Basic Environmental Conservation and You - Member's Workbook
Michigan State University Cooperative Extension Service
4-H Club Bulletin
Robert George, Environmental Conservation Education
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4-H BULLETIN 130

"BASIC" Environmental Conservation *and You*

Member's Workbook

MICHIGAN STATE UNIVERSITY
Cooperative Extension Service • East Lansing

4-H—YOUTH PROGRAMS

THIS WORKBOOK BELONGS TO:

Name..... Age.....

Address .....

Club .....

Leader's Name .....

OBJECTIVE

The "Basic" Environmental Conservation and You Project is designed for all young people, whether on the farm or in the city, in a community club, project club, or school conservation club. This is an experience which we firmly believe will be helpful (and fun) in catching some of the real ideas and ideals of Environmental Conservation.

The Conservation Chart (Discussion and Development). – The aim is to follow the Conservation Story and color each area when it is timely with your discussion. Note: Completing the conservation chart is a club activity. *Use one chart per club or for each 5 to 10 members.*

The Outdoor Conservation Activities – The aim is to have an outdoor experience and activity in each of five major phases recognized in the 4-H Environmental Conservation Program: Soil, Air, Water, Forests (Plants), and Animals.

ACKNOWLEDGMENT

Special thanks are given to the Sport Fishing Institute for permission to reproduce, in black and white, their colored and copyrighted Conservation Chart. We congratulate them for their fine contribution to the understanding of what CONSERVATION means to each of us.

The aim of Michigan State University and the Cooperative Extension Service is to add to this contribution and help in the job to be done in Environmental Conservation Education.

Many others have assisted in developing this written material. We have tried to keep the most important parts of the original text which accompanied the colored Conservation Chart, and still make it brief enough to be really useful to young people getting started in Conservation.

EDITOR'S NOTE — THE CONSERVATION STORY

Even today if the people in Muddy River Valley would really start practicing (thinking, talking and doing) good conservation, their valley could become a much better place in which to live. However, it would be very expensive in both time and money. The scars and effects of Muddy River Valley will remain forever.

The best living is and always will be in Clear River Valley, because, in the future, the people there can use their time and money to maintain and improve their valley. Clear Valley can **BUILD FOR THE FUTURE** While Muddy Valley is **REPAIRING THE PAST.**

Robert W. George
Extension Specialist
Environmental Conservation Education

Conservation Chart

4-PART ACTIVITY

This activity has four parts which are concerned with the "CONSERVATION CHART"; comparing *two different valleys (watersheds).*

To complete this Activity, read the following story. After you have read it, discuss the things that led to the build-up of one valley and downfall of the other.

The conservation chart (uncolored), included in this Activity, can help you learn about the *"Basic"* principles of conservation. It also helps to give us ideas about "real" *conservation youth activities.*

By developing the conservation chart, you have an opportunity to show quickly and graphically that good farming and good forestry mean good hunting and fishing as well as good, healthful living. The chart clearly shows that forest fires, soil erosion, and water pollution may easily destroy wood resources, food and water resources, and wildlife resources.

* * * *

To start this "special watershed activity series," let's read and discuss the CONSERVATION STORY — history of Clear Valley vs. Muddy Valley. **Remember, they started out the same; but see the difference today!**

Part I — The Conservation Story

Clear River Valley and Muddy River Valley were alike when settlers first saw them. In the one valley, the people took good care of their soil, water, woods, and fish and game. In the other, they were careless. They destroyed the very things that meant so much to them.

Clear River Valley

Some people came to Clear River Valley. Like the other valley, it was covered with tall trees. Here, too, the river was cool and clear. It was fed by cool springs flowing from the hillsides. These people decided to settle in the beautiful valley.

The settlers left another valley to come here. Like the people in Muddy River Valley, they had destroyed the forests and the rich soil. The stream in that valley, too, had become muddy and polluted. They left because they no longer liked the valley. They couldn't earn much money there either.

When the settlers came to Clear River Valley, they had learned an important lesson: top soil is very

(Continued on page 4, column 1)

Muddy River Valley

When settlers first saw Muddy River Valley, the land was covered with tall trees. There were many wild turkeys, gray squirrels, bears, and other animals of the big forest. Clear, cool streams flowed from the hillsides. They emptied into the big river.

The stream wasn't called Muddy River then. It was clear and cool. It was called Cool River. Many big trout lived in this beautiful stream. Mud Lake was clear too. It was called Mirror Lake. There were big beds of plants in the water. There were many fish in the clear waters of the lake.

A thick layer of black soil covered most of the valley. The leaves which fell each fall gradually

(Continued on page 4, column 2)

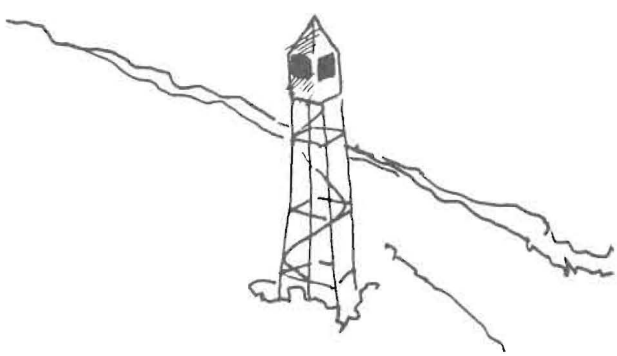
Clear River Valley

important. They had learned that most of the rains must soak into the ground if springs are to run and if rivers are not to overflow their banks.

The settlers decided that they would take good care of their new home. They would be careful about the *woods*, the *soil*, the *water*, and the *fish* and *wildlife*.

These people cleared some land, too. They used the big logs to build their houses and barns. They cleared land for fields and pastures.

Most of the steep hillsides were left in woodland. When big pine trees were cut, seed trees were left to start a new forest around the stumps. When other kinds of trees were cut, only a few of the big ones were taken each year, and there was room for smaller ones to grow and take their places. Each year only some of the trees were cut and sold. There were always more growing to be cut another year, and every year the people had some income.



The settlers built a fire tower on top of the mountain. During dry spells a man would spend the day in the tower looking for smoke. If he saw any, he would call a fire warden, telling him where the fire was. The warden and helpers would rush to the fire and put it out. These people knew the forest was important to them. They didn't want it destroyed.

The people were very careful with their fires. They put up signs warning visitors to be careful, too. Children were taught in school about the damage which could be done with a single match. They learned that a fire might harm the forest and the animals in it and might even spoil Clear River and Clear Lake for fishing and swimming.

The farmers were careful not to feed too many cows on the pastures. If the cows were allowed to eat too much of the pasture there wouldn't be any grass to hold the soil, and some of it would wash away. Crops were planted in broad strips across the hillside. Each strip was a band of corn or hay or some other crop. Rainwater which washed out of a grain field would run onto the hay. Here it would soak into the ground. The mud would be caught here, too. Some

Muddy River Valley

rotted into a thick layer of "humus" which enriched the land. Rain which fell on the forest soaked into the humus and was slowly absorbed by the soil beneath. It appeared again later as cool springs. The springs flowed all year, even during long dry spells.

The settlers liked this valley with its rich soil and its clear, cool springs and streams. They decided to live there. They cut down some of the tall trees and made log houses and barns.

Trees were cut to make room for field and pastureland. The rich soil raised tall corn and good grass for the cattle.

In time, more of the forest was cut away to make room for more fields. A sawmill came to the valley. Many tall trees were cut into lumber and hauled to a faraway city.

After a few years, most of the big trees had been cut. In the hills, where they couldn't farm, people carelessly allowed fires to burn through the cutover forests. This prevented young trees from growing up to replace the ones that had gone to the sawmill. It left steep slopes of bare soil.

In time, two towns appeared in the valley. Some factories were built there, too. More and more people moved to this area. As the towns grew, the farmers had more demand for their crops. They plowed more and more of the land, even on the hillsides.

The farmers plowed in straight lines up and down hill. They thought it was easier than plowing along hillsides. After heavy rains the water ran down the plow furrows. It carried some of the rich topsoil with it.

The farmers noticed that some of the soil washed downhill, and that small gullies were made by the

rushing water. They didn't worry, though. There was still plenty of good soil on the land.

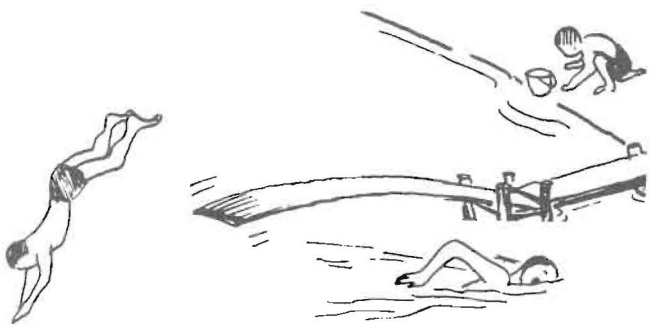
As the soil washed into the clear, cool river, the water became muddy. This water muddied the lake too. Some of the topsoil from the fields covered the gravel bottom of the river. Gradually, the fishermen

Clear River Valley

of the strips acted as dams to catch the water and let it soak into the ground.

The farmers knew that they needed good topsoil on the land. They knew that the rain must soak into the soil. The crops would be good if they took good care of the soil and the rainwater.

The people left brush thickets along the fences for the wildlife cover. They liked to hear the bobwhite call and to see the many wild animals that lived in this cover. They and their children liked to go fishing. Often, they fished in Clear River for a meal of trout, or in Clear Lake for some perch or other fish.



There was a good beach on Clear Lake. Children swam there every day during the summer. The water was clear and unpolluted. They didn't need to worry about getting sick if they swam there.

In time, a town grew along Clear River. The people decided to call it Pleasantville because it was a pleasant place in a Pleasant Valley.

Pleasantville always had plenty of clear, clean water to drink. The water was taken from Clear River. Since it was so clean, it needed only a treatment to make it safe for drinking. This didn't cost much. The people paid very little for their plentiful supply of good drinking water. It was plentiful because the people took care of the woods, soil, and water.

Pleasantville took care of its wastes. The town had a good sewage treatment plant. It didn't want to pollute beautiful Clear River. The wastes were removed from the water before it was discharged back into the river.

A factory was built above the town. It needed clean water to make good products. The company wanted to be a good neighbor, too. It wanted the good will of the people living in the valley. The factory built a treatment plant to take care of its wastes. It didn't pollute the river. It purified the water before returning it to the river.

The people in the valley were healthy. The crops and the milk were rich in mineral matter taken from

Muddy River Valley

in the valley were catching fewer trout in the streams and fewer fish in the lake. The soil which covered the gravel destroyed much of the fish food. The muddy water prevented growth of food, too. The fish couldn't see to find what food there was in the muddy water.

The towns discharged their sewage into the stream. Factories poured acids and wastes into the water. The river and the lake would no longer support many fish. People who wanted fish for dinner had to go elsewhere to catch them.

In time, the land raised less corn and other crops. There was less rich soil to raise them in. The pasture-land raised less grass for the cows to eat. Some of the land couldn't be plowed because big gullies had formed. The gullies grew bigger each time it rained, and the water rushed down them toward the river.

The rich topsoil kept washing away with each heavy rain. The remaining soil had little humus. As the good soil washed away, nothing but poor soil was left. It wouldn't raise good crops.

Now, the farmers had less to sell. So, they had little money to buy things with. The buildings didn't get the repair they needed. The farmers started to work in the factories. They couldn't earn enough money to live on by farming alone. They still raised some cows and tried to raise crops but the cows and crops were poor. The cows gave little milk, too. They couldn't get enough good grass to eat.

When farmers first cleared some of the land, many deer came to the valley. You could see them any morning or evening. There were rabbits and grouse and many other wild animals. Later, when the woods had been cut and burned, and the fields were bare and eroded, most of the animals disappeared also.

Now, the people in the valley couldn't go fishing and hunting. They couldn't see the interesting wild animals, either. People couldn't swim in the muddy, polluted water.

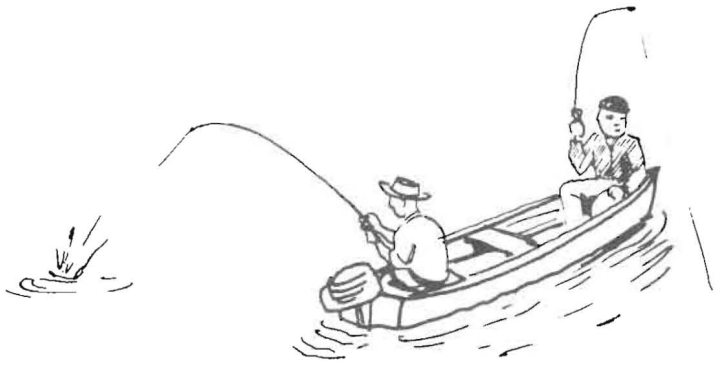
Sometimes the river overflowed its banks. Flood waters covered parts of the two towns. At other times

Clear River Valley

the soil. The people who ate the food and drank the milk received the nourishment their bodies needed.

Pleasantville folks spent much of their time out-of-doors. They hiked in the woods. They went swimming in Clear Lake. Most interesting of all was the fishing. Nearly everybody in the town went fishing.

The people today, in Clear River Valley are happy and contented. The farms raise good crops. Farmers buy the things they want with the money they get for their crops. You can see why people enjoy living in Pleasant Valley.



Muddy River Valley

there was very little water in the river. Now, heavy rains flowed quickly into the river, causing floods. Little of the rain soaked into the soil to appear later as springs. So, during dry summers, the springs no longer flowed. They no longer fed the river with water, and the river was very low during long dry spells.

The farmers now had to drill deep wells to get water for themselves and their cattle. They could no longer get good, cold spring water.

The two towns couldn't get good water either. They took the muddy, polluted water from the river and purified it. Taking out the mud and other impurities was expensive. The people now paid a high price for their water.

This had once been a very pretty valley; now it was unattractive. The buildings weren't painted. There were no green fields with good crops growing in them. The wild animals had disappeared. The people could no longer hear the drumming of the grouse. They couldn't go swimming. Some of them couldn't earn much money.

Even now the people living in the valley don't really call their towns Mudville and Drabtown. They don't call their streams Muddy River. But everyone else calls them by these names. So, that's what we call them on the chart because the "nicknames" describe them so well.

Part II – Coloring the Chart

The first step in actually finishing the chart for use in the display (exhibit) is to color it with water colors, tempera paint, or colored crayons. Painting, if possible, is best since the colors are richer and stand out better.

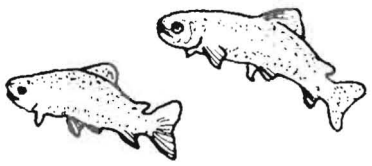
If you use paint, the areas to be painted one color should all be done at one time. Let the paint dry thoroughly before applying another color. Otherwise, the colors may run together and give the chart a muddy appearance.

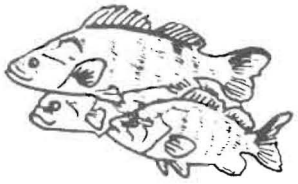
Coloring the chart should be the work of the entire club with each member delegated to color certain areas. Also, certain members should take the responsibility of cutting out and coloring the animals (See Part 3).

Different areas on the chart have certain colors. Each color represents the type of crops, or natural color that applies to that area. Use the following color code for the lettered areas:

AREA	COLOR	AREA	COLOR
BL	Blue	L.G.	Light green
BR	Brown	R	Red
G	Gray	W	White
D.G.	Dark green	Y.G.	Yellow green

Part III – The Animals in the Valleys





To complete Part 3, color the animals and fish and cut them from the chart. Then, paste the animals in the correct locations. This is a job for all members.

The following hints will help you in placing the animals on the chart.

TROUT

There are three Number 1's on the chart. Paste one rainbow trout on each of them. Naturally, they are all in Clear River. Trout couldn't live in Muddy River.

LARGE MOUTH BASS

In the clear, warm water of Clear Lake, the bass have plenty of food. There are many small fish and insects for them to eat. There is plenty of oxygen in this water too, and there is no pollution. So Clear Lake has many large mouth bass in it; Mud Lake has none. Paste the bass on Number 7.

SMALL MOUTH BASS

Paste the bass on Number 2. You wouldn't expect to find Number 2 in Muddy River or in Mud Lake. The small-mouth couldn't live there!

CARP

Paste one carp on each of the three Number 10's. Even if someone fished on Muddy River or in Mud Lake and caught a carp, he wouldn't want to eat it. Fish taken from the muddy, polluted water wouldn't taste good.

ROCK BASS

If you fished on Clear River between the bridge and the mouth, you would probably catch some rock bass. Often these fish will look for food when most others aren't feeding. Paste on Number 3.

SUCKER

Some suckers live in lakes; others prefer streams. The one in our chart likes cool streams, especially if the stream bottoms are gravel. Paste it on Number 4.

PIKE

This fish happens to be a Northern pike. In inland waters along the East Coast, we would find his cousin the chain pickerel. In some waters we would also find another cousin—the muskellunge. Paste on Number 6.

YELLOW PERCH

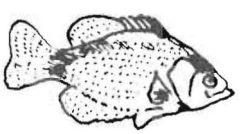
Cut out the school of yellow perch and paste it on Number 5. In mid-day you would put the perch out in the open water, but it's early evening, so put them near the weed bed. There are actually many thousands of yellow perch in Clear Lake. These fish travel in groups which we call "schools", spending much of the day out in the open water of the lake. Toward late afternoon or early evening, they move inshore to the outer edge of the weed beds to find food. Here, they eat insects and minnows until nearly dark.

CRAPPIE

Crappies also travel in schools. Usually perch are most abundant in cool, northern lakes; but crappies prefer warmer, more southern waters. Sometimes we find both kinds of fish in the same lake. Paste the crappie on Number 9, near the weed bed in Clear Lake.

BLUE GILL

Put the blue gills on the two Number 8's in the big underwater weed bed in Clear Lake. The bluegill is the favorite fish of many boys and girls. He fights hard when hooked. Few fish taste better than bluegills which are taken from clear, unpolluted waters.







GROUSE

The grouse lives on the tree-covered slopes of Clear River Valley. Here, careful tree cutting and managed forests have helped the grouse. The brush and young trees in the cut-over areas have increased his food supply. Grouse don't live in Muddy River Valley because the trees have been destroyed there. Paste on Number 19.

QUAIL

When people in Clear Valley wake up on a spring morning, they can hear the cock quail calling "bob-white" from the nearby fields. At times during the day, the hen can be heard calling, too. The quail always have food and shelter in Clear River Valley.

Actually, the quail travel in flocks, which we call "coveys." In summer, a covey is usually the two parents and their broods. In fall, several family groups may join the covey.

We show only three quail on the chart. Each one represents a covey of a dozen or more birds. Cut out each of the three quail and paste one on each Number 12. There are no quail in Muddy River Valley.

PHEASANT

When the settlers first came to Clear River Valley, they didn't see any pheasants. There weren't any "ringnecks" in the valley. In fact, there weren't any pheasants anywhere in North America. These birds were brought here from Asia.

Paste the picture of the male pheasant on Number 13. Knowing that the pheasant likes to live in rich farmland, with brushy field borders, you already know where to find Number 13. You will not find it in Muddy River Valley.

MALLARD

During the summer, mallard ducks like the shallow marshes where they can find water plants to eat. These and water insects are their main food. At night they rest on small islands of marsh plants or swim to open water. When fall comes, they may start feeding on corn or other grains in the fields.

Most ducks will fly south for the winter. In the spring the hen will return, with a mate, to her old nesting place in the marsh. Paste the mallard duck on Number 21. As you expected, you will find this number in the marsh bordering Clear Lake.

BLACK BEAR

The bear lives in the big woods. He might search the meadows and open areas for food, but he wouldn't venture very far over the ridge onto the barren slopes of Muddy River Valley. Here the trees have been cut down or burned. The bear wouldn't feel at home here. He likes Clear River Valley because of its big forests where he can find plenty of food and many hiding places. Paste on Number 20.

DEER

This doe deer lives at the edge of the big forest. During the day she and her fawn rest hidden among the ferns in the woods. Toward evening, they have a drink of cool water from the clear brook. Then they walk to the area where loggers had cut trees and shrubs to feed on. Paste the deer and fawn on Number 16.

FOX SQUIRREL

The fox squirrel likes the farm woodlots, especially if the farmer has left a few "den" trees – hollow trees in which the squirrel can build her nest and find good shelter for the winter. Paste the fox squirrel on Number 14. There are no fox squirrels in Muddy River Valley. Here the trees have been destroyed. The squirrels would find no homes and no food there.

GRAY SQUIRREL

In many ways the gray squirrel resembles his cousin, the fox squirrel. He will live in woodlots, but he prefers the big woods. In Clear River Valley, you






would expect to find the gray squirrel in the big forest and the fox squirrel in the farm woodlot. Paste the gray squirrel on No. 15.

WOODCHUCK

The woodchuck is also called a groundhog. Or you might know him as the Whistle pig. He's not a pig at all, but he does whistle when frightened.

The woodchuck builds an underground home at the edge of a hayfield or pasture, digging long burrows in the ground. During the day, when frightened, he quickly escapes into his home. All winter long, he sleeps there.

The woodchuck which you will paste on Number 17 on the chart is sitting in front of his burrow in Clear Lake Valley.

RABBIT

There are many cottontail rabbits in Clear River Valley. Here they have plenty of food and many hiding places – bushy fence rows and brier patches. Cottontail rabbits often use the burrows built by woodchucks.

In Clear River Valley the rabbits live at the edges of the fields and woods. Cut out the colored pictures of the three Number 11's on the chart.

MUSKRAT

Muskrats live in the marsh where they build their homes of cattail stems and mud. The houses have underwater entrances. Some of these homes have several rooms with separate entrances. The female raises her young in one of the rooms, and other muskrats live in a different room.

As you may have expected, there are no muskrats in Mud Lake. Here they would have no tender plants to eat or stems to build their homes and nests. Paste the muskrat on Number 18, in the marsh bordering Clear Lake.

Clear River Valley

Many other animals live in Clear River Valley. There are wild turkeys and bobcats in the big forests. In a walk through the wooded mountainside, you might see a porcupine high in a tree, eating bark and new twigs. Red fox and gray fox visit the valley. A mink lives along Clear River. Colonies of beaver have dams and lodges on several of the streams. There are many kinds of song birds, and some hawks and owls.

You could put many kinds of animals in Clear River Valley, but the chart would be much too crowded if we tried to show all the different kinds.

Muddy River Valley

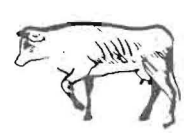
There's plenty of room for these animals in Muddy River Valley part of the chart, but we can't put them there because most wild animals wouldn't want to live in this valley. *There isn't much shelter from weather and enemies or food for wildlife in Muddy River Valley.*

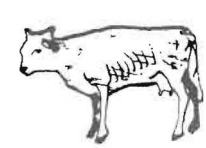
Not many wild animals live in Muddy River Valley because there are few places where they can find shelter from the weather and from their enemies. There are no trees and bushes along the fences where rabbits, quail, pheasants and other wild animals can hide. There isn't much food for some of these animals because too many cows in the valley keep the land overgrazed.

COWS

Much of the topsoil was washed away through the years because the people burned the woods, because they plowed up and down hill, and because they *tried to raise more cows than the grass on the land could feed.*

Most of the rich topsoil has washed from the land in Muddy River Valley. Now the land is poor and will not raise good crops of grass. The cows that graze on this land are *thin.* They don't give much milk. The milk they do give *isn't rich with cream,* like that from the cows which eat their fill of good grasses.





Cut out the pictures of the two underfed cows. Paste them on the two number 22's. The cows are thin and they don't look very contented. So, you know which valley they live in.

Part IV – Test and Review

After your conservation chart is completed, give yourself a little test and review. Check each question true or false and discuss.

1. Did farming techniques affect the valleys?
   TRUE ☐ FALSE ☐
2. Does good farming keep the soil in place on the farm? TRUE ☐ FALSE ☐
3. Industry had no effect on the communities?
   TRUE ☐ FALSE ☐
4. Forest fires had no effect on Muddy Valley?
   TRUE ☐ FALSE ☐
5. Recreation was altered by poor farming?
   TRUE ☐ FALSE ☐
6. Wildlife is the same in each valley?
   TRUE ☐ FALSE ☐
7. Stream pollution was no problem?
   TRUE ☐ FALSE ☐
8. Money from agriculture did not affect the valleys?
   TRUE ☐ FALSE ☐
9. The people in Muddy Valley were very happy and healthy? TRUE ☐ FALSE ☐
10. It would be cheaper to live in Muddy Valley?
    TRUE ☐ FALSE ☐

By now you should have a clear picture of how these two systems of living greatly affected the lives of the people. It is now your job to put this knowledge to work.

Take a "field trip" with your friends and club members and point out the good and poor conservation practices in your neighborhood. Help others to understand about "watersheds" and the real meaning of conservation; the Use and Development of our Resources.

(You know what – this would make a "sharp" DEMONSTRATION!)

Outdoor Conservation Activities

The following activities are suggested for your "basic" Environmental Conservation project. You may make your own choice in each of the five outdoor activities, or your club can work as a unit on any one activity.

The outdoor activities can be the final experience of the project. You may work on one of your activities along with the development and discussion of the Conservation Chart. As a club, try to evaluate and discuss each of the last five activities. This will lead you from the "Conservation Story" to the conservation of soil, air, water, forests, and wildlife in your neighborhood.

Remember, this project is designed to help you get acquainted with conservation, and to encourage you to learn more about wise use of our natural resources . . . the conservation of our total environment!

PROCEDURE

There are several different studies under each of the following activities. Select any one of them under each activity and talk it over with your leader, parents, and teacher. Place any snapshots or sketches you may get, together with your report of information obtained in the appropriate section (soil study, water study, etc.) of *your conservation report.*

Soil

ACTIVITY 5

There's a lot to be learned about *soil.*

We see it and walk on it. We watch crops grow on it. It can be washed away, blown away, or carried away. Some soil is very productive while other soil is not. Soils vary in texture; some are grainy like sugar and others are very sticky when wet. It varies on the surface and varies as we go down into the subsoil.

We are concerned with soil not only for its own production but for protecting it from eroding down into streams and rivers. In this soil conservation activity we want to think about soil use, or we might think a little broader about the land surface and say "land use."

Choose *one* of the following activities:

1. **Kinds of soil** – Do you have different kinds of soil in your neighborhood?
   - A. Collect in pint jars samples of clay, sand, gravel, and muck. Label the jars.
   - B. List where you found them. What was growing on the soil?
   - C. Compare your samples with those of the other members.
   - D. Can you find out why some soil is coarse and some fine?
2. **Organic matter** – The fertility of our soil depends on organic matter.
   - A. Find out about organic matter. How does it help soil?
   - B. Take a field trip to a wooded area to see the decaying leaves and organic matter.
   - C. Visit a farm and find out more about soil fertility and organic matter.
     1. Find out about crop rotations.
     2. Find out about green manure crops.
3. **Soil fertility** – We depend on the topsoil for our soil fertility.
   - A. Help your dad fertilize a crop, the lawn, or shrubs.
   - B. What kind of fertilizer was it? What do the three numbers on the fertilizer bag mean?
   - C. Carry out an experiment on soil fertility by putting some unfertilized topsoil in one pot, subsoil in another pot, and fertilized topsoil in another.
   - D. Sow garden seeds of your choice and keep watered.
4. **Erosion** – After a rain, visit a hill that has been covered by grass, one covered by trees, and one that is bare, or has been plowed recently.
   - A. Which area has the most erosion?
   - B. Collect and examine some of the soil that was washed downhill.
   - C. Was this soil good soil before it washed away? How does it rate now?
   - D. List three ways of controlling soil erosion.

Water

ACTIVITY 6

There's a lot to be known about *water.*

We see and feel rain, snow, dew, fog. We use water for drinking and washing. We irrigate lawns and fields. We talk about the weather, complain that it is too wet or too dry, and misquote Mark Twain about it. Most of us are conscious nearly all the time of the importance of water in our lives, but actually our knowledge of it is skimpy.

We know the chemical symbol of water but little about its properties which can make us comfortable or uncomfortable, rich or poor, secure or insecure. We cannot live without water; we could live better if we knew more about it.

Choose *one* of the following activities:

1. **Stream or lake study** – Do you have a stream or lake in the "resource" area that you have chosen to tour? Possibly you and your dad can go fishing in this body of water.
   - A. Find out what makes the stream or lake a good or poor place for fish to live. List your reasons.
   - B. What is the source of water for the stream or lake?
   - C. What fish or wild mammals use the water?
   - D. Is the water being polluted with sewage or waste from a factory, city, or home? What would you suggest to decrease the amount of pollution?

2. **Our drinking water supplies** –
   - A. Are there springs near your home?
     1. Is the water clear?
     2. Is the water cold? Why?
     3. Is the water good for human use? If not, why?
   - B. Ask 3 different farmers or neighbors in your neighborhood how deep their wells are. Report their answers.
   - C. Where does the water in your home come from?
     1. A well, lake, or stream?
     2. Is it treated or purified? If so, how?
     3. Does the drinking water cost you anything? In what way?
   - D. Contact officials of a town or city which has a municipal water supply. Find out the average daily water needs during winter. Compare this with the water needs during summer.

3. **Water uses in our county** – Possibly your county Extension agent can supply you with a medium-sized map of your county. Place this map in your club room.
   - A. Use a blue line to mark lakes and the courses of rivers and streams.
   - B. Make a black circle to locate villages and cities. Mark a red "x" on those located on streams or lakes.
   - C. Make a yellow circle to show where some feed mill, saw mill, or other mill was built on a stream or lake to use the water. You may have to ask an "old timer" to help you.
   - D. Which streams and lakes were used as "water transportation routes?"
     1. List their names.
     2. What was transported?
     3. Are they still used as "water transportation routes?"

4. **Water from snow**—Snow is a very important source of water. We can make many interesting observations.
   - A. Place some snow in one or more pails being careful not to pack it more than as you find it outside. Melt enough pails of snow to get one pail of snow-water. How many pails of snow did you need?
   - B. Possibly when doing Part "A" of this activity you melted some dark-colored snow as found alongside a plowed field, or an "exposed" plowed knoll in a field. If you melt this dark-colored snow and leave the pail of melted water stand over night, did you find any sediment in the bottom of the pail?
     1. What was it?
     2. Where did it come from?
   - C. Measure the depth of snow layer in an open field.
     1. Record the date of measurement, and depth of snow for each place.
     2. Was there any difference in depth? Why?
     3. Was there any difference in color of the snow layer? Why?

Air

ACTIVITY 7

Air is all around us. It is basic to life . . . all life!

What is air? "Air is that thin band of mixed gases that envelopes the planet on which we live!"

Air is mostly a mixture of Nitrogen (78%) and oxygen (21%), plus carbon dioxide (0.03%), water vapor, and traces of other gases.

Did you know:

The average person breathes 35 lbs of AIR each day. (That is 6 times as much as the food and drink used each day.)

Man needs to breathe air to give him oxygen (O) for his bloodstream to carry out the life-giving processes essential to keep him alive; and, as he uses the oxygen from the air, he changes the air he breathes and exhales carbon dioxide (CO_2).

Choose *one* of the following activities:

1. **Check on air pollution in your neighborhood:** Fasten a sheet of white paper inside a shallow pan . . . (or) spread a thin coating of oil on a piece of glass.
   A. Place outside in different areas.
   B. Check the surfaces three times:
      - six hours later
      - twelve hours later
      - twenty-four hours later

      (Examine the surfaces at each location with a magnifying glass or microscope and record.)
   C. Compare your results! (What did you find?)
   D. Can you explain the reason for air pollution?

2. **Air pollution from automobile exhaust pipes:** Place a piece of clean white cloth over the exhaust pipe of a car. (Caution! The exhaust pipe may be very hot if the car has been running!)
   A. Ask three different people with cars to help you.
   B. Have the car owner start the car.
   C. Examine the cloth for pollution evidence after each of the following three tests:

      Test 1. – The cloth is removed just after the engine was started.

      Test 2. – Cloth is removed after one minute.

      Test 3. – Another piece of cloth is held at the exhaust opening after the car has been idling for about 5 minutes.
   D. Record evidence and compare results.

AIR RIDDLE

(Try this "air riddle" on a friend.)

I seem like nothing,
but I have weight.
I have no color, no
smell, no taste.
You can feel me.
You can push me.
Without me you would live in a silent world.
I am necessary; I am dangerous.
You control me – I control you.
I follow you.
You follow me.
WHAT AM I? (AIR!)

3. **Is air pollution a problem in your community?**
   A. To whom does a community look for help with this problem?
   B. List what citizens can do to lessen air pollution.
   C. Make a scrapbook of clippings, drawings, and pictures concerning air – "community air" – in your neighborhood.

4. **The health of a community depends on air.** (In Michigan, the agency mainly responsible for air quality is the State Health Department – Air Quality Control.)

   Find out from your local health department about:
   A. What is done with the local garbage;
   B. Your local "air-quality-index" rating;
   C. Laws concerning burning of leaves;
   D. Industries, power plants, and other potential sources of air pollution
      (what is being done to ensure the quality of your air?);
   E. Consider what you can do – what your club (group) can do about "dirty air."

Green plants are the "producers" in our environment, and they are also "caretakers"–producing oxygen, reducing noise, decreasing air pollution, and guarding against soil erosion.

Forests (Plants)

ACTIVITY 8

Choose *one* of the following activities:

1. **Take a survey of your neighborhood.**
   A. List the different trees.
   B. Collect the leaf seeds and bark of one tree that is common.
   C. Learn all you can about this tree.
   D. How are the trees in your area used – for shade, windbreaks, erosion control, etc?
2. **Tree Planting Activity**
   A. Plant at least 1 tree in your neighborhood.
   B. Visit a pine-tree plantation.
   C. Make a map of the tree-planting area. List the environmental values of tree planting for the area.
   D. Are more trees needed in your neighborhood?
3. **Demonstrate the value of plants in water quality.** (Look again at clear valley and muddy valley. What really made the difference in the two rivers?)
   A. Compare the water runoff (in a road ditch) after a heavy rain in three areas:
      1. Where the area is cultivated for crops or is bare soil.
      2. Where the area is covered with grass.
      3. Where the area is covered with trees – a forested area.
   B. Record your results.
   C. With sketches, pictures, and props show why the water is clearer where there are plants.
4. **Learn how a plant grows and "produces":**
   A. Visit a forest nursery or garden center.
   B. What does a tree need for growth?
   C. What does a tree do for the environment in your neighborhood?
   D. Record your findings.

Wildlife (Animals)

ACTIVITY 9

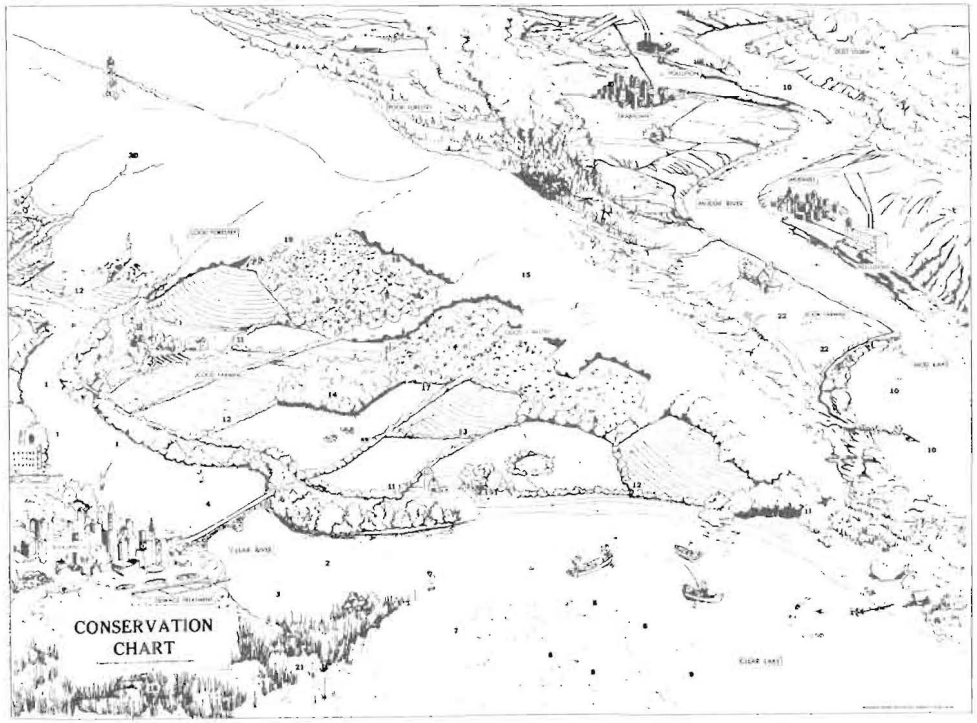
Some of the wildlife in the two valleys of the Conservation Story are present in your neighborhood. We have learned a little about them. Choose one of the following for your outdoor "wildlife" activity.

1. **As a club, go on a wildlife tour.** Check with the farmers or landowners in the area as to the wildlife present.
   A. List the wildlife you see.
   B. What kind of cover and food is in the area?
   C. Check for animal tracks.
2. **Construct and maintain a winter feeding station.**
   A. Operate between December 1 and April 15. (Write to the Wildlife Division, Michigan Department of Natural Resources, Mason Bldg., Lansing, MI 48823, for a free leaflet called "Feeding and Sheltering Michigan's Wildlife.")
   B. Keep a record of the quantity of grain used in the station as well as what animals made use of the feed.
3. **Take a trip to a lake or pond.** Find out what wildlife are present.
   A. How are fishing conditions? What fish are present in the lake?
   B. Do many birds and mammals live along the edge? Identify them.
   C. What foods do the fish, birds, and mammals eat?
4. Choose an area that you are interested in and see what you could do to help wildlife. Check this with the people who live in the area.

The_____Club

Presents

Environmental Conservation and You



(Display your workbooks and other project material here)

Exhibit - ACTIVITY 10

Sample Club Educational Exhibit

11P—15M—3:76—S.H.