26 (2.2%)	60 (5.0%)	101 (8.5%)	230 (19.3%)
Auto exhaust	252 (21.1%)	20 (1.7%)	44 (3.7%)	147 (12.3%)	361 (30.2%)	368 (30.8%)
Fossil Fuels	323 (27.1%)	81 (6.7%)	104 (8.7%)	222 (18.7%)	248 (20.8%)	214 (17.9%)
Ship transport of Oil	345 (28.9%)	88 (7.4%)	93 (7.8%)	186 (15.6%)	194 (16.3%)	286 (24.0%)
Industrial Pollution	251 (21.0%)	17 (1.4%)	28 (2.4%)	109 (9.1%)	234 (19.6%)	553 (46.4%)
Overpopulation	220 (18.5%)	61 (5.1%)	77 (6.5%)	196 (16.4%)	183 (15.4%)	455 (38.2%)
Cutting Forests	295 (24.7%)	22 (1.8%)	34 (2.8%)	114 (9.6%)	185 (15.5%)	542 (45.5%)
Individual Lifestyles	269 (22.6%)	30 (2.6%)	58 (4.9%)	213 (17.9%)	229 (19.2%)	393 (33.0%)

In 1991, the modal answers for all questions but one was "Don't Know". Least was known about the impact of chlorofluorocarbons (CFCs). Nevertheless, for half of the issues the mean score was 5 or more. Overpopulation had the highest mean score (6.2) and a mode of 10. Industrial pollution and the cutting of forests were weakly supported as impacting negatively on the global environment, while opinion was evenly divided on the effect of automobile emissions.

By 1998, four of the eight factors had modal answers of 10, and there was noticeable improvement in all the mean scores (except for the burning of fossil fuels and overpopulation). This suggests that there has been an increase in awareness about these issues. However, the scores are much below the typical values for awareness of the Jamaican environment, which themselves could do with some improvement. There is clear need for more public awareness on global environmental issues, particularly to do with CFCs, the threats posed by ships carrying potentially damaging cargo and matters to do with global warming and the greenhouse effect. It

is likely that many have interpreted “auto exhaust” as the dense smoke often billowing from trucks and buses rather than the emission of carbon monoxide and dioxide into the atmosphere; this issue received more support as a local issue than as a global issue.

**TABLE 4.4:
SOURCES OF NEGATIVE IMPACT ON THE WORLD ENVIRONMENT, 1991, 1998:
Some Statistical Indicators**

Source	1991 Survey				1998 Survey			
	Mean	Median	Mode	SD ¹³	Mean	Median	Mode	SD
CFCs	2.6	0	0	3.5	2.9	0	0	4.1
Auto exhaust	5.0	6	0	4.0	6.1	7	0	3.6
Fossil Fuels	4.7	5	0	3.8	4.7	5	0	3.6
Ship transport of Oil	3.6	2	0	3.7	4.8	5	0	3.9
Industrial Pollution	5.4	7	0	4.2	6.6	8	10	3.8
Overpopulation	6.2	8	10	4.5	6.1	7	10	3.7
Cutting Forests	5.3	6	0	4.1	6.3	8	10	4.1
Individual Lifestyles	4.7	5	0	3.9	5.9	7	10	3.8

4.3 Greatest Threat to the World Environment

There was an increase of sixteen percentage points between 1991 and 1998 in those who offered an opinion as to which of the factors named was the greatest threat to the world's environment, suggesting an increase in awareness. In 1991 the major issue was felt to be overpopulation followed by industrial pollution, while in 1998 their positions were reversed. The numbers supporting deforestation and individual lifestyles increased substantially over the period while the numbers of those supporting overpopulation declined.

**TABLE 4.5:
GREATEST THREAT TO THE WORLD ENVIRONMENT, 1991, 1998**

Source	1991 Survey	1998 Survey
Industrial Pollution	163 (14.4%)	256 (21.4%)
Overpopulation	290 (25.6%)	185 (15.5%)
Cutting Forests	96 (8.5%)	174 (14.6%)
Individual Lifestyles	104 (9.2%)	171 (14.3%)
Auto exhaust	70 (6.2%)	97 (8.1%)
Ship transport of Oil	23 (2.0%)	50 (4.2%)
Fossil Fuels	45 (4.0%)	26 (2.2%)
CFCs	27 (2.4%)	22 (1.8%)
SUB-TOTAL	818 (72.2%)	1,052 (88.1%)
DK		181 (15.2%)
NR	325 (28.7%)	32 (2.7%)
TOTAL	1133 (100%)	1192 (100%)

4.4 Index of Awareness about the World Environment

As before, a composite Awareness Index for negative impacts on the world environment was created by summing the scores for each of the eight factors named above, and then dividing the result by 8. In both 1991 and 1998, about 14-15% professed unawareness about all 8 global

¹³ SD = Standard Deviation.

issues. For easier analysis this data was collapsed into three categories. Those unaware declined from about 39% in 1991 to about 27% in 1998, while those aware increased from about 42% to about 52%. In 1991 and 1998, both awareness and lack of awareness were slightly stronger for the global than for the national issues.

SCORE	INTERPRETATION	1991	1998
0	Don't know anything	157 (13.9%)	180 (15.1%)
1 - 2	Grossly unaware	124 (10.9%)	43 (3.6%)
3 - 4	Unaware	159 (14.0%)	100 (8.4%)
5 - 6	Middle	223 (19.7%)	248 (20.8%)
7 - 8	Aware	334 (29.5%)	390 (32.7%)
9 - 10	Very aware	136 (12.0%)	231 (19.4%)
0 - 4	Unaware	440 (38.8%)	323 (27.1%)
5 - 6	Middle	223 (19.7%)	248 (20.8%)
7 - 10	Aware	470 (41.5%)	621 (52.1%)
TOTAL		1133 (100%)	1192 (100%)

In contrast to the findings on awareness of conditions in Jamaica, in 1991 the respondents most aware and least unaware about global environmental issues were those in the KMA. Again in contrast, deep rural residents were both least aware and most unaware of global issues. This suggests that the awareness of rural people of Jamaican environmental issues might have more to do with their closeness to the local environment than possession of book knowledge.

The indices crosstabulated by parish revealed that in 1991, the respondents most aware of global environmental issues were to be found in St. Elizabeth (81.7%), Westmoreland (75.0%) and St. Andrew (54.8%), while the most unaware were from Hanover (70.0%), St. Catherine (63.0%), Manchester (60.0%), St. Mary (58.0%), St. Thomas (55.0%) and St. James (48.0%). In 1998, the respondents most aware of global environmental issues were to be found in Portland (100%), St. James (78.0%), Westmoreland (74.7%) and St. Mary (74.4%), while the most unaware were from St. Thomas (52.5%), Kingston (51.7%), Hanover (37.5%) and St. Catherine (36.5%). There is no immediately obvious explanation for this shift in awareness, other than the presence of active NGOs in Portland, St. James and Westmoreland¹⁴.

In 1991, there was a six percentage-point difference between the genders in global awareness, which narrowed to one point by 1998. Females were also more unaware about global environmental issues than males (ten percentage points). The eleven-point difference between the genders in lack of awareness in 1991 had narrowed to four points by 1998. Gender differences in these matters seem to be becoming less important.

In 1991 and 1998, it may be clearly seen that the older age groups are less aware than the younger ones. The increases in awareness of global environmental issues which have taken place is more pronounced among the younger age groups.

The higher levels of awareness and lower levels of un-awareness in 1998 compared to 1991 are further evidence of the increase in environmental awareness which have taken place over the period. As before, the highest level of education attained was the strongest correlate of both awareness and unawareness of global environmental issues. Beginning at 60% (1991) and

14 The Portland Environmental Protection Association (PEPA) works throughout the parish of Portland. The Montego Bay Marine Park Trust works in the Montego Bay Marine Park and surrounding communities. The Negril Environmental Protection Trust (NEPT) and the Negril Coral Reef Preservation Society (NCRPS) work in western Westmoreland and Hanover.

42% (1998) un-awareness among those with only primary education, this decreased gradually to zero for those with post-graduate training. Awareness increased dramatically with high school and tertiary-level education, and even higher for post-graduate training. Environmental concepts should be introduced into the formal education system much earlier, which would promote an even higher level of environmental awareness later on.

Table 4.7: Index of Awareness about the World Environment, by Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, Jamaica 1991, 1998							
		1991 Data			1998 Data		
		Unaware	Middle	Aware	Unaware	Middle	Aware
Gender	Male	33.7%	21.9%	44.4%	25.3%	22.3%	52.4%
	Female	44.0%	17.5%	38.5%	28.9%	19.3%	51.8%
	Total	38.8%	19.7%	41.5%	27.1%	20.8%	52.1%
Age	18-24	30.9%	22.3%	46.9%	18.5%	22.2%	59.3%
	25-34	37.3%	19.1%	43.6%	24.6%	20.6%	54.9%
	34-44	35.5%	19.3%	45.2%	23.2%	20.3%	56.5%
	45-54	42.1%	22.7%	34.2%	22.4%	24.8%	52.8%
	55-64	48.6%	18.9%	32.4%	40.9%	17.4%	41.7%
	65+	58.9%	11.6%	29.5%	52.1%	18.8%	29.1%
	Total	38.8%	19.7%	41.5%	27.1%	20.8%	52.1%
Highest Education Attained	No Schooling				80.0%	0.0%	20.0%
	Prim./All-Age	59.0%	15.5%	25.5%	42.3%	19.6%	38.1%
	Some NewSec.	35.0%	25.4%	39.6%	24.9%	20.0%	55.1%
	Some T/C/G	24.7%	18.5%	56.8%	21.1%	19.3%	59.6%
	Done T/C/G	13.5%	21.2%	65.4%	16.5%	22.1%	61.5%
	Tch/Nrse Col	8.6%	25.7%	65.7%	5.6%	26.8%	67.6%
	Some U/CAST	10.3%	34.5%	55.2%	2.0%	24.5%	73.5%
	Completed U/CAST	3.8%	15.1%	81.1%	8.8%	26.5%	64.7%
	Post-Grad	0.0%	14.3%	85.7%	0.0%	20.0%	80.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	50.0%	20.8%	29.2%
Total	38.8%	19.7%	41.5%	27.1%	20.8%	52.1%	
Rural-Urban Status	KMA	24.7%	22.7%	52.5%	34.8%	28.2%	37.0%
	Oth Tns	32.5%	18.0%	49.5%	25.3%	13.9%	60.8%
	Rural	47.5%	18.8%	33.8%	22.4%	18.5%	59.1%
	Total	38.8%	19.7%	41.5%	27.1%	20.8%	52.1%
Occupational Category¹⁵	Prof/Man	4.8%	16.7%	78.6%	20.0%	18.7%	61.3%
	Semi-Prof	16.7%	21.8%	61.5%	11.9%	25.4%	62.7%
	Cler/Tech	25.6%	25.6%	48.9%	27.2%	18.5%	54.3%
	Pers Serv	31.7%	14.5%	53.7%	16.4%	23.4%	60.2%
	Man Skill	24.4%	21.1%	54.5%	34.0%	16.0%	50.0%
	Man Unsk	31.0%	34.5%	34.5%	20.0%	25.6%	54.4%
	Self-Empl	46.5%	19.6%	33.9%	32.6%	16.3%	51.2%
	Domestic	57.1%	14.3%	28.6%	44.8%	20.7%	34.5%
	Unemploy	57.7%	17.1%	25.2%	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
	NILF	51.0%	17.5%	31.5%	24.8%	26.3%	48.9%

15 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

	NR	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	36.0%	19.4%	44.5%
	Total	38.8%	19.7%	41.5%	24.8%	21.1%	54.1%

As before, there does appear to be some relationship between awareness/unawareness and occupation, but this is probably due to the fact that occupation is highly correlated with education. In 1991 the most unaware occupational groups were the unemployed (57.7%), domestic helpers (57.1%), those not in the labour force (51.0%), and the self-employed (46.5%). The most aware occupational groups were professionals and managers (78.6%), the semi-professionals (61.5%), the manual skilled (54.5%) and those in personal services (53.7%). By 1998 the most unaware occupational groups were domestics (44.8%), Manual-Skilled (33.8%), Self-Employed (32.7%), and Clerical-Technical (27.1%). The most aware groups were Semi-Professional (62.7%), Professional/Managerial (61.4%), and Personal Services (60.2%).

CHAPTER 5: EFFECTIVENESS OF THE GOVERNMENT

On a scale of one to ten, the respondents were asked to assess the effectiveness of the Jamaican government in passing legislation to protect the environment (where one means totally ineffective and ten means extremely effective). Because the purpose of the survey was to determine awareness of environmental matters, the “Don't Know” responses were significant and are also listed, and in calculating means etc., were given the value zero.

TABLE 5.1: EFFECTIVENESS OF GOVERNMENT IN PASSING LEGISLATION 1991						
Source of Negative Impact	DK	1-2	3-4	5-6	7-8	9-10
Forestry Industry	28.5%	30.3%	15.1%	13.3%	6.1%	6.7%
Individual residents	24.1%	29.3%	15.0%	15.4%	8.0%	8.2%
The Mining Industry	34.1%	23.5%	13.9%	14.2%	7.8%	6.5%
Household garbage	17.6%	28.6%	14.5%	16.9%	10.1%	12.4%
Automobile exhaust	26.3%	37.2%	12.2%	11.3%	6.8%	6.4%
Urban Sewage and pollution	21.5%	31.0%	13.2%	13.2%	8.6%	12.4%
Toxic Waste	49.2%	23.8%	9.4%	7.2%	5.4%	4.9%
The fishing industry	37.8%	20.3%	15.1%	13.2%	7.2%	6.4%
Manufacturing Plants	34.0%	24.6%	14.1%	13.4%	8.1%	5.7%
Pesticide and Herbicides	29.2%	25.6%	14.2%	13.6%	8.1%	9.3%

TABLE 5.2: EFFECTIVENESS OF GOVERNMENT IN PASSING LEGISLATION 1998						
Source of Negative Impact	DK	1-2	3-4	5-6	7-8	9-10
Forestry Industry	33.1%	28.9%	13.1%	12.3%	5.9%	6.8%
Individual residents	29.4%	35.3%	12.6%	10.0%	6.1%	6.4%
The Mining Industry	32.0%	26.2%	11.4%	12.9%	8.7%	8.7%
Household garbage	27.3%	31.1%	13.4%	12.6%	7.4%	8.1%
Automobile exhaust	34.5%	38.3%	8.0%	8.5%	3.7%	6.8%
Urban Sewage and pollution	31.9%	34.9%	12.6%	7.3%	5.1%	8.2%
Toxic Waste	48.9%	27.0%	5.8%	6.6%	3.6%	8.0%
The fishing industry	39.8%	20.6%	13.8%	13.8%	4.9%	7.1%
Manufacturing Plants	36.8%	28.5%	12.0%	11.8%	5.4%	5.7%
Pesticide and Herbicides	35.4%	22.4%	11.6%	15.8%	6.3%	8.5%

The environmental achievements of the government were not well known. “Don't Know” was the modal response for seven out of the ten factors in 1991, and for all ten in 1998. The mean scores in 1991 were low; four areas received a score higher than 3. The mean scores in 1998 were even lower, with all scores under 3. Scores for all factors declined between 1991 and 1998 except for Mining and Household Garbage which both increased by one-tenth of a percentage point.

The fact that in 1998 fewer people claim to know enough to offer an opinion about the effectiveness of the government in passing environmental legislation than in 1991, indicates an increasing lack of awareness in this area. The vast majority of those who express an opinion

believe that the government is not very effective in passing legislation to protect the environment.

**TABLE 5.3:
EFFECTIVENESS OF GOVERNMENT IN PASSING LEGISLATION 1991, 1998:
Some Statistical Indicators**

Source	1991 Survey				1998 Survey			
	Mean	Median	Mode	SD ¹⁶	Mean	Median	Mode	SD
Forestry Industry	2.7	2	0	2.9	2.6	1	0	3.0
Individual residents	3.1	2	0	3.1	2.5	1	0	2.9
The Mining Industry	2.8	1	0	3.0	2.9	1	0	3.2
Household garbage	3.8	3	1	3.3	2.9	2	0	3.1
Automobile exhaust	2.6	1	1	2.9	2.1	1	0	2.8
Urban Sewage and pollution	3.4	2	1	3.3	2.4	1	0	3.0
Toxic Waste	1.9	1	0	2.8	1.9	1	0	3.0
The fishing industry	2.7	1	0	3.0	2.5	1	0	3.0
Manufacturing Plants	2.7	1	0	3.0	2.3	1	0	2.9
Pesticide and Herbicides	3.1	2	0	3.2	2.8	1	0	3.2

5.1 Government Effectiveness Index

In similar manner to the previous chapter, a composite Effectiveness Index for the government was created by adding together the scores for each of the ten factors named above, and then dividing the result by 10.

**Table 5.4:
Awareness Index for the Effectiveness of the Jamaican Government in
passing Environmental Legislation, 1991, 1998**

SCORE	INTERPRETATION	1991	1998
0	Don't know anything	158 (13.9%)	289 (24.2%)
1 - 2	Extremely ineffective	289 (25.5%)	334 (28.0%)
3 - 4	Ineffective	365 (32.2%)	306 (25.7%)
5 - 6	Middle	217 (19.2%)	136 (11.4%)
7 - 8	Effective	79 (7.0%)	69 (5.8%)
9 - 10	Extremely effective	25 (2.2%)	58 (4.9%)
TOTAL		1,133 (100%)	1,19 (100%)

In 1991, 13.9% claimed ignorance of the government's record in passing environmental legislation; this rose to 24.2% by 1998. In 1991, 57.7% rated the government's performance as ineffective, which decreased to 53.8% in 1998. Those who believe that the government is effective in this area increased from 9.2% in 1991 to 10.7% in 1998. If the government has been effective in passing environmental legislation, this fact is not well known.

5.2 Knowledge about the Government

A new question asked of the respondents (not asked in 1991) was to "name the government agency which has the major responsibility for the environment in Jamaica", and Table 5.5 below summarizes the results. Only 274 respondents (22.9%) offered answers, of which 229 may be considered correct, which means that 83.6% of those who answered got it right. But it also means that only 19.2% of the sample knew that the Natural Resources Conservation Authority (NRCA) in the Ministry of the Environment was the government agency

¹⁶ SD = Standard Deviation.

with the major responsibility for Jamaica's environment. This reflects quite a low level of environmental awareness, and could indicate that the NRCA needs to publicize itself more.

Table 5.5: Government Agency Respondents believe has the major responsibility for the Environment in Jamaica, 1998	
Government Agency	Frequency
Ministry of the Environment	125 (10.5%)
Natural Resources Conservation Authority	104 (8.7%)
Ministry of Agriculture	11 (0.9%)
Metropolitan Parks & Markets	7 (0.6%)
Ministry of Health	6 (0.5%)
Public Health Department	5 (0.4%)
Parish Councils	5 (0.4%)
Forestry Department	2 (0.2%)
Fisheries Division	1 (0.1%)
Ministry of Works	1 (0.1%)
Public Works Department	1 (0.1%)
National Insurance Scheme	1 (0.1%)
Police	1 (0.1%)
Ministry of Finance	1 (0.1%)
Jamaica Information Service	1 (0.1%)
SUB-TOTAL	274 (23.0%)
NR	918 (77.0%)
TOTAL	1192 (100%)

The respondents were also asked to say what they thought the agency with the primary responsibility for the environment did; three responses were permitted. When responses for just the NRCA and the Ministry of the Environment were tabulated, the results were as in Table 5.6 below. Of the 229 persons who knew that the NRCA/Ministry of the Environment was the agency with the major responsibility for the environment, only 160 (69.9%) offered an answer.

Table 5.6: Activities Respondents believe are carried out by the Natural Resources Conservation Authority (NRCA) and the Ministry of the Environment, Jamaica, 1998	
Activity	Frequency
Environmental policy, lawmaking	80 (6.7%)
Protect the Environment	55 (4.6%)
Oversee/Monitor/Enforce	37 (3.1%)
Environmental Education	23 (1.9%)
Report to the Government	12 (1.0%)
Work with NGOs	9 (0.8%)
Build houses	8 (0.7%)
Beach Cleanups	1 (0.1%)
See to proper garbage disposal	1 (0.1%)
Deal with New Buildings	1 (0.1%)
Cleans the city, drains	1 (0.1%)
Management of the Environment	1 (0.1%)
Study and research the environment	1 (0.1%)
TOTAL	160 (69.9%)

At the time of the survey, the portfolio of the environment was in the same ministry as the housing portfolio, which might explain why eight persons said “build houses”. The dearth of responses to this question suggests that the NRCA needs to project itself more.

CHAPTER 6: ENVIRONMENTALLY-FRIENDLY BEHAVIOUR

Environmental awareness has two dimensions: on the one hand there is the question of the knowledge, appreciation and understanding of environmental issues, while on the other hand there is the question of lifestyle, activism and advocacy. To what extent is environmental awareness translated into environmental action?

6.1 The Effectiveness of Individual Action

If people do not believe that activism can be effective in achieving environmental goals, then, even if they are aware of the problems, they may not try to effect any changes. The respondents were asked to indicate how much of an effect they believe individuals like themselves can have on protecting the environment.

Table 6.1: How much of an Effect can Individuals have on Protecting the Environment, Jamaica, 1991, 1998				
EFFECT	1991	1998		
		Male	Female	Total
Extremely Large Effect	81 (7.3%)	60 (10.1%)	75 (12.6%)	135 (11.3%)
Quite a Large Effect	210 (18.8%)	127 (21.3%)	88 (14.8%)	215 (18.0%)
Some Effect	342 (30.6%)	224 (37.5%)	236 (39.7%)	460 (38.6%)
Very Little Effect	273 (24.5%)	142 (23.8%)	136 (22.9%)	278 (23.3%)
No Effect	210 (18.8%)	40 (6.7%)	56 (9.4%)	96 (8.1%)
NR		4 (0.7%)	4 (0.7%)	8 (0.7%)
Large Effect	291 (26.1%)	187 (31.4%)	163 (27.4%)	350 (29.3%)
Some Effect	342 (30.6%)	224 (37.5%)	236 (39.7%)	460 (38.6%)
Little Effect	483 (43.3%)	186 (31.2%)	196 (33.0%)	382 (32.1%)
TOTAL	1,116 (98.5%)	597 (50.1%)	595 (49.9%)	1,192 (100%)

In 1991, only 7% felt that individuals like themselves could have an extremely large effect in protecting the environment, and only 19% felt they could have quite a large effect. On the other hand, 19% felt that individuals could have no effect at all, while 25% felt they could have very little effect. And so 26% believe that individuals like themselves can make a difference, while 43% feel that they can make little difference. By 1998, 29% believe that individuals like themselves can make a difference, while 32% feel that they can make little difference. This pessimism, this fatalism, should lead to a relatively low level of environmental activism.

The corollary of this is that if more people can be convinced that their actions could have a significant effect on the condition of the environment, things might actually improve.

6.2 Environmental Action taken by Individuals

In 1991, 58.8% of the sample and in 1998 56.4% outlined things they had done which they considered helped to protect the Jamaican environment. In the opinion of this author, for both years a significant number of the answers do not fully qualify as being environmentally friendly, which suggests lack of awareness about these environmental factors.

**TABLE 6.2:
MOST RECENT THING YOU DID WHICH YOU CONSIDERED HELPED TO
PROTECT THE ENVIRONMENT, JAMAICA, 1991, 1998**

ACTION TAKEN	1991	1998		
		Male	Female	Total
I clean my yard, road, work area	240 (21.2%)	63 (10.6%)	97 (16.3%)	160 (13.4%)
I planted trees, flowers	131 (11.6%)	75 (12.6%)	65 (10.9%)	140 (11.7%)
I disposal of my garbage properly	115 (10.2%)	78 (13.1%)	57 (9.6%)	135 (11.3%)
I do farming, gardening	62 (5.5%)	25 (4.2%)	12 (2.0%)	37 (3.1%)
I taught others good env practices	67 (5.9%)	15 (2.1%)	20 (3.4%)	35 (2.9%)
I burn garbage	39 (3.4%)	12 (2.0%)	19 (3.2%)	31 (2.6%)
I use unleaded fuel	11 (1.0%)	16 (2.7%)	7 (1.2%)	23 (1.9%)
I recycle, reuse		5 (0.8%)	12 (2.0%)	17 (1.4%)
I cleaned drains, gullies		6 (1.0%)	8 (1.3%)	14 (1.2%)
I keep my car tuned		6 (1.0%)	2 (0.3%)	8 (0.7%)
I donated labour, cleaned beaches		3 (0.5%)	3 (0.5%)	6 (0.5%)
I stopped smoking	2 (0.2%)	4 (0.6%)	2 (0.3%)	6 (0.5%)
I buy env.-friendly prods, chemicals	1 (0.1%)	2 (0.3%)	3 (0.5%)	5 (0.4%)
I use mulch, compost, organic	3 (0.3%)	2 (0.3%)	3 (0.5%)	5 (0.4%)
I bury garbage	8 (0.7%)	3 (0.5%)	1 (0.2%)	4 (0.3%)
I read Environmental Articles		2 (0.3%)	2 (0.3%)	4 (0.3%)
I conserve electricity, water	15 (1.3%)		3 (0.5%)	3 (0.3%)
I used less/boycotted plastic	7 (0.6%)	3 (0.5%)		3 (0.3%)
I painted environmental murals		1 (0.2%)	2 (0.3%)	3 (0.3%)
I conserved trees		2 (0.3%)	1 (0.2%)	3 (0.3%)
I formed, joined env. organization	2 (0.2%)	1 (0.2%)	2 (0.3%)	3 (0.3%)
I reduce, separate my garbage	1 (0.1%)	1 (0.2%)	2 (0.3%)	3 (0.3%)
I terrace land, stopped soil erosion	6 (0.6%)	2 (0.3%)		2 (0.2%)
I avoid CFCs,insecticides,herbicides	8 (0.7%)	1 (0.2%)	1 (0.2%)	2 (0.2%)
I threw back little fish		2 (0.3%)		2 (0.2%)
I lobbied env. issues, helped police			2 (0.3%)	2 (0.2%)
I mended potholes			2 (0.3%)	2 (0.2%)
I employed young people			2 (0.3%)	2 (0.2%)
I use pesticides,herbicides sparingly	6 (0.5%)	1 (0.2%)		1 (0.1%)
I helped protect wildlife	1 (0.1%)	1 (0.2%)		1 (0.1%)
I don't take smoking buses			1 (0.2%)	1 (0.1%)
I punctured cans ¹⁷	11 (1.0%)	1 (0.2%)		1 (0.1%)
I pen my animals			1 (0.2%)	1 (0.1%)
I buy more plastic		1 (0.2%)		1 (0.1%)
I appreciated the beauty of the env.		1 (0.2%)		1 (0.1%)
I cut down smell on my fowl farm		1 (0.2%)		1 (0.1%)
I burn coal		1 (0.3%)		1 (0.1%)
I pray to God to help govt. save env.		1 (0.2%)		1 (0.1%)
I picked up broken bottles			1 (0.2%)	1 (0.1%)
I practiced good food hygiene	6 (0.5%)			
I went fishing	5 (0.4%)			
I spray insects	3 (0.3%)			
I treat water before drinking	3 (0.3%)			
I keep my noise down	1 (0.1%)			
SUB-TOTAL	332 (29.3%)	338 (56.6%)	333 (56.0%)	671 (56.3%)
NR	801 (70.7%)	259 (43.4%)	262 (44.1%)	521 (43.7%)
TOTAL	1133 (100%)	597 (50.1%)	595 (49.9%)	1192 (100%)

¹⁷ Public Health authorities recommend that tin cans be punctured before disposal so they cannot hold water in which mosquitoes may breed.

In both 1991 and 1998, the three most common answers were the same: cleaning my yard/road/work area (21.2% and 13.4%), planting of trees and flowers (11.6% and 11.7%); and the proper disposal of garbage (10.2% and 11.2%). In 1998 there was a wider range of valid answers than in 1991, but the numbers are small, indicating much room for improvement.

In both 1991 and 1998, several of the answers advanced would qualify as good public health practices or extractions of value from the environment, but not necessarily as environmental protection. In both years, the same sorts of answers were popular: keeping the yard/road/work area clean (21.2% and 13.8%), farming/gardening (5.5% and 3.1%) and the burning of garbage (3.4% and 2.6%). So many of the answers relate to personal and household space, that the concept of the environment in use by many of the respondents is revealed. Crosstabulating these answers with the earlier question on the definition of the environment (see Section 3.1) was inconclusive, but there is a clear confusion. Stopping smoking improves the surroundings for non-smokers, and fixing potholes improves conditions for motor vehicles, but these cannot be considered as actions which improve the environment in the sense the word is used in this study. In the same way, clean surroundings and pretty gardens do not qualify. In rural areas where there is limited garbage collection, burning garbage may be better than illegal dumping, but cannot be considered as protecting the environment. A more borderline answer is the cleaning drains and gullies which will prevent flooding and erosion.

A clear conclusion from the answers to this question is that quite a few Jamaicans could benefit from more information on environmental issues and potential actions, such as could come from an education programme, and from the good example of active environmental groups.

6.3 The Environmental Lifestyle of the Respondents

An important indicator of the environmental awareness and commitment of individuals is their personal and family lifestyle. The food products and other household goods they buy (and their packaging), how they dispose of their garbage, their use of energy, their garden and agricultural practices, how they spend their leisure time, the books they read, the organizations they belong to, etc., all provide a good indication of how serious individuals or families are about their environmental concerns.

We have to be careful how we impute motives, positive or otherwise. Some actions which may have positive environmental consequences may have been performed for other motives – say personal convenience or economic gain or to avoid prosecution – without a thought given to the environment.

The three most common “actions taken in the last year to protect the environment” may fall into these categories (see Table 6.3%). Returning glass bottles in Jamaica usually pays a handsome dividend, and one need not look further than that for a motive¹⁸. Because most of Jamaica's electricity is generated using imported petroleum, it is not cheap, and trying to use less electricity will pay in economic terms. Jamaica has a wide variety of economic and domestic fruit trees, and it has long been customary – long before people became concerned about the environment – for Jamaicans to plant fruit trees around their homes and gardens. It is illegal to catch lobster during the lobster closed season (April to June each year). Not everyone eats lobster (for religious or other reasons), and so for some, the question may not be applicable; but avoiding lobster in the closed season (28%) also avoids prosecution for that offence. Preventing soil erosion (21%) protects the value of the owners' land.

18 With the use of plastic bottles replacing glass bottles, this practice is less common in 1998 than in 1991,

**TABLE 6.3:
ACTIONS TAKEN IN THE LAST YEAR TO PROTECT THE ENVIRONMENT,
JAMAICA, 1998**

ACTIONS TAKEN	1991	1998		
		Male	Female	Total
I try to use less electricity	805 (71.1%)	372 (62.3%)	373 (62.7%)	747 (62.6%)
I return glass bottles where possible	850 (75.0%)	331 (55.4%)	360 (60.5%)	691 (58.0%)
I have planted trees	629 (55.5%)	271 (45.4%)	245 (41.2%)	516 (43.3%)
I don't buy products in certain packages	43 (3.8%)	119 (19.9%)	148 (24.9%)	267 (22.4%)
I have switched to unleaded gasoline	55 (4.9%)	127 (21.3%)	93 (15.6%)	220 (18.5%)
I read envir. article to be more aware	252 (22.2%)	92 (15.4%)	103 (17.3%)	195 (16.4%)
I prevent soil erosion	242 (21.4%)	103 (17.3%)	79 (13.3%)	182 (15.3%)
I use fewer chemicals in the garden	205 (18.1%)	91 (15.2%)	83 (13.9%)	175 (14.6%)
I do not buy lobster in closed season	312 (27.5%)	84 (14.1%)	56 (9.4%)	140 (11.7%)
I do not use aerosols	90 (7.9%)	63 (10.6%)	73 (12.3%)	136 (11.4%)
I have a compost heap	105 (9.3%)	73 (12.2%)	58 (9.7%)	131 (11.0%)
I use phosphate-free detergents	24 (2.1%)	33 (5.5%)	96 (16.1%)	129 (10.8%)
I use bio-degradable products	55 (4.9%)	54 (9.0%)	69 (11.6%)	123 (10.3%)
I support envir. action with money, time	153 (13.5%)	18 (3.0%)	45 (7.6%)	63 (5.3%)
I am a member of an envir. org.	52 (4.6%)	18 (3.0%)	11 (1.8%)	29 (2.4%)

Both in 1991 and 1998, the level of environmental activism is low. The data suggests that environmental activism over the period has decreased for certain actions and increased for others. Those decreasing by more than ten percentage points were returning glass bottles, planting trees, and not buying lobster in the closed season. Those increasing by a similar margin were buying products in appropriate packaging, and switching to unleaded gasoline¹⁹. The increase in the use of compost heaps, phosphate-free detergents and bio-degradable products, and the avoidance of aerosols is also worthy of mention. Of special interest is the decline in membership of environmental organizations, in the support offered in money and time, and in the reading of environmental articles to become more aware.

**TABLE 6.4:
ENVIRONMENTAL ORGANIZATION OF WHICH RESPONDENT IS A
MEMBER, JAMAICA, 1998**

Organization	Male	Female	Total
Community Youth Club	3 (0.5%)	1 (0.2%)	4 (0.3%)
School-Based Environmental Club	2 (0.3%)	1 (0.2%)	3 (0.3%)
Community Church Group	1 (0.2%)	2 (0.3%)	3 (0.3%)
Portland Env. Protection Ass. (PEPA)	1 (0.2%)	2 (0.3%)	3 (0.3%)
Community Neighbourhood Watch	1 (0.2%)	1 (0.2%)	2 (0.2%)
Lime Hall Citizens' Association	1 (0.2%)		1 (0.1%)
Natural History Society	1 (0.2%)		1 (0.1%)
Petrojam Refinery	1 (0.2%)		1 (0.1%)
NRCA		1 (0.2%)	1 (0.1%)
Gosse Bird Club		1 (0.2%)	1 (0.1%)
St. Thomas Env. Protection Ass. (STEPA)	1 (0.2%)		1 (0.1%)
Fern Environmental Club		1 (0.2%)	1 (0.1%)
Political Divisional Committee		1 (0.2%)	1 (0.1%)
Kingston Restoration Company	1 (0.2%)		1 (0.1%)
SUB-TOTAL	13 (2.1%)	11 (1.8%)	24 (2.0%)

¹⁹ The Jamaican government has now completely phased out the use of leaded gasoline.

No Organization	582 (97.5%)	586 (98.5%)	1168 (98.0%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (2.0%)

The respondents who said they were members of an environmental organization were asked to name it. See Table 6.4 for a list of the organizations named. Only 24 persons (2.0%) gave a response to this question. Most of the organizations were connected to church or school or community and not dedicated specifically to environmental matters. The survey reveals that membership in environmental organizations is low.

The respondents who said they had read an environmental article to become more aware were also asked to name the article they had read. The responses are listed in Table 6.5. No specific article was mentioned. The type of literature most read were newspapers (9.1%) and magazines (2.3%). If more environmental books and pamphlets were made available, it is likely that the number of responses in those categories will increase.

TABLE 6.5: ENVIRONMENTAL ARTICLE RECENTLY READ BY THE RESPONDENTS, JAMAICA 1998			
Article	Male	Female	Total
Newspaper	49 (8.2%)	59 (9.9%)	108 (9.1%)
Magazine	11 (1.8%)	18 (3.0%)	27 (2.3%)
Television/Radio	4 (0.7%)	5 (0.8%)	9 (0.8%)
Book on the Env.	2 (0.3%)	3 (0.5%)	5 (0.4%)
JIS Programme	5 (0.8%)	-	5 (0.4%)
Pamphlet	2 (0.3%)	2 (0.3%)	4 (0.3%)
National Geographic, Time Magazine	2 (0.3%)	1 (0.2%)	3 (0.3%)
Zoo Book	-	1 (0.2%)	1 (0.1%)
Bird Season Notices	-	1 (0.2%)	1 (0.1%)
STEPA Publication	1 (0.2%)	-	1 (0.1%)
Watchtower/Awake	-	1 (0.2%)	1 (0.1%)
Advertisement	2 (0.3%)	-	-
NRCA Newsletter	1 (0.2%)	-	1 (0.1%)
SUB-TOTAL	79 (13.2%)	89 (15.0%)	168 (14.1%)
Nothing Read	518 (86.8%)	506 (85.0%)	1024 (85.9%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (2.0%)

Those that said they had supported environmental activity with money or time were asked to say how much time and money they had contributed. The results are summarized below in Tables 6.7 and 6.8. Not many persons said how much they gave, which suggests that fewer actually gave than claimed to in Table 6.6. This is a real weathervane of commitment to the environment, and hopefully, there will be improvement in this area in the years to come.

TABLE 6.6: TIME CONTRIBUTED TO WORK FOR THE ENVIRONMENT, JAMAICA 1998			
Hours per Year	Male	Female	Total
1-10	4 (0.7%)	5 (0.8%)	9 (0.8%)
11-100	6 (1.0%)	7 (1.2%)	13 (1.1%)
101-1000	1 (0.2%)	16 (2.7%)	17 (1.4%)
1000+	-	3 (0.5%)	3 (0.3%)
SUB-TOTAL	11 (1.8%)	31 (5.2%)	42 (3.5%)

NR	586 (98.2%)	564 (94.8%)	1150 (96.5%)	
TOTAL	597 (50.1%)	595 (49.5%)	1192 (100%)	
TABLE 6.7: MONEY CONTRIBUTED TO WORK FOR THE ENVIRONMENT, JAMAICA 1998				
Amount per year	Male	Female	Total	Aggregate
J\$ 10		1 (0.2%)	1 (0.1%)	J\$ 10
J\$ 50		1 (0.2%)	1 (0.1%)	J\$ 50
J\$ 100		1 (0.2%)	1 (0.1%)	J\$ 100
J\$1,000	1 (0.2%)	2 (0.3%)	3 (0.3%)	J\$3,000
J\$1,800	1 (0.2%)		1 (0.1%)	J\$1,800
SUB-TOTAL	2 (0.3%)	5 (0.08%)	7 (0.6%)	J\$4,960
NR	595 (99.7%)	590 (99.2%)	1185 (99.4%)	
TOTAL	597 (50.1%)	595 (49.5%)	1192 (100%)	J\$4,960

6.4 Index of Individual Environmental Activity

The responses to the fifteen questions in Table 6.3 were aggregated into an **Individual Environmental Activity Index** to provide an indication of the overall picture of the individual's expressed commitment to the environment (yes = 1, no = 0). Looking at each group, the respondents from both 1991 and 1998 do not impress as being active. In each year only one respondent (0.1%) fell into the "very active" category, and only 1-3% were classified as "active". The number of totally environmentally inactive respondents increased from 6.5% in 1991 to 18.6% in 1998; large numbers of the sample were rated as "very inactive" and "inactive".

To properly evaluate this data it is necessary to compare the "activism" of Jamaicans with citizens of other societies. In the absence of these data we can draw no strong conclusions, except to say that the level of activism appears to be quite low, and that environmental education would seem to be called for.

TABLE 6.8: INDIVIDUAL ACTIVITY INDEX, JAMAICA, 1991, 1998			
Score	Interpretation	1991	1998
0	No Activity	74 (6.5%)	222 (18.6%)
1-3	Very Inactive	586 (51.7%)	536 (45.0%)
4-6	Inactive	377 (33.3%)	274 (22.9%)
7-9	Middle	78 (6.9%)	126 (10.6%)
10-12	Active	17 (1.5%)	33 (2.8%)
13-15	Very Active	1 (0.1%)	1 (0.1%)
	TOTAL	1,133 (100%)	1,192 (100%)

For easy analysis the five categories were collapsed into three. In both years, respondents from "other towns" were more environmentally active than those in the KMA and the rural areas. In 1998 rural residents were the largest group in the "middle" active category. In both years, residents of the Kingston Metropolitan Area²⁰ were the most inactive. In 1991, the most active respondents (and middle) were in Clarendon (5%, 22%), Westmoreland (3%, 13%), St. James (3%, 10%) and St. Ann (3%, 8%). In 1998, the largest number of active respondents by far (27.5%) were found in the parish of Portland, a tribute to the work of Jamaica's oldest parish-

20 The Kingston Metropolitan Area (KMA) includes all of the small parish of Kingston and part of the parish of St. Andrew.

based environmental NGO, the Portland Environmental Protection Association (PEPA). Other parishes with active respondents were St. Mary (7.7%), and St. Elizabeth (5.0%). All (100%) of the residents of Kingston were inactive, and no residents of Kingston or St. James were active.

Table 6.9: Individual Activity Index , By Sex, Age, Highest Education Attained, Rural-Urban Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica 1991, 1998							
		1991 Data			1998 Data		
		Inactive	Middle	Active	Inactive	Middle	Active
Gender	Male	90.0%	8.1%	1.9%	87.8%	9.0%	3.2%
	Female	93.0%	5.7%	1.3%	85.4%	12.1%	2.5%
	Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%
Age	18-24	93.5%	5.1%	1.5%	88.3%	9.3%	2.4%
	25-34	88.4%	8.9%	2.7%	89.7%	8.6%	1.7%
	34-44	89.4%	8.8%	1.8%	83.5%	12.2%	4.2%
	45-54	92.1%	7.0%	0.9%	80.0%	14.4%	5.6%
	55-64	93.7%	5.4%	0.9%	88.7%	10.4%	0.9%
	65+	92.8%	6.3%	0.9%	84.6%	12.0%	3.4%
	Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%
Highest Educa- tion Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	100%	-	-
	Prim./All-Age	96.0%	4.0%	0.0%	90.0%	8.5%	1.5%
	Some NewSec.	95.0%	3.4%	1.6%	87.8%	10.2%	2.0%
	Some T/C/G	81.5%	13.6%	4.9%	86.2%	11.0%	2.8%
	Done T/C/G	87.4%	11.7%	1.0%	87.0%	9.5%	3.5%
	Tch/Nrse Col	74.3%	17.1%	8.6%	76.1%	16.9%	7.0%
	Some U/CAST	82.8%	13.7%	3.4%	77.6%	18.4%	4.1%
	Completed U/CAST	75.5%	18.9%	5.7%	70.6%	20.6%	8.8%
	Post-Grad	14.3%	71.4%	14.3%	40.0%	40.0%	20.0%
	NA	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	100%	-	-
Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%	
Rural- Urban Status	KMA	93.6%	5.4%	1.0%	94.5%	5.0%	0.5%
	Oth Tns	85.9%	9.5%	4.5%	84.8%	8.9%	6.3%
	Rural	92.3%	6.8%	0.9%	81.7%	15.2%	3.0%
	Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%
Occupational²¹ Category	Prof/Man	76.2%	14.3%	9.5%	76.0%	18.7%	5.3%
	Semi-Prof	76.9%	19.2%	3.8%	83.1%	11.9%	5.1%
	Cler/Tech	85.0%	12.5%	2.5%	88.9%	8.6%	2.5%
	Pers Serv	91.1%	7.8%	1.1%	82.0%	14.8%	3.1%
	Man Skill	92.3%	6.6%	1.1%	86.1%	11.5%	2.5%
	Man Unsk	90.6%	8.0%	1.4%	91.1%	8.9%	-
	Self-Empl	100%	0.0%	0.0%	86.0%	9.3%	4.7%
	Domestic	97.6%	2.4%	0.0%	93.1%	6.9%	-
	Unemploy	98.4%	1.6%	0.0%	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
	NILF	94.4%	3.5%	2.1%	84.7%	10.9%	4.4%
	NR	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	92.3%	6.1%	1.6%
Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%	
Awareness Index Jamaican Environment	Unaware	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	96.7%	2.9%	0.4%
	Middle	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	92.3%	6.0%	1.7%
	Aware	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	78.1%	17.1%	4.8%
	Total	91.5%	6.9%	1.6%	86.6%	10.6%	2.9%

21 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

Awareness Index World Environment	Unaware Middle Aware Total	<i>n.a.</i> <i>n.a.</i> <i>n.a.</i> 91.5%	<i>n.a.</i> <i>n.a.</i> <i>n.a.</i> 6.9%	<i>n.a.</i> <i>n.a.</i> <i>n.a.</i> 1.6%	98.1% 91.9% 78.4% 86.6%	1.5% 7.3% 16.6% 10.6%	0.3% 0.8% 5.0% 2.9%
--	-----------------------------------	---	--	--	--	--	--

Neither age nor gender appear to be strong correlates of environmental activity. In 1991, respondents in the 25-34 year age group were slightly more environmentally active than the others. In 1998, the same could be said for those in the 45-54 and 34-44 year age groups.

Level of education appears to be the strongest among the weak determinants of environmental activity. In 1991, the following respondents were rated as “active” and “middle” respectively: Post-Graduate Training (14%, 71%), Teacher/Nursing College (9%, 17%), University First Degree (6%, 19%) and Some High School (5%, 14%). In 1998, only those who have had tertiary education show any substantial levels of environmental activity: Post-Graduate (20%), University First Degree (9%), and Teacher/Nursing College (7%). Whereas the formal education system is relatively successful at providing information, it is not as successful at transmitting norms and values which lead to action.

The upper occupational groups, the ones with higher educational requirements, contain the highly environmentally active respondents. In 1991 those rated “active” or “middle” were: Professional/Managerial (10%, 14%), Semi-Professional (4%, 19%) and Clerical/Technical (3%, 13%). In 1998 they were: Professional/Managerial (5.3%, 18.7%), Semi-Professional (5.1%, 11.9%) and Self-Employed (4.7%, 9.3%). One could speculate that members of higher income groups can afford the time to be environmentally active, but the level of information plays a role.

The awareness indices suggest that knowledge about the environment is, by itself, not the determining factor for environmental activity, as for both the Jamaican and world environments, 78% of those judged “aware” were environmentally inactive. The common view that “people are inactive because they lack awareness, and if only they were ‘educated’ then they would become more active and ‘do the right thing’” must be viewed with some suspicion. People’s actions are governed by the norms and values they hold dear, not by the information they have in their possession, and those interested in increasing environmental activism need to make interventions which will impact at the normative level.

6.5 The Need for Environmental Education

When asked whether they had enough information on actions they personally could take to protect the environment, 45.4% in 1991 and 61.1% in 1998 said they did. The answers to previous questions show that, in fact, Jamaicans are in need of environmental information to a much greater extent than this. Clearly it is the case that they do not know that they do not know, and the first task of environmental education, therefore, must be to convince the public that they need to be educated on the environment.

TABLE 6.10: DO YOU HAVE ENOUGH INFORMATION ON ACTIONS YOU PERSONALLY COULD TAKE TO PROTECT THE ENVIRONMENT? JAMAICA, 1991, 1998		
	1991	1998
Yes	514 (45.4%)	730 (61.2%)
No	593 (52.3%)	414 (34.7%)
NR	26 (2.3%)	48 (4.1%)
Total	1,133 (100%)	1,192 (100%)

The increase between 1991 and 1998 in those who feel they have enough environmental information supports the hypothesis that the public has been lulled into a false sense of information adequacy by the environmental stories the mass media have been presenting over the last few years²². It is always important for people to feel that there is more to know, and the fact that so many say they have enough information either indicates a lack of interest or a profound lack of appreciation of environmental matters.

**TABLE 6.11:
INFORMATION YOU FEEL YOU NEED TO BETTER BE ABLE
TO PROTECT THE ENVIRONMENT?
JAMAICA, 1991, 1998**

	1991	1998
TV, Radio Programmes	120 (10.6%)	165 (13.8%)
Environmental Studies		1 (0.1%)
Posters, Booklets	118 (10.4%)	
Knowledge	213 (18.8%)	
How to protect, improve environment		38 (3.2%)
Garbage Disposal	15 (1.3%)	9 (0.8%)
Who to call to report breaches		6 (0.5%)
What damages the environment		5 (0.4%)
List of safe/unsafe products	3 (0.3%)	4 (0.4%)
Protection Laws	7 (0.6%)	3 (0.3%)
More environment education in schools		3 (0.3%)
Packaging and labelling concerns		3 (0.3%)
Forestry	12 (1.1%)	2 (0.2%)
Community mobilization		2 (0.2%)
How to reduce pollution, industrial waste		2 (0.2%)
Agriculture, fertilizers		2 (0.2%)
How to build burms, road repair		2 (0.2%)
Information on pesticides, herbicides	4 (0.4%)	1 (0.1%)
CFCs and Ozone	2 (0.2%)	1 (0.1%)
Glossary of environmental terms		1 (0.1%)
Information on recycling		1 (0.1%)
Environmentally-friendly technologies		1 (0.1%)
About Jamaica		1 (0.1%)
How pollution affects environment	10 (0.9%)	
Soil Conservation	8 (0.7%)	
Laws for animals	6 (0.5%)	
Substitutes for herbicides	3 (0.3%)	
Greenhouse Effect	1 (0.1%)	
Biodegradable Products	1 (0.1%)	
How to protect water	1 (0.1%)	
TOTAL	524 (46.2%)	253 (21.2%)

In 1991, 52.3%, and 34.7% in 1998 said that they needed more information on the environment, but when asked what sort of information they needed, very few relevant answers were received. A maximum of three answers were permitted, and in 1998, only 239 respondents

²² This writer has been keeping a newspaper clipping archive of articles on the environment, and the number and quality of the pieces has been increasing. More could be done, but the newspapers are to be congratulated.

(20.0%) offered a response; 14 respondents (1.2%) offered two responses and one respondent (0.1%) offered three. This strongly suggests that most of the respondents neither knew that there was something they did not know, nor what it was they did not know.

In 1991 the most common request by far (19%) was for “knowledge”, which may be interpreted as a need for general knowledge or for environmental education, rather than for knowledge on a specific topic. The form in which the knowledge is to be presented came in for significant comment. About 11% felt that the information should be presented on the electronic media: on radio or on television. About 10% felt that posters and booklets would be effective. Among the requests which were valid were appeals for information on garbage disposal, forestry, pollution, soil conservation, chemicals, and existing environmental laws.

There were far fewer answers in 1998. The information most frequently requested was generic: how to protect/improve the environment (3.2%). Other topics requested were garbage disposal, who to call to report breaches, and a clear idea of what damages the environment.

For both 1991 and 1998 the quality of responses was good, but the small number of respondents points to the great need for effective local and national environmental education campaigns.

6.6 Consumer Goods and the Environment

Commodities may be environmentally unfriendly because of the packaging or because of the products themselves. The respondents were asked to name environmentally damaging products which they would like to see removed from the supermarket shelves. In 1991, almost 200 respondents (18%) stated without prompting that, in their opinion, there were no such products, while none did so in 1998.

In 1991 and 1998, 389 (34%) and 486 (41%) persons named products they felt should be removed from the shelves, but in this writer’s opinion the answers given by about one-tenth and one quarter of them were not valid. The valid answers reflected packaging concerns, with objections being raised about cans (13%, 4%) and plastic containers (2%, 11%); some respondents wanted aerosols (8%, 6%) and insecticides (4%, 5%) removed from the shelves. The irrelevant answers mostly reflected religious and health concerns (cigarettes and alcohol, artificial flavours, date expired). In 1998, the largest irrelevant answer was for foreign imported food to be removed from supermarket shelves, reflecting the downturn in the agricultural sector due to competition from imports.

Again the small number of valid responses suggests a topic for local and national environmental awareness programmes.

In both 1991 and 1998, large proportions of the samples (43% and 46%) say they expect environmentally friendly products to be cheaper than other products. In reality this is not the usual situation. Environmentally unfriendly packaging materials tend to be cheaper than biodegradable and reusable ones. In 1991 about 18% of the sample seem to be aware of this, but this declined to 14% by 1998. One could speculate that the response “lower priced” is a plea for lower prices generally rather than a response to the question.

Interestingly, in both 1991 and 1998, about 41% of the sample say they would be willing to pay more for environmentally friendly products. Some might say that this is the bottom line, the final test of personal commitment to environmental health. The level of unawareness which the rest of the data indicate would suggest that not many people should be so committed. Who are these persons who say that they are so committed to environmental health that they are prepared to put their money where their mouths have not so far been?

**TABLE 6.12:
ENVIRONMENTALLY-DAMAGING PRODUCTS WHICH SHOULD BE REMOVED
FROM THE SHELVES, JAMAICA, 1991, 1998**

	ENVIRONMENTALLY DAMAGING PRODUCTS	1991	1998
Valid Answers	Canned Food	145 (12.8%)	42 (3.5%)
	Aerosols, products with CFCs	92 (8.1%)	73 (6.1%)
	Insecticides	43 (3.8%)	62 (5.2%)
	Plastic Packaging	22 (1.9%)	128 (10.7%)
	Detergents with phosphates	19 (1.7%)	9 (0.8%)
	Bleaches	15 (1.3%)	19 (1.6%)
	Unnecessary packaging		5 (0.4%)
	Chemicals	12 (1.1%)	3 (0.3%)
	Non-Biodegradable packaging		10 (0.8%)
	Juice Boxes		6 (0.5%)
	Styrofoam		9 (0.8%)
	TOTAL	348 (30.7%)	366 (30.7%)
Answers not Relevant	Nothing	199 (17.6%)	
	Powdered Seasonings		4 (0.3%)
	Bottled Products	5 (0.4%)	13 (1.1%)
	Cigarettes	10 (0.9%)	31 (2.6%)
	Artificial Flavours	8 (0.7%)	
	Codfish	6 (0.5%)	
	Date Expired	6 (0.5%)	13 (1.1%)
	Alcoholic Beverages	3 (0.3%)	4 (0.3%)
	Explosives	2 (0.2%)	
	Toxic Substances	2 (0.2%)	
	Kerosene	1 (0.1%)	5 (0.4%)
	Bottled Water		1 (0.1%)
	Milk		2 (0.2%)
	Some baked products		1 (0.1%)
	All artificial food		2 (0.2%)
	Move food from beside pesticides		1 (0.2%)
	Improper labelling		5 (0.4%)
	Foreign Imported Foods		29 (2.4%)
	Dog Food		1 (0.1%)
	Obeah Oils		1 (0.1%)
	Candles		1 (0.1%)
	Matches		1 (0.1%)
	Ceiling Fans		1 (0.1%)
	Certain brands of cooking oil		1 (0.1%)
Bath Soap		1 (0.1%)	
White Sugar		1 (0.1%)	
Hair Cream		1 (0.1%)	
	TOTAL	242 (21.4%)	120 (10.1%)
	GRAND TOTAL	590 (52.1%)	486 (40.7%)

TABLE 6.13: PRICE EXPECTATIONS OF ENVIRONMENTALLY-FRIENDLY PRODUCTS JAMAICA, 1991, 1998		
	1991	1998
Higher Priced	199 (17.6%)	167 (14.1%)
Same Price	178 (15.7%)	240 (20.1%)
Lower priced	489 (43.2%)	542 (45.5%)
Not Sure	76 (6.7%)	112 (9.4%)
Don't Know	172 (15.2%)	125 (10.5%)
NR	396 (35.0%)	6 (0.5%)
TOTAL	1,133 (100%)	1,192 (100%)

In 1991, more than half of the KMA respondents (58%) indicated their willingness to pay more for environmentally friendly products. This tendency really came from St. Andrew (61%) rather than Kingston itself (46%). This willingness was less strong in the rural towns (44%) and weakest in the rural areas (35%). The parishes with the strongest willingness were St. Ann (70%) and Hanover (55%). By 1998, this willingness had significantly declined in the KMA and in the rural towns – by eleven and eight percentage points respectively – and slightly increased for the rural areas. In 1998 the parishes with the strongest willingness were Portland (88%) and St. Mary (80%); the rest were below 50%. The parishes with the least willingness to pay more for environmentally friendly products were Hanover (23%) and Clarendon (28%).

TABLE 6.14: WILLINGNESS TO PAY MORE FOR ENVIRONMENTALLY-FRIENDLY PRODUCTS JAMAICA, 1991, 1998		
	1991	1998
Willing	472 (41.7%)	473 (39.7%)
Unwilling	633 (55.9%)	689 (57.8%)
NR	28 (2.5%)	30 (2.5%)
TOTAL	1,133 (100%)	1,192 (100%)

In 1991, the willingness to pay more for environmentally friendly products is strongest in the 45-54 age group and is weakest in the 65+ age group (35%). In 1998 these trends had strengthened and broadened: the willingness to pay more was greatest in those 34-54 years old, and is weakest in those 55 years and older.

In 1991, willingness to pay more was stronger among men (47%); the gender which does most of the purchasing was less willing (39%). By 1998, the percentages were almost reversed but closer together. Since it is females who are becoming more willing to purchase environmentally friendly products, if this trend continues, it could actually affect the market.

Education is a strong determinant of environmental awareness, so it is not surprising that generally for both 1991 and 1998, the willingness to pay more for environmentally friendly products was stronger with increasing education, although 1998 mostly had reduced levels. Of course, those with higher education are likely to be in a better position to pay more.

For both 1991 and 1998, those occupational groups which have higher education levels and the highest income showed the greater willingness to pay more for environmentally friendly products. In 1991 the greatest willingness was shown by the professional/managerial group (65%), followed by the clerical/technical group (57%), the manual unskilled group (56%), the

semi-professionals (49%) and the manual skilled group (47%). The highest group in 1998 were those not in the labour force (55%), followed by the semiprofessionals (54%), the professional/

TABLE 6.15: WILLINGNESS TO PAY MORE FOR ENVIRONMENTALLY FRIENDLY PRODUCTS by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998					
		1991 Data		1998 Data	
		Willing	Unwilling	Willing	Unwilling
Gender	Male	46.5%	53.5%	39.0%	61.0%
	Female	39.2%	60.8%	42.4%	57.6%
	Total	41.7%	55.9%	40.7%	59.3%
Age	18-24	44.0%	56.0%	45.4%	54.6%
	25-34	43.7%	56.3%	35.2%	64.8%
	34-44	43.5%	56.5%	47.9%	52.1%
	45-54	46.8%	53.2%	50.0%	50.0%
	55-64	40.6%	59.4%	31.2%	68.8%
	65+	34.9%	65.1%	32.2%	67.8%
	Total	41.7%	55.9%	40.7%	59.3%
Highest Education Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	20.0%	80.0%
	Prim./All-Age	38.0%	62.0%	26.8%	73.2%
	Some NewSec.	35.6%	64.4%	39.2%	60.8%
	Some T/C/G	55.6%	44.4%	56.5%	43.5%
	Done T/C/G	56.3%	43.7%	41.6%	58.4%
	Tch/Nrse Col	58.8%	41.6%	65.2%	34.8%
	Some U/CAST	64.3%	35.7%	76.6%	23.4%
	Completed U/CAST	66.7%	33.3%	64.5%	35.5%
	Post-Grad	100%	0.0%	80.0%	20.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	33.3%	66.7%
Total	41.7%	55.9%	40.7%	59.3%	
Rural-Urban Status	KMA	58.4%	41.6%	46.9%	53.1%
	Oth Tns	43.7%	56.3%	35.4%	64.6%
	Rural	35.4%	64.6%	38.7%	61.3%
	Total	41.7%	55.9%	40.7%	59.3%
Occupational²³ Category	Prof/Man	65.0%	35.0%	52.1%	47.9%
	Semi-Prof	48.7%	51.3%	53.5%	46.5%
	Cler/Tech	57.3%	42.7%	41.3%	58.7%
	Pers Serv	21.1%	78.9%	44.0%	56.0%
	Man Skill	46.2%	53.8%	35.0%	65.0%
	Man Unsk	55.6%	44.4%	32.6%	67.4%
	Self-Empl	40.1%	59.9%	34.9%	65.1%
	Domestic	30.1%	69.9%	20.7%	79.3%
	Unemploy	38.8%	61.2%	<i>n.a.</i>	<i>n.a.</i>
	NILF	39.4%	60.6%	55.4%	44.6%
	NR	<i>n.a.</i>	<i>n.a.</i>	33.5%	66.5%
Total	41.7%	55.9%	40.7%	59.3%	
Awareness Index Jamaican Environment	Aware	43.4%	56.6%	53.1%	46.9%
	Middle	45.4%	54.6%	38.7%	61.3%
	Unaware	40.2%	59.8%	17.2%	82.8%
	Total	41.7%	55.9%	40.7%	59.3%
Awareness Index World Environment	Aware	46.2%	53.8%	55.1%	44.9%
	Middle	45.9%	54.1%	39.5%	60.5%
	Unaware	37.3%	62.7%	13.2%	86.8%
	Total	41.7%	55.9%	40.7%	59.3%
Individual	Active	72.5%	37.5%	85.3%	14.7%

23 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

Activity Index	Middle Inactive Total	52.3% 39.8% 41.7%	47.7% 60.2% 55.9%	68.0% 35.8% 40.7%	32.0% 64.2% 59.3%
----------------	-----------------------	-------------------------	-------------------------	-------------------------	-------------------------

TABLE 6.16: ACTIONS TAKEN BY THE RESPONDENT WHICH THEY BELIEVE HARMS THE ENVIRONMENT, JAMAICA 1998			
ACTIONS	MALE	FEMALE	TOTAL
Burn garbage including plastic	47 (7.9%)	65 (10.9%)	112 (9.4%)
Throw garbage in the street	28 (4.7%)	19 (3.2%)	47 (3.9%)
Chop down trees	25 (4.2%)	9 (1.5%)	34 (2.9%)
Smoke cigarettes	17 (2.8%)	7 (1.2%)	24 (2.0%)
Throw garbage in open lot, gully, canal, river, sea	6 (1.0%)	15 (2.5%)	21 (1.8%)
Drive smoking, untuned car	9 (1.5%)	4 (0.7%)	13 (1.1%)
Improperly dispose of oil, petrol	11 (1.8%)	-	11 (0.9%)
Use insecticides	7 (1.2%)	3 (0.5%)	10 (0.8%)
Buy plastic, cans, bottles, aerosols	4 (0.7%)	4 (0.7%)	8 (0.7%)
Burn land, bush to clear for planting	3 (0.5%)	4 (0.7%)	7 (0.6%)
Throw plastic (e.g. bags in the garbage)	2 (0.3%)	3 (0.5%)	5 (0.4%)
I don't care enough	-	4 (0.7%)	4 (0.3%)
Use leaded gas	3 (0.5%)	1 (0.2%)	4 (0.3%)
Use chemicals	2 (0.3%)	2 (0.3%)	4 (0.3%)
Ignore wrongdoing	2 (0.3%)	1 (0.2%)	3 (0.3%)
Urinate, spit on the street	1 (0.2%)	2 (0.3%)	3 (0.3%)
Drive too much	1 (0.2%)	1 (0.2%)	2 (0.2%)
Improperly dispose of chemicals	1 (0.2%)	1 (0.2%)	2 (0.2%)
Use a soak-away pit	2 (0.3%)	-	2 (0.2%)
Waste water	1 (0.2%)	-	1 (0.1%)
Shoot lobsters in closed season	1 (0.2%)	-	1 (0.1%)
Set off dynamite under water	1 (0.2%)	-	1 (0.1%)
Catch immature fish	-	1 (0.2%)	1 (0.1%)
Don't have a toilet pit at home	1 (0.2%)	-	1 (0.1%)
Don't clean up my area	-	1 (0.2%)	1 (0.1%)
Use too much bleach	-	1 (0.2%)	1 (0.1%)
Use non-biodegradable products	1 (0.2%)	-	1 (0.1%)
Use detergents with phosphates	-	1 (0.2%)	1 (0.1%)
Bury garbage	-	1 (0.2%)	1 (0.1%)
Light fire when breeze is high	-	1 (0.2%)	1 (0.1%)
Package garbage in plastic bag for disposal	-	1 (0.2%)	1 (0.1%)
Play music loud	-	1 (0.2%)	1 (0.1%)
SUB-TOTAL	179 (30.0%)	154 (25.9%)	333 (27.9%)
NR	418 (70.0%)	441 (74.1%)	859 (72.1%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

managerial group (52%), the personal services group (44%) and the clerical/technical group (41%). In 1991, the personal services group (79%) and the domestics (70%) expressed the strongest views against paying more for environmentally friendly products, while in 1998, that honour went to the domestics (79%) and the unskilled manual labourers (67%).

In both 1991 and 1998 there is a noticeable relationship between willingness to pay more for environmentally friendly products and the Individual Activity Index, which was more

pronounced in 1998. Of those found to be active, 73% in 1991 and 85% in 1998 were willing to pay more, with correspondingly lower figures for Middle and inactive persons.

Despite what might be expected, in 1991, environmental awareness as measured by the Jamaica and World indices described above does not seem strongly correlated with willingness to pay more for environmentally friendly products. The 1998 data, however, suggest a strong correlation. Nevertheless, large numbers of persons judged to be aware are not willing to pay more for environmentally friendly products. Clearly, people's behaviour is not always linked to the information they possess, and more is required for knowledge to be translated into action.

6.7 Harming the Environment

The respondents were asked to name one thing they do currently or have done recently which they think could harm the Jamaican environment (this question was not asked in 1991). Table 6.16 summarizes the answers which were received.

About 28% of the sample (328 persons) confessed to committing an action presently or recently which they think harmed the environment; some actions admitted to were not actually inappropriate environmental actions, such as smoking cigarettes, and disposal of plastic in domestic garbage.

The majority of the appropriately named harmful actions, (181 – 62%) had to do with the improper disposal of personal and domestic garbage. Other actions included improper disposal of chemicals and waste oil, deforestation, driving an untuned motor vehicle, and the purchase of too many non-biodegradable items.

It is quite likely that many more respondents had actions they could have named as inappropriate, but did not do so either because of shame, environmental ignorance, unconcern, or lack of self-examination. Part of an environmental education/awareness programme should be to sensitize persons as to the impact their own actions have on the environment. The data suggest that such a programme is needed in Jamaica.

6.8 Willingness to Change Lifestyle

	1991	1998
Yes	699 (61.7%)	672 (56.4%)
Probably	188 (16.6%)	351 (29.4%)
No	85 (7.5%)	81 (6.8%)
Don't Know	71 (6.3%)	78 (6.5%)
NR	90 (7.9%)	10 (0.8%)
TOTAL	1,133 (100%)	1,192 (100%)

In 1991, about 62% of the sample said that they were willing to change to a more environmentally-friendly lifestyle (see Table 6.18); 17% said that they might; 8% flatly said that they were unwilling to change. By 1998, the numbers willing to change had decreased to 56%, but those who “probably” would, increased to 30%; the numbers who refused were about the same as in 1991. Overall this is indeed a positive sign, and augurs well for the success of the environmental movement in Jamaica, as nowhere will the condition of the environment improve unless there is a change of personal culture.

The respondents were asked specific questions about what in their lifestyle they would be prepared to change (see Table 6.18). In every case more than 50% said they were willing to act, and 94% said that if given seedlings, they would plant them and care for them. Those who said they would give time were asked how much annually: they promised 3,348 hours between them at an average of 5.35 hours each (see Table 6.19). Those who said they would give money promised J\$172,457 between them annually at an average of J\$276.82 each (see Table 6.20). These figures appear low. The environmental effort will not prosper unless persons are prepared to give much more time and money.

**TABLE 6.18:
ACTIONS WHICH RESPONDENT IS PREPARED TO TAKE TO PROTECT THE
ENVIRONMENT, JAMAICA, 1998**

ACTION	MALE	FEMALE	TOTAL
I would give money to environmental action	331 (55.4%)	292 (49.1%)	623 (52.3%)
I would give time to environmental action	324 (54.3%)	301 (50.6%)	625 (52.4%)
I would use unleaded gas even if more expensive	407 (68.2%)	324 (54.5%)	731 (61.3%)
I would join an Environmental Organization	394 (66.0%)	403 (67.7%)	797 (66.9%)
I would do community tree planting	528 (88.4%)	506 (85.0%)	1,034 (86.7%)
I would recycle if there was such a programme	532 (89.1%)	524 (88.1%)	1,056 (88.6%)
If given seedlings I would plant, care for them	570 (95.5%)	560 (94.1%)	1,130 (94.8%)
TOTAL	597 (50.1%)	595 (49.9%)	1,192 (100%)

**TABLE 6.19:
TIME RESPONDENT WOULD CONTRIBUTE TO WORK FOR THE
ENVIRONMENT, JAMAICA 1998**

HOURS PER YEAR	MALE	FEMALE	TOTAL
1-10	298 (49.9%)	271 (45.5%)	569 (47.7%)
11-100	25 (4.2%)	29 (4.9%)	54 (4.5%)
101-1000	1 (0.2%)	1 (0.2%)	2 (0.2%)
1000+	-	-	-
SUB-TOTAL	324 (54.3%)	301 (50.6%)	625 (52.4%)
NR	273 (45.7%)	294 (49.4%)	567 (47.6%)
TOTAL	597 (50.1%)	595 (49.9%)	1,192 (100%)

**TABLE 6.20:
MONEY RESPONDENT WOULD CONTRIBUTE TO WORK FOR THE
ENVIRONMENT, JAMAICA 1998**

AMOUNT PER YEAR	MALE	FEMALE	TOTAL	AGGREGATE
J\$ 1 – J\$10	15 (2.5%)	23 (23.5%)	38 (3.2%)	J\$ 292
J\$11 – J100	172 (28.8%)	140 (6.7%)	312 (26.2%)	J\$ 25,265
J\$100 – J\$1,000	139 (23.3%)	122 (20.5%)	261 (21.9%)	J\$ 92,400
J\$1,000+	5 (0.8%)	7 (1.2%)	12 (1.0%)	J\$ 54,500
SUB-TOTAL	331 (55.4%)	292 (49.1%)	623 (52.3%)	J\$172,457
NR	266 (44.6%)	303 (50.9%)	569 (47.7%)	
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)	J\$172,457

CHAPTER 7: SPECIAL TOPICS: AIR POLLUTION, WATER POLLUTION, GARBAGE DISPOSAL, AND THE BIG CHOICE

Most of the questions in the 1998 survey are intentionally identical to those in the 1991 survey so the results of the two surveys can be compared. However some new questions testing the respondents knowledge and attitudes were introduced. These were to do with air pollution in general and motor vehicle exhaust in particular; the pollution of fresh water resources; and the disposal of household garbage. The respondents were also asked to state how they would act in a particular defined scenario.

7.1 Air Pollution

In the 1991 survey, air pollution emerged as an important environmental concern, and this was reinforced in 1998. To test the detailed knowledge of the respondents, they were asked to state the degree to which certain factors contribute to air pollution. To get an idea of the extent to which respondents were guessing, some “red herring” questions were included. The order in which the factors were asked is left intact.

Table 7.1: The Degree to which Certain Factors contribute to Air Pollution, Jamaica, 1998				
	Major	Minor	Not at All	Don't Know
Auto Emissions	839 (70.4%)	97 (8.1%)	19 (1.6%)	237 (19.9%)
Burning Rubbish	677 (56.8%)	369 (31.0%)	51 (4.3%)	95 (8.0%)
Aerial Spraying	531 (44.5%)	252 (21.1%)	127 (10.7%)	282 (23.7%)
Fishing Industry	162 (13.6%)	366 (30.7%)	395 (33.1%)	269 (22.6%)
Industrial Plants	806 (67.6%)	142 (11.9%)	44 (3.7%)	200 (16.8%)
Power Generating Plants	481 (40.4%)	312 (26.2%)	131 (11.0%)	268 (22.4%)
Citrus Farms	120 (10.1%)	272 (22.8%)	54 (45.4%)	259 (21.7%)
Quarrying	477 (40.0%)	399 (33.5%)	87 (7.3%)	229 (19.3%)
Sewage	522 (43.8%)	271 (22.7%)	127 (10.7%)	272 (22.8%)
Cane Burning	614 (51.5%)	359 (30.1%)	55 (4.6%)	164 (13.7%)

The two “red herring” factors were, of course, the fishing industry and citrus farms, and although these received the lowest ratings for “major”, they each attracted over 10% support. With major and minor combined, they received 44.3% and 33.0% respectively; at the same time 22.5% and 21.7% respectively said that they didn't know. Still, 33.2% and 45.4% got the correct answer, but one could conjecture that somewhere between one-third and one-half of the respondents were guessing.

As may be seen from the data, although many of the respondents are concerned about air pollution, they are not familiar with the details, which should be remedied by an appropriate environmental education programme.

Some respondents are concerned about the maleffects of motor vehicle exhaust, and to determine their detailed knowledge, the respondents were asked which of the following were components of motor vehicle exhaust, and if so, to what extent.

Table 7.2: Whether the Respondent is of the Opinion that the following are Components of Motor Vehicle Exhaust, Jamaica, 1998					
	Major	Minor	Not at All	Don't Know	Correct
Small Particles	197 (16.5%)	298 (25.0%)	49 (4.1%)	648 (54.4%)	<i>Major</i>
Carbon Monoxide	436 (36.6%)	108 (9.1%)	27 (2.3%)	621 (52.1%)	<i>Major</i>
Carbon Dioxide	475 (39.8%)	95 (8.0%)	52 (4.4%)	570 (47.8%)	<i>Major</i>
Iron Oxides	151 (12.7%)	121 (10.2%)	58 (4.9%)	862 (72.4%)	<i>Not at all</i>
Nitrogen Oxides	136 (11.4%)	143 (12.0%)	65 (5.5%)	848 (71.2%)	<i>Major</i>
Oxygen	85 (7.1%)	128 (10.7%)	449 (37.7%)	530 (44.5%)	<i>Not at all</i>
Lead	425 (35.7%)	159 (13.3%)	86 (7.2%)	522 (43.8%)	<i>Major</i> ²⁴
Arsenic	95 (8.0%)	93 (7.8%)	172 (14.4%)	834 (69.8%)	<i>Not at all</i>
Tin	109 (9.1%)	143 (12.0%)	161 (13.5%)	779 (65.4%)	<i>Not at all</i>
Sulphur Oxides	211 (17.7%)	122 (10.2%)	59 (4.9%)	800 (67.1%)	<i>Major</i>

Again, red herrings were included; in fact, four of the substances named were not in motor vehicle exhaust at all, viz: iron oxides, oxygen, arsenic and tin. Most of the respondents who claimed to know, stated that “oxygen” was not present; but almost half the sample said they didn’t know. On all the other issues, the sample was not very informed. Possibly most respondents (and most Jamaicans) know that automobile exhaust is bad, but they don’t know the details. How much detail about these matters is satisfactory for general knowledge needs to be discussed and agreed upon by those concerned with the delivery of environmental awareness.

7.2 Water Pollution

Water pollution and water shortages were major concerns of the sample, and the respondents were asked the degree to which the following factors negatively affect the quantity or quality of fresh water. All the factors had an impact upon the quality or quantity of fresh water, some more or less than others. Littering, which in the opinion of this author, had the least impact, ranked third in the list of importance for the sample.

Table 7.3: The Degree to which Certain Factors affect Negatively the Quality or Quantity of Fresh Water, Jamaica, 1998				
	Major	Minor	Not at All	Don't Know
Fish Farming	209 (17.5%)	354 (29.7%)	333 (27.9%)	296 (24.8%)
Pesticides	555 (46.6%)	343 (28.8%)	107 (9.0%)	186 (15.6%)
Deforestation	788 (66.1%)	172 (14.4%)	46 (3.9%)	186 (15.6%)
Lack of Rainfall	1,000 (83.9%)	129 (10.8%)	12 (1.0%)	51 (4.3%)
Industrial Effluent	699 (58.6%)	164 (13.8%)	68 (5.7%)	261 (21.9%)
Littering	865 (72.6%)	178 (14.9%)	52 (4.4%)	97 (8.2%)
Housing Schemes	341 (28.6%)	380 (31.9%)	317 (26.6%)	154 (12.9%)
Pit Latrines	423 (35.5%)	426 (35.7%)	175 (14.7%)	168 (14.1%)
Population Increase	554 (46.5%)	323 (27.1%)	193 (16.2%)	122 (10.2%)

24 Lead, of course, is not present in unleaded fuel, which at the time of the survey, was not the most common type used in Jamaica.

Sewage Treatment Plants	565 (47.4%)	256 (21.5%)	124 (10.4%)	247 (20.7%)
Soak-Away Pits	449 (37.7%)	381 (32.0%)	179 (15.0%)	183 (15.3%)
Lack of Storage Capacity	988 (82.9%)	104 (8.7%)	25 (2.1%)	75 (6.3%)

Again the data suggests that although Jamaicans are aware that water pollution is a problem, they do not know the details. The fact that fish farming, housing schemes, pit latrines and soak-away pits received the lowest scores, suggests where an environmental education programme might focus.

7.3 The Disposal of Domestic Garbage where there is no Collection

In many parts of rural Jamaica, there is no collection of solid waste by the municipal authorities, and householders are left to disposal of their domestic garbage using their own discretion. To try to determine the attitudes to domestic garbage disposal, the respondents were asked the following question:

In communities where household garbage is not collected, which of the following methods would be environmentally appropriate for residents to use to dispose of their household garbage? Choose all that apply.

The following answers were obtained:

Table 7.4: The Propriety of Disposal Methods for Domestic Garbage, Jamaica, 1998			
Method	Male	Female	Total
Burn the domestic garbage	304 (50.4%)	342 (57.5%)	646 (54.2%)
Bury the domestic garbage	401 (67.2%)	385 (64.7%)	786 (65.9%)
Throw it in a gully	11 (1.8%)	10 (1.7%)	21 (1.8%)
Throw it in an open lot	10 (1.7%)	14 (2.4%)	24 (2.0%)
None of the above	71 (11.9%)	67 (11.3%)	138 (11.6%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

Burying and burning were the two most popular options, supported by about half and two-thirds respectively; but in real-life, dumping in gullies and open lots is not uncommon. The responses indicate the widespread awareness that dumping is not recommended; and the fact that 12% did not like any of the options offered is a good sign.

7.4 The Choice between Economic Development and the Environment

Often, environmental regulators are faced with the choice of approving projects which they know will cause environmental damage, or rejecting them and the employment and other benefits to the economy which they might bring. How popular would be a decision to reject such projects? In an effort to test public opinion on this matter, the following question was asked:

Imagine this situation: Investors wish to establish a factory in an area which will cause damage to a nearby mangrove wetland, which is environmentally significant. There are no ways to reduce the environment damage. There are few economic opportunities in the area, and the factory will create about 50 jobs for local people. If you had the power to approve the project or turn it down, which of the following decisions would you take:

[] immediately approve the project because of the jobs which would be created

[] seek alternative sites which would be less environmentally damaging; if none could be found, I would approve the project;

[] seek alternative sites which would be less environmentally damaging; if none could be found, I would reject the project

Table 7.5: Mangroves or Fifty Jobs: A Choice between the Natural Environment and Economic Development, Jamaica, 1998			
Choice	Male	Female	Total
Immediately Approve	146 (24.5%)	170 (28.6%)	316 (26.5%)
Approve if no other Option	163 (27.3%)	147 (24.7%)	310 (26.0%)
Reject if no other Option	286 (47.9%)	264 (44.4%)	550 (46.1%)
NR	2 (0.3%)	14 (2.4%)	16 (1.3%)
TOTAL	597 (50.1%)	595 (49.9%)	1192 (100%)

About one-quarter of the sample said they would immediately approve the project; another quarter said they would approve it if no other suitable site could be found. Just less than half of the sample said they would reject the project if there was no alternative site. This answer indicates a significant level of commitment to the environment, where about half of the Jamaican population is prepared to forego economic benefits – including jobs – for the sake of mangrove wetlands even in economically difficult times. [Those who are in the position to take these decisions in real life need to take note of the public sentiment expressed in these data].

Who are these people willing to forego economic benefits for the sake of environmental protection? Are they mostly the well-to-do, or are they spread across the strata of society?

Slightly more men than women were in favour of rejection if no alternative, and more women would have immediately approved the project without examining the environmental consequences.

The age group 65+ years old was by far the most willing to approve the project asking no environmental questions. Those 45-54 were the most willing to reject, even if there is no alternative; those 55-64 were the least willing. Indeed, those born after 1945 are noticeably more environmentally committed than those born before.

Those with no schooling or with only primary education were most willing to accept the project out-of-hand. The vast majority of those with tertiary education were prepared to reject the project even if there was no alternative. Education remains the strongest explanatory variable for environmental awareness and commitment.

Interestingly, fewer residents of the KMA were willing to accept the project out-of-hand, wanting some environmental investigation. But it was those in the rural towns who were most willing to reject, even if no alternative was apparent. St. James (73.2%) and Portland (64.1%) were the parishes most willing to reject, while no-one in Portland was willing to accept without an environmental study. Residents of St. Elizabeth and St. Ann (40.0%) were the strongest believers that the project should be accepted without question.

Since education is correlated with occupation, it is not surprising that members of the occupational groups with the higher status were those most environmentally aware. Most of those not in the labour force – who could be housewives and the chronically unemployed – were also prepared to reject even if no alternative were available.

The various awareness and activity indices were correlated with the expected opinions. The strongest consonance was with the individual activity index where 94% of those who were active say they would reject even if no alternative could be found.

Table 7.6: Mangroves or Fifty Jobs: A Choice between the Natural Environment and Economic Development by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1998				
		Immediately Approve	Approve, even if no Alternative	Reject if no Alternative
Gender	Male	24.5%	27.5%	48.1%
	Female	29.3%	25.3%	45.4%
	Total	26.8%	26.4%	46.8%
Age	18-24	27.9%	23.5%	48.6%
	25-34	24.8%	29.4%	45.8%
	34-44	20.9%	30.0%	49.1%
	45-54	22.8%	23.6%	53.7%
	55-64	31.0%	31.0%	38.1%
	65+	43.0%	13.2%	43.9%
	Total	26.8%	26.2%	46.9%
Highest Education Attained	No Schooling	55.6%	33.3%	11.1%
	Prim./All-Age	39.1%	25.9%	35.1%
	Some NewSec.	30.6%	35.5%	33.9%
	Some T/C/G	13.8%	28.4%	57.8%
	Done T/C/G	22.6%	23.5%	53.9%
	Tch/Nrse Col	4.2%	22.5%	73.2%
	Some U/CAST	2.1%	6.3%	91.7%
	Completed U/CAST		26.5%	73.5%
	Post-Grad		10.0%	90.0%
Total	26.6%	26.6%	46.8%	
Rural-Urban Status	KMA	24.8%	31.0%	44.2%
	Oth Tns	27.9%	12.0%	60.1%
	Rural	27.8%	29.2%	43.0%
	Total	26.8%	26.4%	46.8%
Occupational²⁵ Category	Prof/Man	18.7%	21.3%	60.0%
	Semi-Prof	12.0%	24.8%	63.2%
	Cler/Tech	26.3%	27.5%	46.3%
	Pers Serv	11.9%	23.8%	64.3%
	Man Skill	27.2%	29.2%	43.6%
	Man Unsk	24.4%	34.4%	41.1%
	Self-Empl	34.9%	20.9%	44.2%
	Domestic	44.4%	22.2%	33.3%
	NILF	24.6%	16.4%	59.0%
	Total	22.7%	25.2%	52.1%
Awareness Index Jamaican Environment	Aware	12.6%	29.4%	58.0%
	Middle	31.2%	26.4%	42.4%
	Unaware	51.1%	19.2%	29.7%
	Total	26.9%	26.2%	46.9%
Awareness Index	Aware	12.9%	26.7%	60.4%
	Middle	30.5%	34.6%	35.0%

25 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Not in Labour Force. Please refer to Section 2.6 for definitions of these categories.

World Environment	Unaware Total	51.4% 26.8%	19.5% 26.4%	29.1% 46.8%
Individual Activity Index	Active	2.9%	2.9%	94.1%
	Middle	7.2%	26.4%	66.4%
	Inactive	30.2%	27.2%	42.8%
	Total	26.8%	26.4%	46.8%

CHAPTER 8: PUBLIC EDUCATION AND THE MEDIA

If any sort of public education programme is contemplated for Jamaicans, then the appropriate medium (or media) to be used needs to be discussed. The survey examined the habits of the sample with respect to the print media, as well as radio and television.

8.1 The Print Media

The respondents were asked whether they had read a newspaper at all in the past week. In 1991, only 36% reported that they had compared to 46% in 1998. Jamaica is not a very literary society. Although official government statistics report that only 18.0% of males and 23.0% of females are functionally illiterate²⁶, many including this author believe that the real illiteracy rate is much higher. An indicator of this is that in a population of 2.5 million people, only 397,000 were found to read Jamaica's leading daily newspaper (the **Gleaner**) on weekdays and 451,000 on Sundays²⁷. Many people do not get any of their information from reading, and so this medium is not to be solely relied on for dispensing environmental information.

TABLE 8.1: READ A NEWSPAPER IN THE LAST WEEK, JAMAICA, 1991, 1998		
	1991	1998
Yes	409 (36.1%)	548 (46.0%)
No	724 (63.9%)	644 (54.0%)
Total	1,133 (100%)	1,192 (100%)

The reading public is not spread evenly across the island. In 1991 more than half of the respondents in the Kingston Metropolitan Area (58%) had read a newspaper during the past week compared with 45% in "other towns" and 23% in the rural areas. The situation in 1998 was that readership in the KMA had increased to 67%, and readership in both rural towns and deep rural areas had equalized at about 37%. The parishes with the highest readership were Portland (83%), St. Andrew (69%), St. Mary (63%) and St. Catherine (61%), while those with the lowest were (Westmoreland (22%), Manchester (26%) and Clarendon (29%). Bearing in mind that many of the activities which impact directly on the environment (like agriculture, tree-cutting and fishing) take place in rural areas, newspaper articles or advertising would be largely ineffective in reaching this target population.

In 1991, neither gender nor age were correlated with newspaper reading, but in 1998 more males read newspapers than females by a margin of seven percentage points. In 1998, the age group which read the most 45-54 years, and the worst was 65 years and over. In both 1991 and 1998 there appeared to be a relationship with schooling, occupation and income; schooling is considered to be the fundamental variable, the other two being largely derived from it.

The question of whether newspaper reading during the past week was a good explanatory variable for the levels of environmental awareness and activism already observed was explored. The assumption made is that the behaviour over the past week is typical of past behaviour. In 1998 some relationship was observed between newspaper reading and the Awareness Indices for the local and the world environment, since about 50% of those found to be aware read the

²⁶ STATIN (1995) Table 5.35 page 167.

²⁷ 1993 Jamaica Media Survey, Market Research Services, Kingston, 1993.

newspaper, while about 80% who were found to be unaware did not. The relationship was not as strong in 1998, with the read/not read values for aware/unaware persons being closer.

**TABLE 8.2:
READ A NEWSPAPER IN THE LAST WEEK
by Gender, Age, Highest Education, Urban-Rural Status, Occupational Category,
the Awareness Indices and the Activity Index, Jamaica, 1991, 1998**

		1991 Data		1998 Data	
		Read	Not Read	Read	Not Read
Gender	Male	<i>n.a.</i>	<i>n.a.</i>	47.8%	52.2%
	Female	<i>n.a.</i>	<i>n.a.</i>	43.2%	56.8%
	Total	36.1%	63.9%	46.0%	54.0%
Age	18-24	<i>n.a.</i>	<i>n.a.</i>	48.0%	52.0%
	25-34	<i>n.a.</i>	<i>n.a.</i>	47.4%	52.6%
	34-44	<i>n.a.</i>	<i>n.a.</i>	49.4%	50.6%
	45-54	<i>n.a.</i>	<i>n.a.</i>	54.4%	45.6%
	55-64	<i>n.a.</i>	<i>n.a.</i>	40.0%	60.0%
	65+	<i>n.a.</i>	<i>n.a.</i>	27.4%	72.6%
	Total	36.1%	63.9%	46.0%	54.0%
Highest Education Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	10.0%	90.0%
	Prim./All-Age	19.8%	80.2%	26.9%	73.1%
	Some NewSec.	28.2%	71.8%	39.2%	60.8%
	Some T/C/G	50.6%	49.4%	60.6%	39.4%
	Done T/C/G	65.4%	34.6%	56.7%	43.3%
	Tch/Nrse Col	77.1%	22.9%	81.7%	18.3%
	Some U/CAST	72.4%	27.6%	77.6%	22.4%
	Completed U/CAST	94.3%	5.7%	88.2%	11.8%
	Post-Grad	100%	0.0%	90.0%	10.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	37.5%	62.5%
Total	36.1%	63.9%	46.0%	64.0%	
Rural-Urban Status	KMA	58%	42%	65.5%	34.5%
	Oth Tns	45%	55%	36.7%	63.3%
	Rural	23%	77%	36.0%	64.0%
	Total	36.1%	63.9%	46.0%	64.0%
Occupational²⁸ Category	Prof/Man	<i>n.a.</i>	<i>n.a.</i>	63.9%	36.1%
	Semi-Prof	<i>n.a.</i>	<i>n.a.</i>	66.9%	33.1%
	Cler/Tech	<i>n.a.</i>	<i>n.a.</i>	46.9%	53.1%
	Pers Serv	<i>n.a.</i>	<i>n.a.</i>	70.3%	29.7%
	Man Skill	<i>n.a.</i>	<i>n.a.</i>	29.1%	70.9%
	Man Unsk	<i>n.a.</i>	<i>n.a.</i>	40.0%	60.0%
	Self-Empl	<i>n.a.</i>	<i>n.a.</i>	39.5%	60.5%
	Domestic	<i>n.a.</i>	<i>n.a.</i>	27.6%	72.4%
	Unemploy	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
	NILF	<i>n.a.</i>	<i>n.a.</i>	54.0%	46.0%
Total	36.1%	63.9%	46.0%	54.0%	
Awareness Index Jamaican Environment	Aware	49.8%	50.2%	49.0%	51.0%
	Middle	38.6%	61.4%	49.3%	50.7%
	Unaware	19.9%	80.1%	34.7%	65.3%
	Total	36.1%	63.9%	45.8%	54.2%
Awareness Index World Environment	Aware	51.4%	48.6%	51.4%	48.6%
	Middle	38.6%	61.4%	52.0%	48.0%
	Unaware	18.7%	81.3%	31.0%	69.0%
	Total	36.1%	63.9%	46.0%	54.0%
Individual Activity	Active	94.4%	5.6%	67.6%	32.4%
	Middle	76.9%	23.1%	50.8%	49.2%

28 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

Index	Inactive	32.0%	68.0%	44.7%	55.3%
	Total	36.1%	63.9%	46.0%	54.0%

In both 1991 and 1998, lack of awareness is more closely related with not reading newspapers than is awareness with reading them. Either the environmental content of Jamaican newspapers is not reaching enough of the population to make a bigger difference; or the Jamaican print media has not yet risen to the challenge of providing sufficient environmental information to the reading public.

A stronger relationship was found to exist between newspaper reading and individual activity, although the hypothesis that activism causes individuals to read newspapers is just as valid as the reverse. In 1991, of those rated “active” 94% read newspapers, while of those rated “inactive” 68% did not read a newspaper in the week preceding the survey. In 1998, the relationship was not as strong; of those rated “active” 68% read newspapers, while of those rated “inactive” 54% did not read a newspaper in the week preceding the survey. It is a fair conclusion that any increased environmental awareness over the period did not come from reading newspapers.

8.2 Television

The respondents were asked whether they had watched television at all during the past week; in 1991, 69% reported that they had, and this had increased to 82% in 1998. Television is clearly a better medium for communication with (and therefore for education of) the Jamaican population than the print media.

TABLE 8.3: WATCHED TELEVISION DURING THE PAST WEEK, JAMAICA, 1991, 1998		
	1991	1998
Yes	779 (68.8%)	974 (81.7%)
No	354 (31.2%)	218 (18.3%)
Total	1,133 (100%)	1,192 (100%)

Some persons watch more television than others, and those who watch for longer hours may be expected to pick up more information than those who watch for less. The respondents were asked whether they had watched television for more than five hours during the past week; in 1991, 41% reported that they had compared with 61% in 1998. Even with this narrowing of the target group, television reaches substantially more people than the print media.

TABLE 8.4: WATCHED TELEVISION FOR MORE THAN FIVE HOURS DURING THE PAST WEEK, JAMAICA, 1991, 1998		
	1991	1998
Yes	462 (40.8%)	726 (60.9%)
No	671 (59.2%)	466 (39.0%)
Total	1,133 (100%)	1,192 (100%)

In 1991 the viewing public (five hours or more) was spread almost evenly across the island at a relatively low level; about the same percentage of respondents in the Kingston Metropolitan Area watched television for more than five hours in the week preceding the survey as respondents in “other towns” (43%), compared with 39% of rural respondents. By 1998, the increase in viewership had increased, but not evenly. More residents in rural towns watched

television for more than five hours than anywhere else (77%), and the proportion of KMA and rural residents seemed to be converging at about 62%. By parish, at the high end all (100%) of St. Mary residents, 95% of Portlanders and 75% of St. Catherine folk said they watched for five

TABLE 8.5: WATCHED TELEVISION FOR MORE THAN FIVE HOURS LAST WEEK By Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998					
		1991 Data		1998 Data	
		Watched	Not Watch	Watched	Not Watch
Gender	Male	<i>n.a.</i>	<i>n.a.</i>	57.3%	42.7%
	Female	<i>n.a.</i>	<i>n.a.</i>	64.5%	35.5%
	Total	40.8%	59.2%	60.9%	39.1%
Age	18-24	42.1%	57.9%	75.8%	24.2%
	25-34	44.4%	55.6%	66.3%	33.7%
	34-44	46.0%	54.0%	62.0%	38.0%
	45-54	36.0%	64.0%	59.2%	40.8%
	55-64	36.0%	64.0%	43.5%	56.4%
	65+	26.8%	73.2%	29.9%	70.1%
	Total	40.8%	59.2%	60.9%	39.1%
Highest Education Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	50.0%	50.0%
	Prim./All-Age	31.6%	68.4%	42.5%	57.5%
	Some NewSec.	43.3%	56.7%	62.0%	38.0%
	Some T/C/G	50.6%	49.4%	69.7%	30.3%
	Done T/C/G	54.8%	45.2%	76.2%	23.8%
	Tch/Nrse Col	51.4%	48.6%	71.8%	28.2%
	Some U/CAST	31.0%	69.0%	85.7%	14.3%
	Completed U/CAST	30.3%	69.7%	76.5%	23.5%
	Post-Grad	57.1%	42.9%	80.0%	20.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	66.7%	33.3%
Total	40.8%	59.2%	60.9%	39.1%	
Rural-Urban Status	KMA	43%	57%	56.7%	43.3%
	Oth Tns	43%	57%	73.8%	26.2%
	Rural	39%	61%	58.4%	41.6%
	Total	40.8%	59.2%	60.9%	39.1%
Occupational²⁹ Category	Prof/Man	<i>n.a.</i>	<i>n.a.</i>	77.3%	22.7%
	Semi-Prof	<i>n.a.</i>	<i>n.a.</i>	71.2%	28.8%
	Cler/Tech	<i>n.a.</i>	<i>n.a.</i>	63.0%	37.0%
	Pers Serv	<i>n.a.</i>	<i>n.a.</i>	71.9%	28.1%
	Man Skill	<i>n.a.</i>	<i>n.a.</i>	48.8%	51.2%
	Man Unsk	<i>n.a.</i>	<i>n.a.</i>	56.7%	43.3%
	Self-Empl	<i>n.a.</i>	<i>n.a.</i>	62.8%	37.2%
	Domestic	<i>n.a.</i>	<i>n.a.</i>	48.3%	51.7%
	Unemploy	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
	NILF	<i>n.a.</i>	<i>n.a.</i>	61.3%	38.7%
	NR	<i>n.a.</i>	<i>n.a.</i>	59.1%	40.9%
	Total	40.8%	59.2%	60.9%	39.1%
Awareness Index Jamaican Environment	Aware	48.6%	51.4%	64.2%	35.7%
	Middle	44.7%	55.3%	64.7%	35.3%
	Unaware	30.5%	69.5%	49.6%	50.4%
	Total	40.8%	59.2%	60.9%	39.1%
Awareness Index World Environment	Aware	52.1%	47.9%	65.2%	34.8%
	Middle	42.2%	57.8%	63.7%	36.3%
	Unaware	28.7%	71.3%	50.5%	49.5%
	Total	40.8%	59.2%	60.9%	39.1%

29 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

Individual Activity Index	Active	72.2%	27.8%	79.4%	20.6%
	Middle	51.3%	48.7%	71.4%	28.6%
	Inactive	39.8%	60.2%	59.0%	41.0%
	Total	40.8%	59.2%	60.9%	39.1%

hours or more, while on the low end, only 48% of Westmorelanders, 56% of Manchesterians and 57% of Clarendonians said the same. Television has a wider coverage of the island than print, but at best reaches about three-fifths of the population.

In 1991 there was no real difference between the genders in terms of television-watching, but there was an age difference; the young were more inclined to watch television than the old, although for no age group did the figure attain 50%. By 1998 more females (by six percentage points) were television watchers, and the age gradient was marked; only among those over 55 years old did less than 50% watch television for more than five hours in the week before the survey; and only among the youngest persons in the sample did the figure top 70%.

In 1991 there was no obvious relationship between television watching and highest education received, but by 1998 there was a clear gradient. This may be a surrogate for income, where people with higher incomes are able to buy television sets and have the leisure to watch for longer hours.

Neither in 1991 or 1998 was there any obvious relationship between occupation and television-watching; in 1998 all categories watched more than 50% and about half were over 70%.

The question of whether television watching over the past week was a good explanatory variable for the levels of environmental awareness and activism already observed was explored. In both 1991 and 1998 there was clearly a relationship for awareness of local and global environmental issues. In 1998 awareness was greater, and viewership was greater; but viewership among the unaware increased almost as much as viewership among the aware, and so watching television is unlikely to be the cause of increased awareness. Either the environmental content of Jamaican television is not reaching enough of the population to make a bigger difference; or Jamaican television has not yet risen to the challenge of providing sufficient environmental information to the watching public.

The relationship between television watching (5+ hours) and environmental activism is weaker than for awareness. Television-watching increased more among the inactive than among the active. It is going to be difficult to support a conclusion that for the broad spread of Jamaicans, television is an important source of environmental information and awareness, and stimulus for activism.

The respondents were not asked whether they watched cable or broadcast television, or with which channel they spent the most time. This sort of information is collected and analyzed annually by the media themselves and the advertising industry, and is widely published. Since the popularity of cable television is increasing in Jamaica (with mostly foreign programming sourced by satellite), there is a down-side: it is not easy for Jamaican environmental interests to use this medium for education purposes. The up-side is that several of these foreign cable channels carry environmental programming which does create and strengthen some awareness. There will always be a constituency which will gain information from cable and/or broadcast television, and the above data do not support a conclusion that environmental features on television should not be supported.

8.3 Radio

The respondents were asked whether they had listened to the radio at all during the past week. In 1991, as many as 88% reported that they had, while in 1998 the figure was 90%. Radio has long been recognized as the best medium for communication and education in Jamaica. The annual all-media surveys support the data obtained by this exercise.

TABLE 8.6: LISTENED TO THE RADIO DURING THE PAST WEEK, JAMAICA, 1991, 1998		
	1991	1998
Yes	991 (87.5%)	1,075 (90.2%)
No	142 (12.5%)	117 (9.9%)
Total	1,133 (100%)	1,192 (100%)

Some persons listen to the radio for longer periods than others; those who listen for longer hours may be expected to pick up more information than those who listen for less. The respondents were asked whether they had listened to the radio for more than five hours during the past week; in 1991, 62% reported that they had, compared with 68% in 1998. The effective listening public is still significantly higher than the effective watching public.

TABLE 8.7: LISTENED TO THE RADIO FOR MORE THAN FIVE HOURS DURING THE PAST WEEK, JAMAICA, 1991, 1998		
	1991	1998
Yes	702 (62.0%)	811 (68.0%)
No	431 (38.0%)	381 (32.0%)
TOTAL	1,133 (100%)	1,192 (100%)

In 1991 the listening public (five hours or more) was spread almost evenly; about the same percentage of respondents in the Kingston Metropolitan Area listened to the radio for more than five hours in the week preceding the survey (58%) as respondents in “other towns” (60%) and the “rural” areas (65%). By 1998 the proportion of listeners in the KMA was about the same (56%) while those in rural towns (85%) and rural areas (79%) increased substantially. Radio has the best coverage of the island, and remains the best medium to reach the rural population.

In both 1991 and 1998 there was no significant difference between the genders in terms of radio-listening. In 1991 there was an age difference, which appeared to have weakened by 1998 as radio listenership increased to quite high levels. It is interesting that the age trends have reversed; in 1991 more of the younger segments of the sample (18-44 years) listened to the radio for longer hours than the older ones and the 25-34 age group were the largest listeners (73%); while in 1998 the older segments in the sample were bigger listeners, while the 25-34 age group had the fewest listeners (69%).

The data suggests that in 1991 there was a weak positive relationship between education and radio listenership (5+ hours), but in 1998 the relationship had reversed to become a noticeable negative relationship; the more formal education a person had, the less likely they were to have listened to the radio for more than 5 hours during the past week. This provides the advice that radio is a good medium to reach those at the lower end of the market.

The question of whether listening to the radio during the past week was a good explanatory variable for the levels of environmental awareness and activism already observed was explored. The relationship between the Awareness Indices for the local and the world environment and listening to the radio for more than five hours were similar. For 1991 and 1998

the percentage of listeners among the aware was about the same; but the increase in listenership among the unaware and middle groups was significant. If radio listenership is a cause of environmental awareness, then after a suitable lag period, we should observe an increase in awareness of local and global environmental issues. Because over three-quarters of the unaware listen to the radio for more than five hours, it is safe to conclude that there is a lot of room for Jamaican radio to increase the amount of environmental information it provides.

TABLE 8.8:					
LISTENED TO THE RADIO FOR MORE THAN FIVE HOURS LAST WEEK					
By Gender, Age, Highest Education, Urban-Rural Status, Occupational Category, the Awareness Indices and the Activity Index, Jamaica, 1991, 1998					
		1991 Data		1998 Data	
		Listened	Not Listen	Listened	Not Listen
Gender	Male	<i>n.a.</i>	<i>n.a.</i>	68.8%	31.2%
	Female	<i>n.a.</i>	<i>n.a.</i>	67.2%	32.8%
	Total	62.0%	38.0%	68.0%	32.0%
Age	18-24	63.2%	36.8%	65.7%	34.3%
	25-34	73.1%	26.9%	64.6%	35.4%
	34-44	69.3%	30.7%	67.1%	32.9%
	45-54	54.4%	45.6%	72.0%	38.0%
	55-64	55.9%	44.1%	76.5%	33.5%
	65+	58.9%	41.1%	72.6%	27.4%
	Total	62.0%	38.0%	68.0%	32.0%
Highest Education Attained	No Schooling	<i>n.a.</i>	<i>n.a.</i>	90.0%	10.0%
	Prim./All-Age	56.5%	43.5%	70.4%	29.6%
	Some NewSec.	65.0%	35.0%	69.4%	30.6%
	Some T/C/G	67.9%	32.1%	59.6%	40.4%
	Done T/C/G	64.4%	35.6%	77.5%	22.5%
	Tch/Nrse Col	65.7%	34.3%	59.2%	40.8%
	Some U/CAST	51.7%	48.3%	44.9%	55.1%
	Completed U/CAST	75.5%	24.5%	58.8%	31.2%
	Post-Grad	71.4%	28.6%	40.0%	60.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	50.0%	50.0%
Total	62.0%	38.0%	68.0%	32.0%	
Rural-Urban Status	KMA	58%	42%	50.6%	49.4%
	Oth Tns	60%	40%	81.4%	18.6%
	Rural	65%	35%	74.7%	25.3%
	Total	62.0%	38.0%	68.0%	32.0%
Occupational³⁰ Category	Prof/Man	<i>n.a.</i>	<i>n.a.</i>	65.3%	34.7%
	Semi-Prof	<i>n.a.</i>	<i>n.a.</i>	68.6%	31.4%
	Cler/Tech	<i>n.a.</i>	<i>n.a.</i>	75.3%	24.7%
	Pers Serv	<i>n.a.</i>	<i>n.a.</i>	66.4%	33.6%
	Man Skill	<i>n.a.</i>	<i>n.a.</i>	66.8%	33.2%
	Man Unsk	<i>n.a.</i>	<i>n.a.</i>	77.8%	22.2%
	Self-Empl	<i>n.a.</i>	<i>n.a.</i>	67.4%	32.6%
	Domestic	<i>n.a.</i>	<i>n.a.</i>	58.6%	41.4%
	Unemploy	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
	NILF	<i>n.a.</i>	<i>n.a.</i>	65.0%	35.0%
	NR	<i>n.a.</i>	<i>n.a.</i>	67.6%	32.4%
	Total	62.0%	38.0%	68.0%	32.0%
Awareness Index Jamaican Environment	Aware	68.6%	31.4%	64.0%	36.0%
	Middle	59.8%	40.2%	71.5%	28.5%
	Unaware	56.4%	43.6%	72.3%	27.7%
	Total	62.0%	38.0%	68.1%	31.9%

30 The categories should read across: Professional and Managerial; Semi-Professional; Clerical and Technical; Personal Services; Manual-Skilled; Manual-Unskilled; Self-Employed; Domestic; Unemployed; Not in Labour Force. See Section 2.6 for definitions of the categories.

Awareness Index World Environment	Aware Middle Unaware Total	70.0% 62.3% 53.2% 62.0%	30.0% 37.7% 46.8% 38.0%	65.5% 63.3% 76.5% 68.0%	34.5% 36.7% 23.5% 32.0%
Individual Activity Index	Active Middle Inactive Total	72.2% 70.5% 61.2% 62.0%	27.8% 29.5% 38.8% 38.0%	91.2% 70.6% 67.0% 68.0%	8.8% 29.4% 33.0% 32.0%

The relationship between listening to the radio (5+ hours) and environmental activism was weak in 1991; of those rated “active” 72% are listeners, while of those rated “inactive” 61% listened to the radio for 5+ hours in the week preceding the survey. By 1998 those who were both environmentally active and radio listeners had increased by about 20 percentage points to 91%, while those who were inactive and in the middle category also increased but by significantly less. Is it that when they are active they listen more to the radio, or that they become active by listening to the radio? Either is a possible explanation of the past; but for the future it is also possible that environmental features on the radio might increase activism; over 70% of those who are inactive listen to the radio for more than five hours during the week before the survey.

8.4 Overall Media Reach

In the event that an environmental agency makes the same intervention in all three media (which would be expensive), would all Jamaicans be reached? The data indicates that about 10% of Jamaicans neither read the print media nor listened to the radio nor watched television during the week preceding the survey. The best that can be hoped for is 90% coverage. Just over one-quarter of the sample would have the message reinforced twice over, as they experienced all three of the mass media in the week preceding the survey.

Not using radio would exclude 13% of the sample, who only use that medium. Not using print or television would each exclude a different 4-5% of the sample.

TABLE 8.9: MEDIA REACH: RADIO AND TELEVISION FOR MORE THAN FIVE HOURS, AND PRINT JAMAICA, 1998	
Total Print	548 (46.0%)
Total Television	726 (60.9%)
Total Radio	811 (68.0%)
Print, Radio and Television	285 (23.9%)
Print and Radio only	86 (8.0%)
Print and Television only	91 (7.2%)
Radio and Television only	273 (22.9%)
Print only	51 (4.3%)
Radio only	142 (11.9%)
Television only	48 (4.0%)
None of them	103 (8.6%)
SUB-TOTAL	1,161 (97.4%)
NR	31 (2.6%)
GRAND TOTAL	1,192 (100%)

Using radio alone will reach 75% of the population. Adding television to radio (which might more than double the cost) will increase the coverage by 12% to 87%; adding print to radio will increase the coverage by 13% to 88% (for the additional cost). Adding the third medium will only add 4-5% coverage for the additional cost. Print and radio with a total coverage of 88% is probably the most cost effective, with the additional advantage of the persistence of old newspapers which continue to inform and educate over time (as opposed to radio and television which only have their impact once at the time they are broadcast).

CHAPTER 9: CONCLUSIONS AND RECOMMENDATIONS

Based on the above findings, several conclusions were arrived at. They are presented below, with some of the data which supports them, and with any recommendations which flow from them.

FINDINGS	CONCLUSIONS	RECOMMENDATIONS
<ol style="list-style-type: none"> 1. When asked to place their level of concern about the environment on a five point scale, between 1991 and 1998 opinion shifted away from “no concerns” towards the centre, while the numbers of concerned and unconcerned remained relatively stable. 2. More than half of the respondents (54.4%) said that their levels of environmental concern have remained the same over the last five years; 36.1% said that their levels of concern had increased, while only 5.6% said that their concern had decreased. 3. Without any prompting or any previous question which might suggest an answer, respondents were asked to name the major issue they see facing the Jamaican environment. Only one answer was allowed, and in 1998, 82.8% of respondents gave an answer, compared to 63.7% in 1991. 4. Respondents were asked to name as many as four issues facing the Jamaican environment (other than the major one). In 1991 relatively few advanced any other opinions; only 35% of the sample suggested a second issue, 11.3% a third and 3.8% a fourth. In 1998, the number naming other issues increased substantially: 65.1% named a second issue, 38.6% a third, 17.9% a fourth and 6.8% a fifth. 5. Without any prompting, respondents were asked to name the most threatened area of Jamaica’s environment; only one response per person was permitted. In 1991 just less than 50% offered an answer; in 1998 this increased to just under 70%. 6. In 1991, over 3% professed unawareness about all ten Jamaican environmental issues; 36.1% were unaware, while 38.9% were aware. By 1998, the unaware decreased and the middle and aware categories increased their share. 7. In 1991, more than half of those with only primary education were unaware; by 1998 this had decreased to 32.4%. 8. In 1991, the modal answers for all questions about impact on the world environment but one was “Don’t Know”. Nevertheless, for half the issues the mean score was 5 or more. By 1998, four of the eight factors had modal answers of 10, and there was noticeable improvement in all the mean scores (except for the burning of fossil fuels and overpopulation). This suggests that there has been an increase in awareness about these issues. However, the scores are much below the typical values for awareness of the Jamaican environment, which themselves could do with some improvement. 9. There was an increase of sixteen percentage points between 1991 and 1998 in those who offered an opinion as to which of the factors named was the greatest threat to the world's environment. 10. Respondents were prompted with ten factors, and asked to evaluate their negative impacts on the Jamaican environment on a scale of one to ten (one having no effect; ten having tremendous effect). As in 1991, for all the factors, the modal responses were either 0 (don’t know) or 10 (maximum negative impact). Whereas in 1991 seven of the ten factors had a modal response of 0, in 1998 this was reduced to five. Indeed, the mean scores for all ten factors increased. Also, the standard deviations for all the factors decreased, suggesting that as environmental awareness increases, public opinion is solidifying around the mean values. 11. Respondents were asked to name environmentally damaging products which they would like to see removed from the supermarket shelves. In 1991, almost 200 respondents (18%) stated without prompting that, in their opinion, there were no such products, while none did so in 1998. 	<p>Knowledge, awareness and concern about environmental issues increased between 1991 and 1998.</p>	<p>Another similar attitude survey should be conducted in 2005 to see if the trend continues.</p>
<ol style="list-style-type: none"> 1. Wildlife and biodiversity issues (hunting, habitat/reef/wetland destruction) received very little concern. 2. In 1991 and 1998 several answers qualify as good public health practice or extraction of value from the environment but not as environmental protection: keeping the yard/road/work area clean (21.2% and 13.8%), farming/gardening (5.5% and 3.1%) and the burning of garbage (3.4% and 2.6%). So many of the answers relate to personal and household space, the concept of environment 	<p>About 50% had an inadequate or narrow understanding of the concept of the environment, having in mind only their immediate surroundings (e.g.</p>	<p>One of the first tasks of any environmental education programme should be to broaden the understanding of the term “environment” to include the natural environment: air,</p>

<p>in use by many of the respondents is revealed. Stopping smoking improves the surroundings for non-smokers; fixing potholes improves conditions for motor vehicles; and clean surroundings and pretty gardens are good; but these are not actions which improve the environment in the sense the word is used in this study. In rural areas where there is limited garbage collection, burning garbage may be better than illegal dumping, but cannot be considered as protecting the environment.</p>	<p>their back yards).</p>	<p>water and land, forests, wetlands and the sea, and all the animals and plants living in Jamaica's ecosystems.</p>
<ol style="list-style-type: none"> 1. Respondents were asked to name as many as four issues facing the Jamaican environment (other than the major one). In 1991 relatively few advanced any other opinions; only 35% of the sample suggested a second issue, 11.3% a third and 3.8% a fourth. In 1998, the number naming other issues increased substantially: 65.1% named a second issue, 38.6% a third, 17.9% a fourth and 6.8% a fifth. 2. There was a high incidence of "don't know" answers throughout the survey. 3. Respondents were prompted with ten factors, and asked to evaluate their negative impacts on the Jamaican environment on a scale of one to ten (one = no effect; ten = tremendous effect). Except for the fishing industry and toxic waste, all means were over 5.0, and for six of the ten factors, the means were under six. 4. In 1991 (58.8%) and in 1998 (56.4%) were outlined things they had done to protect the Jamaican environment. In the opinion of this author, for both years a significant number of the answers do not fully qualify as being environmentally friendly, which suggests lack of awareness about these environmental factors. 5. When asked whether they had enough information on actions they personally could take to protect the environment, 45.4% in 1991 and 61.1% in 1998 said they did. The answers to previous questions show that, in fact, Jamaicans are in need of environmental information to a much greater extent than this. 6. About 28% of the sample (328 persons) confessed to committing an action presently or recently which they think harmed the environment; some actions admitted to were not actually inappropriate environmental actions, such as smoking cigarettes, and disposal of plastic in domestic garbage. 7. The test questions results showed that although many respondents are concerned about air and water pollution, they are not familiar with the details. 	<p>Only a small segment of the Jamaican population are aware of a broad range of environmental issues. Jamaican environmental consciousness lacks depth.</p> <p>Although there has been an increase in environmental awareness between 1991 and 1998, the small number of respondents for some questions indicates that there is more to be done.</p> <p>Many persons do not know that they do not know.</p>	<p>Jamaicans could benefit from more information on environmental issues and potential actions, such as could come from an education programme, and from the good example of active environmental groups. A campaign of environmental awareness in the mass media should be quite successful in raising both the breadth and depth of environmental consciousness.</p> <p>The first task of environmental education must be to convince the public that they need to be educated on the environment.</p>
<ol style="list-style-type: none"> 1. In both 1991 and 1998, the most aware respondents were to be found in rural towns; whereas in 1991 the second most aware respondents were those in the KMA, by 1998 the second most aware Jamaicans were in the deep rural. The data also show that between 1991 and 1998 there has been a reduction in "lack of awareness" in rural towns and rural areas, but a sharp increase in "lack of awareness" seems to have occurred in the KMA. 2. Rural people are more concerned about the environment than persons in the KMA; residents of rural towns have the highest level of concern. 3. In contrast to the findings on awareness of conditions in Jamaica, in 1991 the respondents most aware and least unaware about global environmental issues were those in the KMA. Again in contrast, deep rural residents were both least aware and most unaware of global issues. 4. In both years, respondents from "other towns" were more environmentally active than those in the KMA and rural areas. In 1998 rural residents were the largest among the "middle" active. In both years, residents of the KMA³¹ were the most inactive. 5. In 1991, 58% of KMA respondents indicated their willingness to pay more for environmentally friendly products. This tendency really came from St. Andrew (61%) rather than Kingston itself (46%). This willingness was less strong in the rural towns (44%) and weakest in the rural areas (35%). 	<p>There has been a big increase in awareness among rural people especially in towns, and an increase of "lack of awareness" in the KMA.</p> <p>The awareness of rural people about local environmental issues might have more to do with their closeness to nature than possession of book knowledge.</p>	<p>Environmental awareness efforts should still be conducted islandwide.</p> <p>Special efforts must be made to increase the environmental awareness of persons in the KMA.</p>
<ol style="list-style-type: none"> 1. In both 1991 and 1998, the highest level of education attained was the strongest correlate of both awareness and unawareness of local environmental issues. In both 1991 and 1998, lack of awareness trended to zero from primary to those with post-graduate training. For both years, awareness increased dramatically with high school attendance, again for tertiary-level education, and even higher for post-graduate training. 2. The highest educational institution attended was a strong correlate of level of environmental concern. 3. The highest level of education attained was the strongest correlate of both awareness and unawareness of global environmental issues. 4. Level of education appears to be the strongest among the weak determinants of environmental activity. 	<p>The higher levels of Jamaica's formal education system do expose students to environmental issues.</p> <p>Whereas the formal education system is relatively successful at providing information, it is not as successful at transmitting norms and values which lead to action.</p> <p>Education remains the strongest explanatory variable for environmental awareness and</p>	<p>It should be possible to introduce environmental concepts to students much earlier.</p> <p>Every primary and secondary school should have an</p>

31 The Kingston Metropolitan Area (KMA) includes all of the small parish of Kingston and part of the parish of St. Andrew.

<p>5. Those with no schooling or only primary education were most willing to accept the project out-of-hand. The vast majority of those with tertiary education were prepared to reject the project even if there was no alternative.</p>	<p>commitment.</p>	<p>environmental club.</p>
<p>There does appear to be some relationship between awareness/unawareness and occupation.</p>	<p>This is probably because occupation is highly correlated with education.</p>	<p>There should be more emphasis on environmental education in primary school.</p>
<p>Respondents were asked to rank eight environmental and socioeconomic issues in order of priority to determine how important environmental concerns are in comparison to other issues. Socioeconomic issues far outweighed environmental issues in terms of importance to the respondents. Crime, unemployment, and the high cost of living were far and away the issues of most concern. The environmental issues of most concern were garbage disposal, sewage and overpopulation. Air pollution and Deforestation were the least important issues.</p>	<p>Unless some way can be found to link environmental issues to development issues, environmental concerns will be left behind.</p>	<p>Greater efforts should be made to link environment and development issues.</p>
<p>The respondents who said they were members of an environmental organization were asked to name it. Only 24 persons (2.0%) gave a response to this question. Most of the organizations were connected to church or school or community and not dedicated specifically to environmental matters.</p>	<p>The names of Jamaican environmental NGOs are not very well known.</p> <p>There is the need to encourage the formation and strengthening of environmental non-government organizations of all types in both urban and rural areas, which can promote environmental education, advocacy and activism.</p>	<p>Jamaican environmental non-government organizations need to project themselves more.</p> <p>Already existing organizations – e.g. church organizations, citizens’ associations and youth clubs should be encouraged to adopt an environmental agenda.</p> <p>Establishing this network of organizations with an environmental focus should be the work of both the NRCA and the more established ENGOs.</p>
<p>1. Respondents were asked to evaluate the impact of eight factors on the world’s environment. The level of “Don’t Know” responses was greater than for the Jamaican situation.</p> <p>2. In 1991, the modal answers for all questions about impact on the world environment but one was “Don’t Know”. Least was known about the impact of chlorofluorocarbons (CFCs). Nevertheless, for half the issues the mean score was 5 or more. Overpopulation had the highest mean score (6.2) and a mode of 10. Industrial pollution and the cutting of forests were weakly held to be impacting negatively on the global environment, while opinion was evenly divided on the effect of automobile emissions. By 1998, 4 of the 8 factors had modal answers of 10, and there was noticeable improvement in all the mean scores (except for the burning of fossil fuels and overpopulation). However, the scores are much below the typical values for awareness of the Jamaican environment, which themselves could do with improvement.</p>	<p>There is a greater level of unawareness about the global environment, especially about CFCs, the burning of fossil fuels and overpopulation.</p>	<p>There is clear need for more public awareness on global environmental issues, particularly to do with CFCs, the threats posed by ships carrying potentially damaging cargo and matters to do with global warming and the greenhouse effect.</p>
<p>1. In 1991 the greatest threat to the world’s environment was felt to be overpopulation followed by industrial pollution, while in 1998 their positions were reversed. The numbers supporting deforestation and individual lifestyles increased substantially over the period while the numbers of those supporting overpopulation declined.</p> <p>2. In both 1991 and 1998, Pollution of some sort was the most common answer by far, followed by Deforestation.</p> <p>3. In 1991, the three top responses were “land”, “water” and “atmosphere”, which together were two-thirds of the responses. By 1998 opinion had shifted considerably. Concern for forests, mountains and watersheds which ranked fifth in 1991 was top of the list in 1998. Concern for rivers & fresh water sources remained in second place with increased support (the two issues are, of course, linked).</p>	<p>There is a growing interest in the problem of deforestation and watershed management.</p>	<p>More information about deforestation, soil erosion and sedimentation should be made available.</p>
<p>1. In 1991, there was a six percentage-point difference between the genders in global awareness, which narrowed to one point by 1998. Females were also more unaware about global environmental issues than males (ten percentage points). The eleven-point difference between the genders in lack of awareness in 1991 had</p>	<p>In terms of environmental awareness, gender differences seem to be becoming less</p>	<p>In environmental education, no special effort needs to be made to target any particular</p>

narrowed to four points by 1998.	important.	gender.
<ol style="list-style-type: none"> In 1991 and 1998, the older age groups are less aware than the younger ones. The increases in awareness of global environmental issues which have taken place is more pronounced among the younger age groups. Indeed, those born after 1945 are noticeably more environmentally committed than those born before. 	The increase in awareness which has taken place is more pronounced among younger age groups.	In environmental education, keep the emphasis on the young, but make a special effort to target older people.
<ol style="list-style-type: none"> “Don't Know” was the modal response for seven out of the ten factors in 1991, and for all ten in 1998. The mean scores in 1991 were low; four areas received a score higher than 3. The mean scores in 1998 were even lower, with all scores under 3. Scores for all factors declined between 1991 and 1998 except for Mining and Household Garbage which both increased by one-tenth of a percentage point. In 1998 fewer people claim to know enough to offer an opinion about the effectiveness of the government in passing environmental legislation than in 1991. In 1991, 13.9% claimed ignorance of the government's record in passing environmental legislation; this rose to 24.2% by 1998. In 1991, 57.7% rated the government's performance as ineffective, which decreased to 53.8% in 1998. Those who believe that the government is effective in this area increased from 9.2% in 1991 to 10.7% in 1998. Only 19.2% of the sample knew that the Natural Resources Conservation Authority (NRCA) in the Ministry of the Environment was the government agency with the major responsibility for Jamaica's environment. 	<p>The environmental achievements of the government were not well known.</p> <p>The vast majority of those who express an opinion believe that the government is not very effective in passing legislation to protect the environment.</p>	The NRCA and the government needs to do more and to publicize itself more.
In 1991, only 7% felt that individuals like themselves could have an extremely large effect in protecting the environment, and only 19% felt they could have quite a large effect. On the other hand, 19% felt that individuals could have no effect at all, while 25% felt they could have very little effect. And so 26% believe that individuals like themselves can make a difference, while 43% feel that they can make little difference. By 1998, 29% believe that individuals like themselves can make a difference, while 32% feel that they can make little difference.	This pessimism, this fatalism, should lead to a relatively low level of environmental activism.	<p>An environmental education/awareness programme is needed to sensitize persons to the impact their own actions have on the environment.</p> <p>People need to be empowered and to feel empowered to deal with environmental issues.</p>
<ol style="list-style-type: none"> Both in 1991 and 1998, the level of environmental activism is low. The data suggests that environmental activism over the period has decreased for certain actions and increased for others. Those decreasing by more than ten percentage points were returning glass bottles, planting trees, and not buying lobster in the closed season. Those increasing by a similar margin were buying products in appropriate packaging, and switching to unleaded gasoline. The increase in the use of compost heaps, phosphate-free detergents and bio-degradable products, and the avoidance of aerosols is also worthy of mention. Of special interest is the decline in membership of environmental organizations, in the support offered in money and time, and in the reading of environmental articles to become more aware. The reading of environmental publications is low. Respondents in 1991 and 1998 do not impress as being active. In each year only one respondent (0.1%) fell into the “very active” category, and only 1-3% were classified as “active”. The number of totally environmentally inactive respondents increased from 6.5% in 1991 to 18.6% in 1998; large numbers of the sample were rated as “very inactive” and “inactive”. Interestingly, in both 1991 and 1998, about 41% of the sample say they would be willing to pay more for environmentally friendly products. Some might say that this is the bottom line, the final test of personal commitment to environmental health. The level of unawareness which the rest of the data indicate would suggest that not many people should be so committed. In both 1991 and 1998 (more pronounced in 1998) there is a noticeable relationship between willingness to pay more for environmentally friendly products and the Individual Activity Index. Of those found to be active, 73% in 1991 and 85% in 1998 were willing to pay more, with correspondingly lower figures for Middle and inactive persons. 	<p>The overall level of environmental activism has decreased between 1991 and 1998.</p> <p>If more environmental books and pamphlets are made available, it is likely that the number of responses in those categories will increase.</p>	<p>ENGOS which focus on activities for their members need to be strengthened.</p> <p>ENGOS which focus on public education and sensitization need to be formed and strengthened.</p> <p>Opportunities for more persons to volunteer in ENGOS need to be provided.</p>
1. For both the Jamaican and world environments, 78%	Knowledge about the environment is, by itself,	Those interested in increasing

<p>of those judged “aware” were environmentally inactive.</p> <p>2. In 1991, environmental awareness as measured by the Jamaica and World Awareness indices above does not seem strongly correlated with willingness to pay more for environmentally friendly products. The 1998 data, however, suggest a strong correlation. Nevertheless, large numbers of persons judged to be aware are not willing to pay more for environmentally friendly products.</p>	<p>not the determining factor for environmental activity. The common view that “people are inactive because they lack awareness, and if only they were ‘educated’ then they would become more active and ‘do the right thing’” must be viewed with some suspicion. People’s actions are governed by the norms and values they hold dear, not by the information they have in their possession.</p>	<p>environmental activism need to make interventions which will impact at the normative level.</p> <p>Clearly, more is required for knowledge to be translated into action.</p>
<p>1. In 1991, about 62% of the sample said that they were willing to change to a more environmentally-friendly lifestyle; 17% said they might; 8% flatly said they were unwilling to change. By 1998, the numbers willing to change had decreased to 56%, but those who “probably” would, increased to 30%; the numbers who refused were about the same as in 1991.</p> <p>2. Respondents were asked specific questions about what in their lifestyle they would be prepared to change. In every case more than 50% said they were willing to act; 94% said that if given seedlings, they would plant and care for them. Those who said they would give time promised 3,348 hours between them at an average of 5.35 hours each. Those who said they would give money promised J\$172,457 between them annually at an average of J\$276.82 each.</p>	<p>Overall this is a positive sign which augurs well for the success of environmental protection in Jamaica, as nowhere will the condition of the environment improve unless there is a change of personal culture.</p> <p>These figures appear low. The environmental effort will not prosper unless persons are prepared to give much more time and money.</p>	<p>What is needed is a strategy to motivate people to give more time and money to environmental causes.</p>
<p>A scenario concerning a choice between retaining a healthy stand of mangroves and a project bringing fifty jobs was presented. About one-quarter of the sample said they would immediately approve the project; another quarter said they would approve it if no other suitable site could be found.</p>	<p>This indicates a significant level of commitment to the environment, where about half of the Jamaican population is prepared to forego economic benefits – including jobs – in favour of mangrove wetlands even in economically difficult times.</p>	<p>Policymakers need to be advised of the significant level of commitment to the environment, where about half of the Jamaican population is prepared to forego economic benefits – including jobs – in favour of mangrove wetlands even in economically difficult times.</p>
<p>1. In 1991, only 36% reported they had read a newspaper in the past week compared to 46% in 1998.</p> <p>2. In 1991, 69% said they had watched television during the past week, and this increased to 82% in 1998. In 1991, 41% reported they had watched television for more than five hours during the past week compared with 61% in 1998.</p> <p>3. In 1991, as many as 88% reported that they had listened to the radio in the last week, while in 1998 the figure was 90%. In 1991, 62% reported they had listened to the radio for more than five hours during the past week, compared with 68% in 1998.</p> <p>4. The data indicates that about 10% of Jamaicans neither read the print media nor listened to the radio nor watched television during the week preceding the survey. The best that can be hoped for is 90% coverage. Just over one-quarter of the sample would have the message reinforced twice over, as they experienced all three of the mass media in the week preceding the survey.</p> <p>5. Not using radio would exclude 13% of the sample, who only use that medium. Not using print or television would each exclude a different 4-5% of the sample.</p> <p>6. Using radio alone will reach 75% of the population. Adding television to radio (which might more than double the cost) will increase the coverage by 12% to 87%; adding print to radio will</p>	<p>Jamaica is not a very literary society. Television is clearly a better medium for communication with (and education of) Jamaicans than the print media. Even with narrowing the target group, television reaches substantially more people than the print media. Radio is long recognized as the best medium for communication and education in Jamaica. The effective listening public is significantly higher than the watching public. Print and radio with a total coverage of 88% is probably the most cost effective, with the additional advantage of the persistence of old newspapers which continue to inform and educate over time (as opposed to radio and</p>	<p>Print and radio with a total coverage of 88% is recommended for environmental education programmes.</p>

<p>increase the coverage by 13% to 88% (for the additional cost). Adding the third medium will only add 4-5% coverage for the additional cost.</p>	<p>television which have their impact only once at the time they are broadcast).</p>	
<p>About 11% felt that environmental information should be presented on the electronic media: on radio or on television. About 10% felt that posters and booklets would be effective. Among the requests which were valid were appeals for information on garbage disposal, forestry, pollution, soil conservation, chemicals, and existing environmental laws.</p>	<p>Some persons feel the need for more environmental education material on different media.</p>	<p>Environmental education material should be prepared on different topics on different media.</p>

BIBLIOGRAPHY

CASSIDY, Frederic Gomes and Robert Brock LE PAGE. **Dictionary of Jamaican English.** Cambridge: Cambridge University Press. 1980.

CHIANG, Chan Huan and Harun DIN. *Survey on Environmental Awareness and Attitudes in Malaysia: Final Report.* Conducted by the Centre for Policy Research, Universiti Sains Malaysia (Penang, Malaysia) and funded by the Commonwealth of Learning, British Columbia, Canada), April 1993.

ESPEUT, Peter A. *Attitudes to the Environment in Jamaica, 1991.* Report of a survey conducted for the Commonwealth of Learning, Vancouver, British Columbia, Canada, carried out by the Institute of Social and Economic Research, University of the West Indies, Mona, Jamaica. June 1993.

**SURVEY ON
ENVIRONMENTAL AWARENESS AND ATTITUDES
IN JAMAICA 1997**

	M	F
18-24	2	2
25-34	3	3
35-44	2	2
45-54	1	1
55-64	1	1
65+	1	1

Sponsored by

**the ENACT Project (Canada)
and the Natural Resources Conservation Authority (Jamaica)**

and Conducted by

**The South Coast Conservation Foundation,
91a Old Hope Road, Kingston 6, Jamaica**

May 1997

Good Morning/Afternoon! My name is _____ and I would like to ask you a few questions on your knowledge and attitudes to the environment.

ENVIRONMENTAL AWARENESS AND ATTITUDES IN JAMAICA 1997

- | | | | |
|----|---|-------|------|
| 1. | Would you please tell me if you have read or looked at any newspapers in the last week? | [yes] | [no] |
| | Have you listened to the radio in the last week? | [yes] | [no] |
| | If yes, for more than 5 hours? | [yes] | [no] |
| | Have you watched television in the last week? | [yes] | [no] |
| | If yes, for more than 5 hours? | [yes] | [no] |

2. What do you understand by the term "environment"?

The environment may be defined as the whole world around us: the air, water and land, forests, wetlands and the sea, and all animals and plants living about us.

3. Generally speaking, which of the following statements **best** describes your feelings about the environment? **(READ ALL OPTIONS; THEY MUST CHOOSE ONE)**

- I have **no concerns** about the environment.
- I have **few concerns** about the environment.
- I have **some concerns** about the environment.
- I am **quite concerned** about the environment.
- I am **extremely concerned** about the environment.

4. At present, what do you personally say is the **major issue** affecting Jamaica's environment? **(One Answer)**

5. What other issues concern you about Jamaica's environment? **(List as many as you like)**

6. Which aspect of Jamaica's environment do you think is **most** threatened? **(Choose one)**

7. What are the major problems affecting the world's environment today? **(As many as you like)**

8.1 How much negative effect do you think each of the following is having on Jamaica's environment? Answer on a scale from one to ten with one having no effect and ten having tremendous effect. Kindly indicate **DK** if you are unfamiliar with the item.

a. Household garbage.

1 2 3 4 5 6 7 8 9 10 DK

b. Automobile exhaust.

1 2 3 4 5 6 7 8 9 10 DK

c. Sewage pollution.

1 2 3 4 5 6 7 8 9 10 DK

d. The forestry industry.

1 2 3 4 5 6 7 8 9 10 DK

e. The fishing industry.

1 2 3 4 5 6 7 8 9 10 DK

f. The mining industry.

1 2 3 4 5 6 7 8 9 10 DK

g. The individual resident.

1 2 3 4 5 6 7 8 9 10 DK

h. Toxic wastes.

1 2 3 4 5 6 7 8 9 10 DK

i. Manufacturing plants.

1 2 3 4 5 6 7 8 9 10 DK

j. Agriculture's use of pesticides and herbicides.

1 2 3 4 5 6 7 8 9 10 DK

8.2 Which of the preceding (a to j) would you say has the greatest negative impact on Jamaica's environment? **Choose only one!**

a b c d e f g h i j

9.1 Using the same one to ten scale, how much effect does each of the following have on the world's environment? Kindly indicate **DK** if you are unfamiliar with the item.

a. Use of CFCs.(used in some spray cans)

1 2 3 4 5 6 7 8 9 10 DK

b. Automobile exhaust.

1 2 3 4 5 6 7 8 9 10 DK

c. Burning fossil fuel (e.g. kerosene, gasoline, diesel, candles)

1 2 3 4 5 6 7 8 9 10 DK

d. Transport of oil/petroleum by ships.

1 2 3 4 5 6 7 8 9 10 DK

e. Industrial pollution.

1 2 3 4 5 6 7 8 9 10 DK

f. Overpopulation.

1 2 3 4 5 6 7 8 9 10 DK

g. The cutting of the world's forests.

1 2 3 4 5 6 7 8 9 10 DK

h. Individuals and their lifestyles.

1 2 3 4 5 6 7 8 9 10 DK

9.2 Which of the above (a - h) would you say is the **greatest** threat to the World's environment? **Choose only one!**

a b c d e f g h

10. Again using the one to ten scale, with 1 meaning **totally ineffective** up to 10 which means **extremely effective**, how effective has the government of Jamaica been in passing laws to protect the environment from the effects of: (DK = unfamiliar)

a. the forestry industry

1 2 3 4 5 6 7 8 9 10 DK

b. individual residents

1 2 3 4 5 6 7 8 9 10 DK

c. the mining industry

1 2 3 4 5 6 7 8 9 10 DK

d. household garbage and other wastes

1 2 3 4 5 6 7 8 9 10 DK

e. automobile exhaust

1 2 3 4 5 6 7 8 9 10 DK

f. sewage pollution from cities and towns

1 2 3 4 5 6 7 8 9 10 DK

g. toxic wastes

1 2 3 4 5 6 7 8 9 10 DK

h. the fishing industry

1 2 3 4 5 6 7 8 9 10 DK

i. manufacturing plants

1 2 3 4 5 6 7 8 9 10 DK

j. use of pesticides and herbicides

1 2 3 4 5 6 7 8 9 10 DK

11. Which of the following contribute to **air pollution**:
- | | | | | | | | | |
|--------------------------------|--------------------------|-------|--------------------------|-------|--------------------------|------------|--------------------------|----|
| auto emissions | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| the fishing industry | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| burning rubbish | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| industrial plants | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| citrus farms | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| power generating plants | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| aerial crop dusting (spraying) | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| quarrying | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| sewage treatment plants | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| sugar estates (cane burning) | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
12. Which of the following are pollutants in **car exhaust**:
- | | | | | | | | | |
|-----------------|--------------------------|-------|--------------------------|-------|--------------------------|------------|--------------------------|----|
| carbon dioxide | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| carbon monoxide | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| lead | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| oxygen | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| arsenic | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| small particles | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| tin | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| sulfur oxides | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| nitrogen oxides | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| iron oxides | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
13. Which of the following do you think negatively affects the quality and quantity of **fresh water** for drinking?
- | | | | | | | | | |
|--------------------------------|--------------------------|-------|--------------------------|-------|--------------------------|------------|--------------------------|----|
| littering | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| lack of rainfall | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| deforestation | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| pit latrines | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| too many housing schemes | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| industrial effluent discharge | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| fish farming | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| soak away pits | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| use of pesticides by farmers | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| sewage treatment plants | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| population increase | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
| lack of water storage capacity | <input type="checkbox"/> | major | <input type="checkbox"/> | minor | <input type="checkbox"/> | not at all | <input type="checkbox"/> | DK |
14. Imagine this situation: Investors wish to establish a factory in an area which will cause damage to a nearby mangrove wetland, which is environmentally significant. There are no ways to reduce the environment damage. There are few economic opportunities in the area, and the factory will create about 50 jobs for local people. If you had the power to approve the project or turn it down, which of the following decisions would you take:
- immediately approve the project because of the jobs which would be created
 - seek alternative sites which would be less environmentally damaging; if none could be found, I would approve the project;
 - seek alternative sites which would be less environmentally damaging; if none could be found, I would reject the project

15. How much effect do you think individuals such as yourself can have on protecting the environment? **(Choose one).**

can have **an extremely large** effect.

can have **quite a large** effect.

can have **some** effect.

can have **very little** effect.

can have **no** effect.

16. What is the most recent thing that you did that you considered could protect the environment?

17. Do you feel that you would change your lifestyle in any way in the future to help protect the environment?

[yes]

[probably]

[no]

[Don't Know]

18. Which of the following actions have you personally taken in the last year in order to protect the environment? **(Choose all that apply) Please note that not all of these actions are environmentally friendly, so answer carefully.**

I have planted trees

I used unleaded gasoline

I have spread garlic outside in the yard

I use biodegradable products whenever possible (products that decompose naturally)

I buy phosphate-free detergent

I return glass bottles whenever possible

I try to use less electricity

I use fewer chemicals in the garden such as insecticides and herbicides

I do not use aerosols containing CFCs

I do not buy certain products because of packaging concerns

I burn my garbage

I created/maintained a compost heap

I took steps to prevent soil erosion

I do not buy lobster in the closed season

Other (specify) _____

19. With respect to the following statement, say whether you strongly agree, agree, disagree, or strongly disagree?:

The state of the environment is important to the quality of my life.

strongly agree

disagree

agree

strongly disagree

20. If you found an environmental organization or programme that you felt was doing just the right thing to protect or improve the environment, how much money per month would you be willing to donate regularly to support its efforts? J\$ _____

21. If you found an environmental organization or programme that you felt was doing just the right thing to protect or improve the environment, how much time per week would you be willing to contribute on a regular basis towards its efforts? _____

22.1 Would you say you have enough information on actions you personally could take to help protect the environment?

[yes] [no]

22.2 If no, what type of information would you like to obtain? **(Probe)**

23. Which environmentally damaging items would you like to see removed from the supermarket shelves?

24. There are now more environmentally friendly/less environmentally damaging products available in supermarkets and stores. Do you expect these products to be: **(Choose one)**

higher priced

about the same price

lower priced

Do not prompt these:

don't know

not sure

than other products that may be more harmful to the environment?

25. Would you be willing to pay more for environmentally friendly/less harmful products? [yes] [no]

Would you be willing to use unleaded gasoline despite the fact that it costs more than leaded gas? [yes] [no]

Would you be willing to take part in community tree planting? [yes] [no]

Would you be prepared to join an organization dedicated to the protection of the environment? [yes] [no]

26. Which of the following have you been involved with or done recently:(Choose all that apply)

[] I have joined or am a member of an organization involved with the environment. Which?: _____

[] I have read an article to help me become more environmentally aware. Which?: _____

[] I have supported environmental actions with money or time. How much per year?: \$ _____ Time _____

27. If you were given an appropriate seedling and advice on planting, would you be willing to plant and care for a tree in your community or on your own land? Yes No

28. If you were living in a town which launched a garbage recycling programme which encouraged citizens to separate glass, metal, paper and plastics for special collection and recycling, would you be willing to do so even if participation were not compulsory? Yes No

29. Name one thing that you do currently or have done recently that you think could harm the Jamaican environment? _____

30. In communities where household garbage is not collected, which of the following methods would be environmentally appropriate for residents to dispose of their household garbage? *Choose all that apply!*

[] burning

[] burying

[] throw in gully

[] throw in open lot

Do not prompt this:

[] none of the above

31.1 Would you say that over the last five years your concerns about the environment have?

- increased significantly.
- increased somewhat.
- remains the same.
- decreased somewhat.
- decreased significantly

31.2 ***If you are more concerned today than five years ago***

What do you think has contributed most to this increased concern?

32. Rank the following concerns in order of national importance to Jamaica from 1 to 8, where 1 is the item of most importance to Jamaica, and 8 is the least important.

- | | |
|---|--|
| <input type="checkbox"/> Garbage disposal | <input type="checkbox"/> Deforestation |
| <input type="checkbox"/> Unemployment | <input type="checkbox"/> Sewage disposal |
| <input type="checkbox"/> Crime | <input type="checkbox"/> Overpopulation |
| <input type="checkbox"/> Air pollution | <input type="checkbox"/> Cost of living |

33. Can you name the government agency which has the major responsibility for the environment in Jamaica? _____

What does it do? _____

34. Can you name a Jamaican non-government agency (NGO) which works to protect the environment? yes no

If yes, please do so:

DEMOGRAPHICS

1. Are you male female
2. What was your age last birthday?
3. How many children do you have?
4. What is the highest level of education that you have attained/completed?
 - no schooling
 - some/completed primary/all-age/elementary school
 - some/completed junior secondary/new secondary
 - some technical/comprehensive/high school
 - completed technical/comprehensive/high school
 - completed teacher's college/nursing school
 - some University/CAST/polytechnic
 - completed University/CAST/polytechnic
 - postgraduate
- 4.1 What is your principal occupation, i.e., at what do you earn most of your income?

- 4.2 What are your other occupations, in order of importance?

5. Are you:
 - married widowed
 - living with someone separated
 - single divorced
6. Which of the following categories best describes your total annual **family** income, before taxes, for 1996?
 - under \$50,000
 - \$50,000 to under \$100,000
 - \$100,000 to under \$150,000
 - \$150,000 to under \$200,000
 - \$200,000 to under \$250,000
 - \$250,000 to under \$300,000
 - \$300,000 to under \$350,000
 - \$350,000 or more
 - don't know