



## **The 2004 Survey of Kentuckians Environmental Knowledge, Attitudes and Behaviors**

In 1995, the Kentucky Environmental Education Council (KEEC) a state agency, was established to improve environmental education in the Commonwealth. The General Assembly charged the agency with a number of tasks, one of which was to “monitor and report periodically on environmental literacy in Kentucky.” KEEC, working with the University of Kentucky Survey Research Center, completed the first survey of environmental knowledge, attitudes and behaviors in 1999 and the second in 2004. This report gives the results of the 2004 survey and compares it to the 1999 survey.

As in the first report, this survey does not actually measure the environmental literacy of Kentuckians. Environmental literacy is so complex that it is difficult to define, let alone to measure. This survey, conducted by the UK Survey Research Center on a random sample of 669 Kentucky adults from September through November of 2004, is simply a snapshot of whether Kentuckians can answer some very basic questions about issues that deal with air, land and water quality. It also asks Kentuckians to share their attitudes about certain environmental issues, such as how well we are protecting our natural resources. Finally, it asks Kentuckians to identify whether or not they engage in behaviors that might improve their environment.

The first three sections of this document report on the knowledge, attitudes and reported behaviors of Kentuckians in general regarding the environment. The final section breaks down some of those questions by socioeconomic group.

Please note that all percentages have been rounded to the nearest decimal for easier reading.

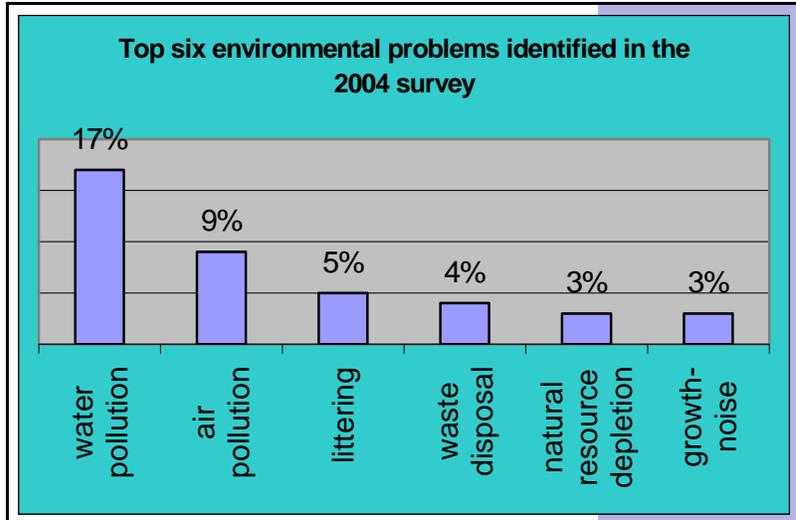
## **Results of the Survey**

### **KNOWLEDGE**

The survey asked questions that measured Kentuckians’ knowledge of current environmental topics. The questions were designed to be very easy. These are questions that any middle school student should be able to answer and, as expected, the majority of respondents to the survey were able to answer many, though not all, questions correctly. However, a very sig-

nificant minority – in many cases nearly half – of respondents were not able to give correct answers to these very basic questions.

Though this report will compare some of the responses from the 1999 survey with those of the 2004 survey, readers should be aware that, as in all such surveys, there is a statistical margin of error of plus or minus 3.8% on these figures.



As in 1999, when asked to cite the most important environmental problem in Kentucky, most respondents in the 2004 survey simply identified “pollution.” Among those who gave specific responses, the rankings for topics of most concern stayed the same in both surveys but the percentages changed somewhat. For example, in 1999 and in 2004, water pollution was identified as the most important issue in Kentucky. However, in 1999, 23% of respondents identified water pollution as their number one concern while in 2004 only 17% did so. Though air pollution was ranked second in both surveys, 15% percent of those surveyed in 1999 identified air pollution as the leading concern, compared to only 9% in 2004. Littering dropped to 5% from 15% in 1999.

Though water pollution is identified as a leading source of concern by those surveyed, Kentuckians are not able to correctly identify runoff from fields, pavements and lawns as the leading source of water pollution in the Commonwealth. Only 17% of respondents identify runoff as the leading source of water pollution (compared to 21% in 1999). In 2004, a whopping 56% incorrectly identify factory waste as the leading source of water pollution.

When asked the major source of electricity generation in the U.S., only 49% of Kentuckians, less than half, correctly identified coal-burning power plants. The remainder identified nuclear or hydroelectric generation as the major sources. These are essentially the same responses as those in the 1999 survey and, as in 1999, these figures are of special concern in a state where electricity costs are relatively low due to our proximity to coal and where coal, the jobs it creates, and the way it is mined are major sources of public debate.

When asked to choose a best definition for biodiversity, a majority of those surveyed correctly chose the answer, “the many different kinds of plants and animals.” Fifty-five percent gave the correct answer compared to only 49% in the 1999 survey. However, 31% still chose the incorrect definition, “the many differing opinions on environmental issues” as the best definition for

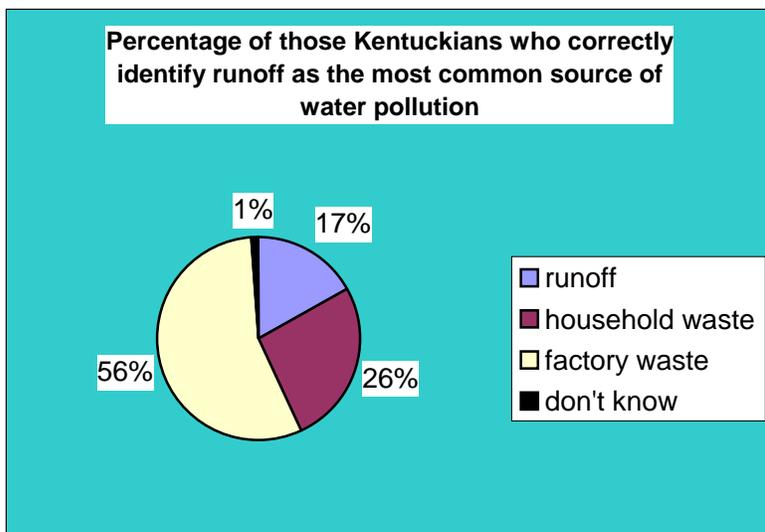
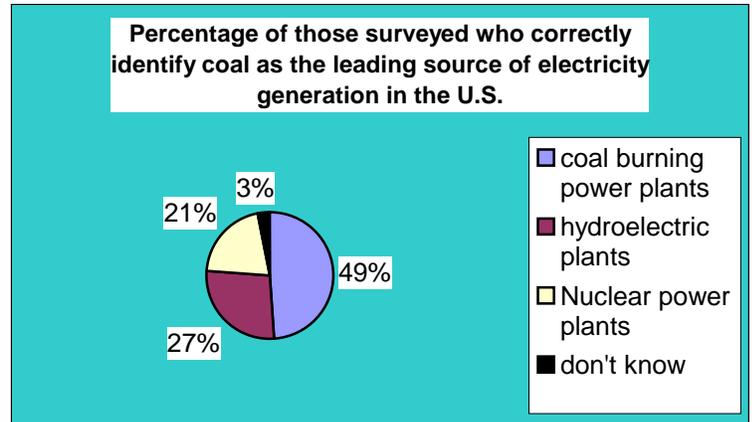


biodiversity and 9% said biodiversity means “the many kinds of diseases that affect humans.” In a related question that asked the most common reason for the extinction of animals and plants, “habitat loss” was correctly identified by 63% of respondents. This compares with 62% in 1999.

Kentuckians were less able to identify the primary benefit of wetlands in the 2004 survey than in the 1999 survey. Only 63% said that wetlands help to clean natural water systems. This is down from 72% in 1999. Only a little more than half of those surveyed in 2004 correctly answered the very basic question defining renewable resources. In the 2004 survey, only 55% correctly answered that solar energy and trees are renewable resources compared to 61% in 1999. Since 4% answered “don’t know”, this means that a full 41% of those surveyed in 2004 identified iron, coal and oil as renewable resources.

On some topics that have received a great deal of national media attention, respondents did fairly well. For example, when asked to identify which of the following: paints, acids and pesticides, glass and newspapers or building materials such as lumber and nails were considered hazardous waste, 86% of those surveyed correctly identified paints, acids and pesticides. Although this is down from 95% in the 1999 survey it is still a respectable majority. In the same vein, 74% of those surveyed in 2004 were able to identify “cancer causing ultraviolet rays” as the correct answer to the question, “What does the earth’s ozone level protect us from?” This is a 6% increase from the 1999 survey.

On another issue often covered in the national media, respondents were less successful at giving the correct answer. Only 61% were able to identify fumes from motor vehicles as the leading source of carbon monoxide in the atmosphere. This compares to 73% in the 1999 survey. Echoing the responses to the question about the leading cause of water pollution, a sizable minority of respondents in the 2004 survey (32%) incorrectly identified factory emissions as the largest source of carbon monoxide in the atmosphere. In the 1999 survey, 73% of respondents correctly identified fumes from vehicles as the leading source of carbon monoxide in the atmosphere while 24% thought the major source was factory emissions.



On an issue much discussed in Kentucky in the past five years, Kentuckians’ knowledge improved (or perhaps the circumstances improved and Kentuckians are able to identify that improvement). When asked the most common destination for household garbage, 77% of respondents correctly identify landfills. This percentage is the same as in 1999.

In 1999, 23% incorrectly identified illegal dumps as the leading destination for household garbage, compared to 15% in 2004.

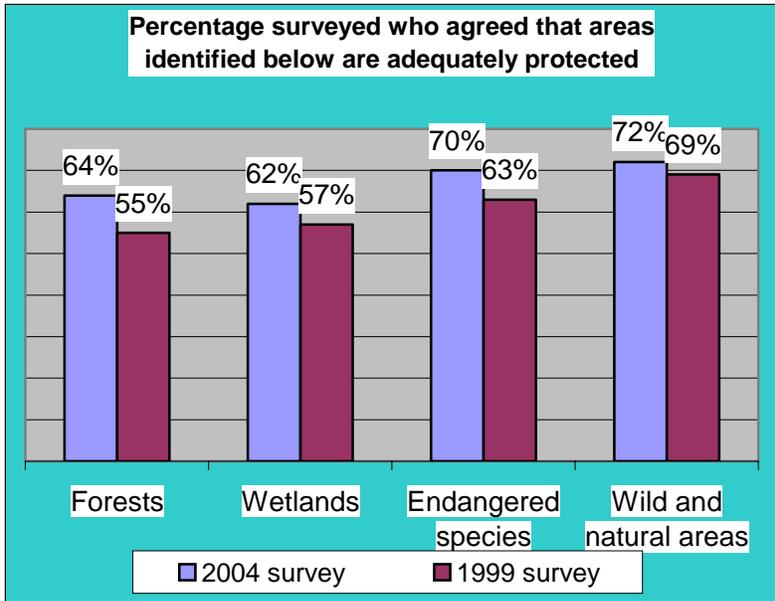
Two new knowledge questions were added to the 2004 survey. In the first, those surveyed were asked to answer the question, “What is a watershed?” Only 65% percent correctly answered, “the area that channels rain into a particular body of water.” The response to this very basic question adds to the concern that most Kentuckians incorrectly identify the leading source of water pollution, although they continue to identify water pollution as the single most important environmental issue in the Commonwealth.

On the final question of the knowledge section, those surveyed were asked to identify where Kentucky ranks nationally in acres of land per person that have been converted to development. The correct answer is second, but only 7% of respondents correctly answered this question. The most common, though incorrect, answer was 30<sup>th</sup>, given by 55% of those surveyed.



## ATTITUDES

Other questions on the survey asked Kentuckians to give their opinions on various environmental topics. In 1999, Kentuckians surveyed tended to believe that air and water quality in the areas where they lived was better than air and water quality in general. These beliefs held true in the 2004 survey, though the percentages changed somewhat. For example, when asked to rate the environmental quality of water in general, 50% reported that water quality was excellent or good. This compares with 40% in the 1999 survey. However, when asked to rate the environmental quality of water in their own area, 56% rated water quality as excellent or good, down from 62% in 1999.



When asked to rate air quality in general, 41% rated it excellent or good compared to 44% in 1999, while 64% rated air quality in their own area as excellent or good compared with only 52% in 1999.

When asked if specific areas of the environment are adequately protected, there was a very slight increase in those who agreed either strongly or somewhat strongly that the environ-

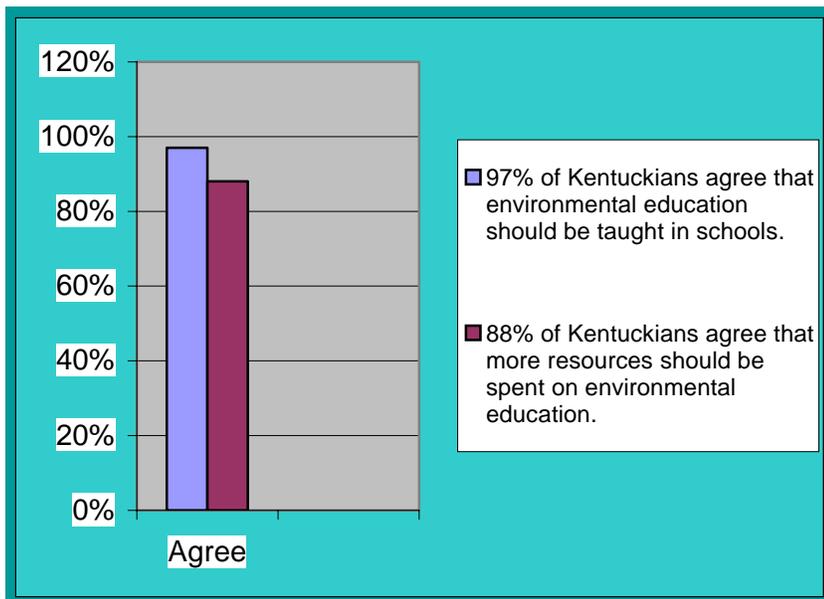
ment is adequately protected. For example, when asked if wild and natural areas are adequately protected, 72% agreed that they are adequately protected, compared to 69% in the 1999 survey. A smaller percentage, 62%, believed that wetlands are adequately protected, compared to 57% in 1999, 64% agreed that forests are adequately protected compared to 55% in 1999, and finally, 70% of those surveyed agreed that endangered species are adequately protected compared to 63% of those in the 1999 survey.

In perhaps the most controversial question of the survey, respondents were asked to agree or disagree with the following statement: "Private landowners should be able to use their land in any way they see fit." On this question, as in 1999, Kentuckians split down the middle. Keeping in mind the plus or minus 3.8% statistical margin of error, 51% of Kentuckians agreed with this statement while 49% disagreed. In 1999, 52% agreed and 48% disagreed. As in the more recent survey, this is a statistical dead heat.

A new question in the 2004 survey asked Kentuckians to agree or disagree with this statement: "It is possible to both protect the environment and have a strong economy." A remarkable 92% of respondents either strongly agreed or somewhat agreed with this statement

Those surveyed were asked to agree or disagree with the statement: environmental education should be taught in the schools." Ninety-seven percent agreed that environmental education

should be taught in the schools compared to 96% in the 1999 survey.



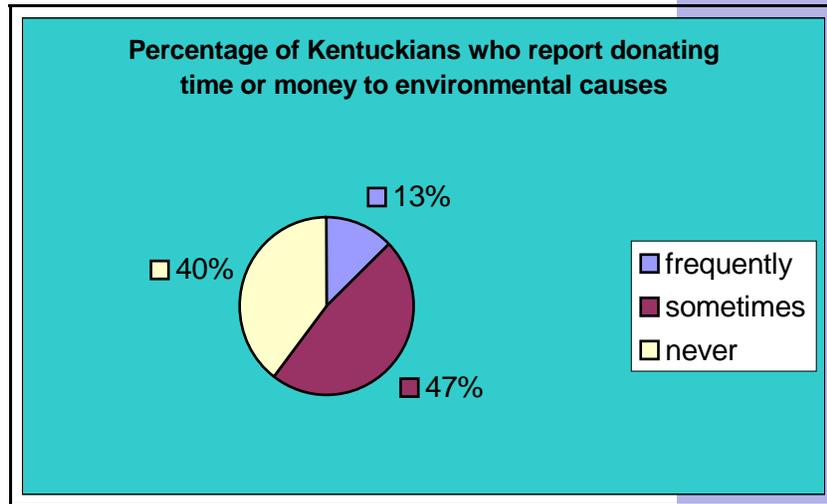
A new and related question asked whether the state should invest more in teaching about the environment. Eighty-eight percent of Kentuckians agreed that the state should invest more in this effort.

In a final question, which was new on the 2004 survey, respondents were asked if they agreed or disagreed with this statement: "The everyday actions by Kentucky citizens, regarding home,

farm and land management, are the major source of water pollution." Twenty percent of those surveyed strongly agreed with this statement while 50% somewhat agreed with it. The 20% figure is similar to the 17% that correctly identified runoff as the leading source of water pollution, which makes sense since runoff is essentially caused by the "everyday actions of all of us" with respect to water quality.

## BEHAVIORS

The final section of the survey concerned reported behaviors that affect the environment. Respondents were asked to report behaviors or beliefs that would have a positive effect on the environment. Although readers should be aware that positive behaviors are often over reported, Kentuckians surveyed (in both 2004 and 1999) do report a strong interest in knowing about and protecting the environment. For example, 96% agree that knowing about environmental problems is important to them. This is the same percentage as in 1999. Another 60% report donating time or money to environmental causes either frequently or sometimes, down somewhat from 65% in 1999.



Eighty-four percent of Kentuckians said gas mileage is either frequently or sometimes an important consideration when they buy a car. This figure was 85% in 1999. Ninety-two percent of those surveyed in 2004 reported that they attempt frequently or sometimes to reduce the amount of waste produced in their household compared with 93% in 1999 and 83%, compared to 84% in 1999, reported that they try to buy products with less packaging. Planting trees is often an indicator of environmental stewardship and, in the 2004 survey, 24% of Kentuckians surveyed reported that they frequently plant trees, while 46% reported doing so occasionally. In 1999 these figures were 28% and 41% respectively.

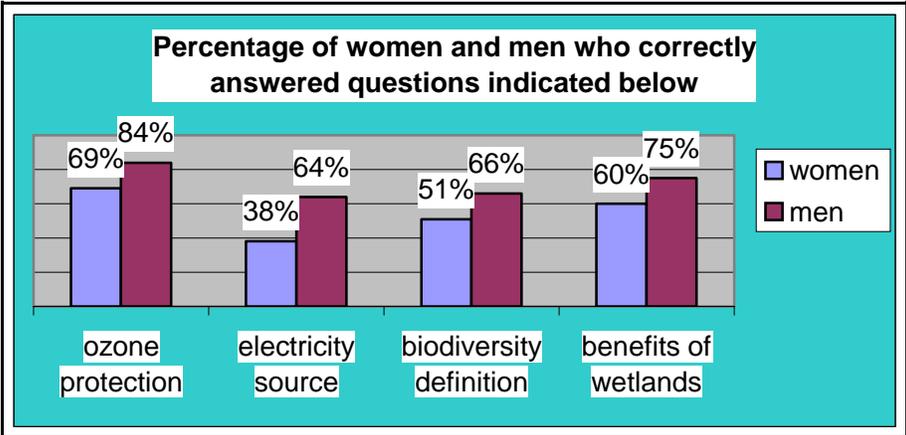
Money talks, and one of the questions on the survey asked respondents to answer yes or no regarding whether or not they would be willing to pay more for goods and services in order to protect the environment. The number of those who answered yes dropped from the 1999 survey, moving from 74% to 63%. When asked how much more they were willing to pay, of those who answered yes to the previous question, 52% said they would be willing to spend 5% more on goods and services in order to protect the environment and 32% said they would be willing to spend 10% more. In 1999, these same figures were 47% and 28%. In both the 2004 survey and the 1999 survey the percentages dropped substantially when asked if they would be willing to spend 15% or more.



# THE EFFECTS OF SOCIOECONOMIC FACTORS ON THE SURVEY

Along with the knowledge, attitude and behavior questions, those surveyed were asked to report such information as their age, education level, gender, in what type of community they lived, and how long they had lived in the Commonwealth. For some questions on the survey there were statistically significant differences in the way these socioeconomic factors affected answers to the questions. The most striking of these were the differences between answers from men and women. For example, women were significantly less likely to correctly answer several of the questions in the knowledge section of the survey. These are listed below.

- ◆ Only 69 % of women correctly stated that the ozone layer of the atmosphere protects us from ultraviolet rays, as opposed to 84% of men who correctly answered this question.
- ◆ Only 38% of women correctly identified coal as the leading source of electricity generation in the U.S. Men correctly answered this question 64% of the time.
- ◆ Only 51% of women correctly defined biodiversity as the many types of plants and animals, as opposed to 66 % of men.
- ◆ Only 60% of women were able to correctly identify the primary benefit of wetlands (that they help clean water), whereas 75% of men answered this correctly.



The exception to this rule was the question about the percentage of Kentucky’s land per person under development. Women did answer this question correctly significantly more often than men though neither group did very well. Ten percent of women correctly answered this question compared to only 4% of men.

Although they did less well than men on the knowledge questions, women were significantly more concerned about the environment. In the attitude section of the survey:

- ◆ Women were significantly less likely to identify air quality in general as excellent or good (34%) than were men, 49% of whom identified air quality in general as excellent or good.
- ◆ Women were significantly less likely to identify air quality in their area as excellent or good (59%) than were men (70%).
- ◆ Women were also less likely than men to identify the water quality for their area as either excellent or good. Sixty-two percent of males did so, as opposed to 51% of females.
- ◆ Women also were less likely to agree that wild and natural areas are adequately protected. Sixty-nine percent did so, compared to 74 % of men.
- ◆ Women were less likely to agree that wetlands are adequately protected. Fifty-nine percent of women agreed wetlands are adequately protected, compared to 65% of men.
- ◆ Women were also less likely than men to believe that endangered species are adequately protected. These figures were 65%, compared to 75% of men.

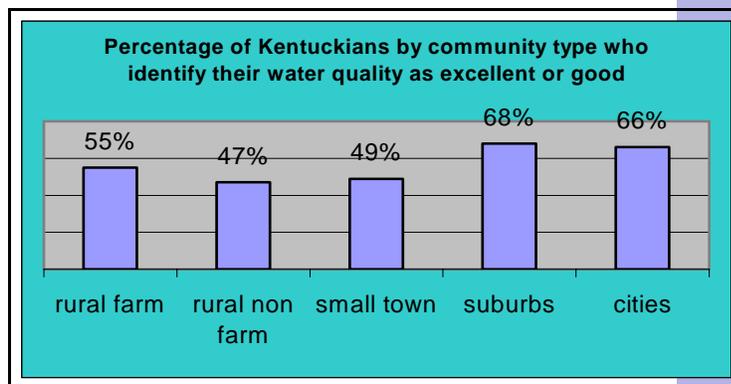
This concern for the environment is reflected in two areas of environmental behaviors: where 46% of women report frequently buying products with less packaging as compared with only 31% of men, and where 58% of women report frequently trying to reduce household waste as opposed to 53% of men.



How long respondents had lived in Kentucky was also a factor in their knowledge and attitudes toward the environment. Only 53% of respondents who had lived in Kentucky more than 30 years were correctly able to define biodiversity as opposed to 64% of those who had lived here less than ten years. Respondents who had lived in Kentucky longest (30 years or more) were also more likely to agree that landowners should be able to use their land in any way they see fit. These figures were 56% compared to 38% of those who had lived here less than 10 years. Kentuckians who had lived here longer than 30 years were also less likely to agree that it is possible to have a strong economy and protect the environment; though a strong majority of both groups agreed with the statement. Ninety percent of those living in Kentucky for more than 30 years agreed that it is possible to have a strong economy and protect the environment, compared to 98% of those who had lived here less than ten years.

Where Kentuckians live also affected their view of the environment. Respondents were asked to identify where they lived as either a rural area on a farm, a rural area not on a farm, a small town, a suburb or a city of 50,000 people or more.

Eighty-seven percent of Kentuckians who live on farms report that air quality in their area is either excellent or good. This percentage falls steadily when reported by people who live in rural areas that are not farms, in small towns, in suburbs or in cities over 50,000. Only 52% of Kentuckians who live in cities report that their air quality is either excellent or good.



These percentages reverse themselves when Kentuckians are asked to rate water quality in their areas. Only 55% of those who live on farms, 47% of those who live in rural non farm areas and 49% of those who live in small towns rate their water quality as either excellent or good, but the rate increases sharply for those living in suburbs, 68% of whom rate their water quality as excellent or good and those who live in cities, 66% of whom rate their water quality as excellent or good.

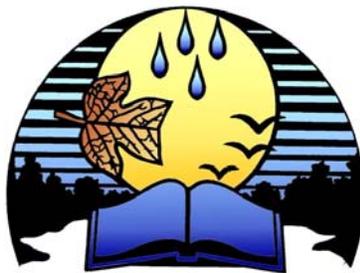
There are other statistically significant differences with respect to where Kentuckians live and some of their attitudes concerning the environment. For example, 66% of people who live on farms agree with the statement, "Private landowners should be able to use their land in any way they see fit," while only 40% of those who live in cities of 50,000 or above agree with that statement.

Respondents were asked how often they planted trees, as a measure of environmentally positive behaviors. 41% of Kentuckians living on rural farms reported frequently planting trees as compared to only 19.4% of those living in cities of 50,000 or more.

Among the most dramatic but not surprising differences on the survey was the number of correct answers in the knowledge section of the survey when respondents were divided by education level. For example, only 44% of respondents who reported finishing only grade school could correctly identify the importance of the earth's ozone layer, while 84% of those with graduate college degrees could do so. The same was true for providing the correct definition for biodiversity (29% of those who had finished only grade school as compared to 77% of those with graduate degrees.) Seventy-four percent of those with graduate degrees could correctly identify renewable resources compared to only 47 % of those who had finished only grade school.

In fact, for eight of the twelve knowledge questions on the survey, those with more education did statistically better than those with less, with correct answers rising steadily as education levels rose. However, on self-reported environmental behaviors, despite their better knowledge of environmental facts, those with more education were not more likely to report engaging in environmentally responsible behaviors. Moreover, attitudes about the environment were not significantly different among the various educational levels. The one exception was that 71% of those with graduate degrees said they would be willing to spend more for goods and services in order to protect the environment, compared to only 36% of those who did not finish grade school. Of course, this may be a function of their higher income levels.

One conclusion that may be drawn from this is that even though people understand the scientific facts of environmental issues, they do not connect those facts with their own actions and behaviors. This may be why Kentuckians believe that air and water pollution come from factories rather than from the every day actions of all of us. This is an argument for environmental education that is interdisciplinary; examining not just natural systems but the interrelationships between human and natural systems.



Kentucky Environmental Education Council