Engaging Young People in Conservation and Education

A Toolkit for Site Support Groups

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SECTION ONE
This booklet is to help you to get young people involved in conservation activities. Many young people today do not know much about the natural world. They have not even learned the names of plants and animals in local languages. YOU can help to connect them with nature.

The activities and ideas are for young people in upper primary (10–14 years) and junior secondary level (15–16 years).

The practical activities focus on addressing conservation issues related to three key habitats: wetlands, grasslands and forests, all which are critical for resident and migratory birds. Some of these habitats may not be near your community. Just use the activities that work best for your area.

1.1.1 Identifying priorities and direction

Before you start, there are critical questions that need to be answered in consultation with the Site Support Group, teachers and youth leaders. Some of the questions are:

- What is the dominant habitat in our area?
- What are the conservation problems and issues in our area?
- Who or what might be contributing to the conservation problems?
- What are some solutions to these problems?
- How can we work with young people to help solve or reduce some of the problems?
1.1.2 Working with young people:
- How do we reach the young people? *(For example, through schools, church groups, youth groups, etc.)*
- Do we need any resources? *(For example, notebooks and pencils; DVD machine and screen; transport, etc.)*
- Are we able to get these resources locally?
- If education materials need to be produced, is it possible to get support from teachers or organisations?

1.1.3 Taking action:
- What are the key messages that we want to communicate? *(The message could be, being aware of the importance of the environment. Or it could be changing behaviour or taking action.)*
- What do we want the young people to do? *(For example, take part in exhibitions and festivals. Or become citizen scientists (nature detectives). Or take action advising farmers, planting trees, etc.)*

1.1.4 Results:
- Can the work with young people reach the local community and decision-makers?
- How can the County government come in?
- How will we measure the success of our work?

1.2 First steps

1.2.1. Setting objectives
Choose activities based on available resources and the results you want to achieve.

1.2.2 Selecting schools and the youth clubs
Some schools have environment or wildlife clubs. Most Wildlife Clubs are part of the Wildlife Clubs of Kenya. Some schools may have Boy Scouts or Girl Guides. Other clubs may be science, music, drama.

Where there is no club, talk to the school administration and teachers about starting one. This includes agreeing on:
- Who can become a member, and whether there is a fee.
- Main objectives of the club.
- Roles of the teachers and your group in managing the club.
- Activities to be carried out in and sometimes beyond the school compound.

Once a club is started, it is important to remain involved and keep the children and teachers interested.
1.2.3 Building relationships with stakeholders

It is helpful to involve others who are active in the community. These stakeholders include the local administration, teachers, other CBOs, the private sector, universities, the media and other conservation agencies. You can reach them in various ways:

- Referral by a local leader, teacher, or organisation.
- Establishing contact during meetings, events or projects.
- Conducting a survey of organisations in your area to find out what they do and possible areas of collaboration. Then writing a letter to introduce your group and its activities, expressing interest in working together; or organising a formal meeting with them.

Local leaders, groups or organisations may provide useful information about trends in use of natural resources, what has been done, and lessons learnt.

Some Stakeholders and what they might be able to do:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>What they might be able to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media (Print and audio-visual media)</td>
<td>- Publicity and coverage of projects, events, conservation issues, innovations.</td>
</tr>
<tr>
<td>Local Education Office, teachers</td>
<td>- Development of resource materials&lt;br&gt; - How to link the activities with the curriculum.</td>
</tr>
<tr>
<td>County Environment, Water and Natural Resources Committee</td>
<td>- Raise conservation issues in the County.&lt;br&gt; - Make decisions or regulations regarding use and access to natural resources.</td>
</tr>
<tr>
<td>Government agencies such as:</td>
<td>- Enforcement of environment regulations.&lt;br&gt; - Permission for access to a protected area.&lt;br&gt; - Knowledge of sites for outdoor learning.&lt;br&gt; - Provision of security if necessary&lt;br&gt; - Advice on tree nurseries and tree planting.&lt;br&gt; - Links with other Government agencies.</td>
</tr>
<tr>
<td>NEMA (National Environment Management Authority)</td>
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<td>KWS (Kenya Wildlife Service)</td>
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<td>KFS (Kenya Forest Service)</td>
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<td>WRMA (Water Resources Management Authority)</td>
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<td>NMK (National Museums of Kenya)</td>
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<tr>
<td>Community-based and non-governmental organisations</td>
<td>- Additional resources, publications, resource persons.</td>
</tr>
<tr>
<td>Businesses and private companies such as banks, manufacturing firms</td>
<td>- Participation in activities and provision of funds or loans.&lt;br&gt; - Promoting cleaner production to safeguard the environment.</td>
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</tbody>
</table>
SECTION TWO
2. Active Learning

We learn best by doing. Field visits and games are a great way to start environmental awareness.

2.1 Field visits

Field visits give young people a chance to see nature first-hand. You need to select the area to be visited, how to get there, and what will be learned there.

Field visits usually start with the school compound. Then visit other places that can be reached on foot, such as a field, farm, forest or river. If you have time and resources, organise visits to other habitats, museums, forest reserves or national parks.
During any field visit, encourage the children to:

- **Make observations:** Record physical features such as hills or streams. Look for plants, touch them, smell them or draw them. Watch animals and listen for them. Search for hidden signs of animal life such as nests, burrows and tracks.

- **Record observations:** Share what you discover. Draw pictures and maps, or take notes, photographs, video, or audio recordings. Write down details such as date, season, location, habitat, sound, smell, texture, colour, size and shape.

- **Ask questions:** This leads to more learning and interaction.

- **Identify:** Study a plant or animal. Do you know its name in the local language? Do you have a guidebook for identification? If you don’t, try to identify it down to a group or category.
  - Is it an insect? How many legs? Does it have wings? What kind of insect? An ant, a fly, a butterfly, a grasshopper?
  - Is it a bird? A crow, a dove, a bird of prey or a small bird? Can you tell what it eats by the shape of its beak? Does its song tell a story?
  - Is it a plant? A tree, a shrub, a climber or vine, a grass or sedge, or a flower? Is it used for food, for medicine, for shade, for decoration?

### 2.2 Games

Games are a fun way to learn, and can pass on conservation messages. Games may be used for indoor and outdoor learning. They can incorporate challenges to be solved and lead to discovery.

Pre-test any game before use. The following are tips for planning and playing games:

- Instructions to be clear to all the participants.
- Participants to be able to learn ideas from playing the game.
- After the game, ask the participants what they learned.
- Discuss how the lessons learnt from the game apply to environmental conservation.

See activities for different habitats and animal groups on pages 11–29.
SECTION THREE
3. Learning through Stories, Photos, Drama

3.1 Libraries

Books are valuable teaching tools. They do not need special equipment to view, and can be stored for a long time. Ask various conservation organisations for books and other publications. Keep the books in a safe place such as a metal box that can be carried to schools or in the field.

3.2 Story gathering and writing

Young people can play a vital role in informing others about the environment. This involves story gathering, writing and photography. Encourage young writers to present their work to the rest of the school. The best stories can be sent for publication to conservation organisations or newspapers. Five key things to keep in mind when writing a story are:

A is for Audience – Who are you writing for?
Think of the people you are writing for. What do they know? What do they not yet know? What do they want to know? What do you need to tell them?

B is for Brief – Keep it short!
A clear and simple language appeals more to readers. Stick to short sentences. Present one idea or concept per sentence. If possible, use headings and paragraphs. Re-read and revise your story many times to ensure the story flows from beginning to end.

C is for Correct – Accuracy is critical
Check the facts before you write about them. Ask different people to get their different viewpoints. Check that names and places are identified and spelled correctly. Once something is published, you cannot take it back.

D is for Development – how the story develops
There are three components of any story:
(a) The introduction or beginning: How the story starts really matters. Our great-grandparents knew this when they sat their grandchildren by the fireside in evenings for storytelling. They might start in a creative way like “hadithi, hadithi,” then the kids would respond “hadithi njoo”. This was a way to catch the attention of the audience. An introduction has to be catchy and interesting. Journalists usually try to answer What? Where? When? Why? in the first paragraph of a story.
(b) The body or main plot: This carries the weight of the story.
(c) The end or conclusion: How you end your story is important too. Readers are taken through a journey and they need to know the end of the journey as they read a story.

**E is for Electronic or Print**
This refers to where the story will be published. Is it in print, online or audio-visual media? Stories may be pinned on school notice boards, read during assemblies, posted on social media or a blog, or submitted for publication in magazines. (Magazines include Komba, the magazine of the Wildlife Clubs of Kenya, or Nature Net, the Nature Kenya monthly newsletter). Explore writing in local languages too.

### 3.3 Photography: An image is worth ten thousand words

Nature photos are among the most interesting photos in the world. They tell us so much about creatures and places. Today, photos can be taken with cell phones. However, a having a good camera adds value to photography.

**Tips on how to take a good photo:**
- Understand how your camera works. If it’s a new one read the manual carefully.
- Cover the lens when not in use. This protects it from scratches and strong sunlight.
- Frame your subject. That is, make sure what you are photographing fits nicely in the frame of the lens. Remember, your eye is the first camera.
- Take a photo that tells a story. Do not just take a photo for the sake of it.
- Take many photos and change angles. Different angles make a picture interesting to look at.

### 3.4 Performing arts

Performing Arts include music, dance, drama, poetry, and storytelling. Voice variation and body movement are used to highlight issues, educate as well as entertain. Participation helps to develop creative thinking, team work, public speaking and writing skills.

**Tips for a good drama presentation:**
- Prepare early.
- Practice, practice, practice.
- Make sure that performers speak clearly and slowly enough to be understood.
Performances can be prepared for major environmental celebrations, or for annual drama or music festivals.

Poems are a powerful way of writing, using just a few words to create images or express feelings.

**Tips on writing poems:**
- You might want to describe a place, a season, a plant or animal. Or you might want to cry out over destruction of the environment, or praise a hero.
- Carry a notebook, pen or pencil for writing down ideas and observations.
- You can start by writing in free style (no verses); as you progress you shape the poem into verses
- As the poem takes shape, revise it.
- Ask your friends and teachers to read and provide comments.
- Put feelings into the poem.

**3.5 Visual arts**

These include painting, drawing, sculpture, crafts, or photography. Use available local materials, such as clay, wood or seeds, and make your own paints. The artwork can be used for classroom teaching, displayed during exhibitions, and entered in competitions.
Important points to consider while using performing or visual are:

- The target audience — is it aimed at resource users, decision makers, other young people?
- The message behind the story, for example, water scarcity as a result of destruction of catchment areas.
- The impact — is it to highlight the biodiversity found in a place, to outline threats, or to encourage people to change behaviour?
- Remember that the impact will be greater if it appeals to the emotions of people.

### 3.6 Conservation films

There are many good nature films available today. Films can be hired or purchased from libraries, bookshops and film production companies. Some films can be downloaded from the internet. Remember that equipment for showing films requires investment for purchase, hire and maintenance.

Choose the right film to explain a subject or introduce the youth to the wider world of wildlife. If possible, watch the film before screening it, and see whether it meets the need of the audience.
Before showing a film, introduce the subject. Ask the children what they know about the subject.

After the film, ask the children what they saw, heard or learned. Explain new concepts in the film. Ask the children if there are lessons from the film that they can apply to solve a problem or change attitudes.

If you have the resources, make your own film featuring the local nature and culture.

**Where to get films:**
Africa Environmental Film Foundation (AEFF) produces educational films on various environmental issues in Africa. Upon request, the films are distributed free of charge to education institutions, wildlife clubs and conservation organisations in Africa (www.aeffonline.org).
4.1 Wetlands

4.1.1 What are wetlands?
Wetlands are areas where land meets water. The water may be fresh, salty or alkaline. Wetlands include swamps, dams, seasonal pools, riverbanks, lakeshores and seashores.

Some fresh water wetlands are permanent — they hold water all year round. Other wetlands are seasonal, drying up for part of the year. Fresh water or alkaline wetlands cover about 3% of Kenya in the dry season, and 6% in the wet season.
ACTIVITY 1: Bird migration race

This is a kind of game or drama for outdoor use. Migrating waterbirds — ducks, storks, flamingos, plovers and sandpipers — fly from the places where they nest to places where they feed and rest. For example, Lesser Flamingos breed, or nest, on Lake Natron. After breeding, they fly to alkaline lakes all over East Africa to feed. White Storks nest on chimneys in Europe. After the nesting season, it becomes cold in Europe. Then the White Storks fly south to Africa, stopping to feed in grassland and wetlands along the way.

Migrating waterbirds therefore need wetlands in their breeding habitat AND in non-breeding sites. Since these two sites may be thousands of kilometres apart, waterbirds also need wetlands in-between.

The populations of some species of waterbirds are healthy; however, populations of many are showing downward trends. Examples of bird species that appear to be healthy in most areas in Kenya are Cattle Egrets, Sacred Ibis and Hadada Ibis. One well-known species that has recently become endangered is the Grey Crowned Crane — national bird of Uganda.

The main threat to migratory waterbirds is the disappearance and degradation of wetlands – sites to breed and feed. Without wetlands, dozens of species of ducks, storks, pelicans, flamingos and other waterbirds lose the necessary habitat for survival.

Materials

Large playing field, two markers (e.g. sticks or stones) for every three students. Clearly mark the markers to differentiate the top from the bottom.

Procedure

1. Select a large playing area about 20 metres in length. Select two markers for every three students. Place half the habitat markers at one end of the playing field, and half at the other end. Scatter the markers so there is some space between them.

   Designate one end of the field the “nesting habitat” and the other the “non-breeding habitat.” This means you have two sets of markers; one set at the nesting habitat and one set at the non-breeding habitat.

2. Explain to the students that they are waterbirds and will migrate between these two areas at your signal. Tell them that the markers represent “wetlands.” These wetlands provide suitable habitat for waterbirds. At the end of each journey, the students must have one foot on a marker in order to be allowed to continue.
If they cannot get their foot on a marker, that means they have not found any suitable habitat. They “die” and have to move — at least temporarily — to the sidelines and watch. During migration, the students may want to “flap their wings”, moving their arms like birds in flight.

3. Explain to the students that many factors will limit the survival of migrating waterbirds. There will be times of abundant food, water, shelter and space. There will be other times when the habitat is stressed, with many factors affecting survival. Sometimes the area of available habitat is reduced. Tell the students that in this game, only three waterbirds can occupy a habitat marker at any one time.

4. Start with all of the students at the non-breeding habitat. Announce the start of the first migration. Ask the students to migrate in slowly until they become familiar with the process. Then they can speed up. On the first try, all the birds will successfully migrate to the nesting habitat. Explain that there has been no loss of available habitat. Thus, a successful nesting season is at hand.

5. Before the students migrate toward the non-breeding habitat, turn over one marker from the non-breeding region. Explain that a large wetland area has been drained to build a shopping mall. Ask the students to migrate to the non-breeding habitat. When they get there, three students will not have a marker. Tell them to stand on the sideline. Explain that these three birds “died” as a result of loss of habitat. (Remind any “dead birds” that they will have a chance to get back into the game. They can come back as surviving young when favourable conditions prevail and there is habitat available in the nesting ground.)

6. Repeat the process for eight or ten migration cycles to illustrate changes in habitat conditions with resulting effects on the birds. Give examples of positive (creating new wetlands and restoring damaged ones, or planting shrubs and trees, setting aside land for a park, removing water hyacinth and negative factors (floods, drought, disease, predation) that might influence the birds’ survival.

7. Ask the students to summarise what they have learned about the many factors that affect waterbird migration. List and discuss human-caused factors and environmental factors. Compare similarities and differences between these limiting factors. Highlight those that the students identify as posing the most significant long-term threats to the survival of migrating waterbirds.

Source: Modified from PROJECT WILD, Canadian Wildlife Federation
**ACTIVITY 2: Field trip to a local wetland**

Arrange a visit to a wetland:
- Divide the group to observe different areas, such as upstream and several parts of the wetland.
- Ask students to write down or draw some of the animals and plants they see during the visit. They may see reeds like Typha, Papyrus or other sedges; birds like a heron or a stork; water creatures such as fish, snails or crayfish. When students do not know the name of a plant or animal, they can draw it.
- Ask students to observe human activities at the wetland.

After the visit, follow up with activities and discussion:
- Ask students to create three different wetland food chains by pasting or drawing pictures of wetland plants and animals in the correct space. Start each food chain at the bottom of the sheet with a producer (plant) and indicate what may eat it on the line above. Continue until the food chain is complete. Encourage students to share their results with the rest of the class to show the variety of possibilities.
- Identify and discuss human activities that have an impact on the wetland.

**Wetland Conservation**

Conservation means the wise and sustainable use of natural resources. Discuss this definition with the students. How is it different from simply setting aside or “preserving” natural resources? Ask them for reasons why conservation is important. Do the students think wetland conservation is important?

List reasons why wetlands should be conserved. Your list might include:
- Wetlands catch, store and release water. They help to control floods, protect the shore, and reduce soil erosion.
- Wetlands also purify water. Wetland plants such as papyrus trap soil, minerals and waste before they reach the water.
- Wetlands regulate the local climate. Wetland plants store carbon, helping to slow climate change.
- Wetlands are home to a rich diversity of animals and plants. They are the breeding grounds for fish, birds and other animals.

Economically, wetlands provide many goods and services, including:
- Water for people, livestock and wildlife.
- Fish and other foods.
- Plants products for thatching, baskets, canoes, mats and crafts.
- Dry season grazing grounds.
• Clay and other minerals.
• Transport.

Wetlands are also:
• Religious and cultural sites.
• Places for tourism and recreation.
• They provide an area for outdoor education.
• They are areas of scientific interest.
• They are beautiful!

Now ask the students what may happen if people did not conserve wetlands. **What can communities do?** Ask the students for **suggestions or recommendations.** These may include:

(a) Take action to reduce or prevent pollution.
   – For example, plant shrubs and reeds along riverbanks and around wetlands.
   – Or meet the owners of a factory and encourage them to treat the factory’s waste water.
(b) Raise awareness to the community by presenting the results from your wetland visit. Explain how human actions affect water quality and what they can do to prevent this.

(c) Find out how you can assist relevant agencies to ensure that people and businesses comply with regulations. For instance, promote waste water treatment.

(d) Help local communities to build water troughs for livestock to avoid trampling and bank erosion.

(e) Regulate the harvesting of plants and animals in a wetland. Emphasise wise use and sustainability for future generations.

(f) Learn more about wetlands and share what you learn with others who still think wetlands are wastelands.

(g) Get involved with the Kenya Wetlands Forum or Nature Kenya.

(h) If you are observing plants and wildlife or temporarily bringing them home, remember to replace them, unharmed, in their original habitat.

4.2 Marine wetlands

Introduction
Two worlds meet at the seashore — the land and the sea. The meeting place may be a sandy beach, a rocky cliff, a muddy estuary, a wide delta or a mangrove forest.

4.2.1 The beach
Here the land slopes towards the sea. The beach is covered in billions of grains of sand, mixed with tiny pieces of shells. Many fishermen keep their boats at the beach. People come from cities and from other countries to enjoy the sun, sea and sand.

The place where land meets sea changes every hour of the day. Sometimes the sea covers the beach entirely. At other times the water is low, exposing rocks and seaweed below the sandy beach. This change in sea level is called the tides. There is a high tide and a low tide every day
and every night. High and low tides happen at different times each day, because tides follow the movement of the moon.

The waves and tides bring food and dissolved oxygen. This supports a great variety of life. Microscopic animals and plants live among the sand grains. The waves also bring bits of seaweed, sea grass, shells and tiny living things. Sometimes the brown dead leaves of sea grass cover part of the beach. The waves also bring back rubbish that people have thrown into the sea.

**ACTIVITY 1:** Visit to a beach

(a) At the beach, divide into groups. Ask each group to find these objects in 10 minutes:
- Seaweed
- Shell
- Piece of old coral
- Living animal (such as hermit crab or sand flea)
- Seed or flower from the land
- Driftwood
- Flip flop or other plastic waste.

Discuss how each item ended up on the beach.

(b) Find the line where the tide deposited objects from the sea. Measure a square 2m by 2m (or any suitable size). Sort the items deposited by the sea in the following groups:
• Seaweed and sea grass
• Shells and other animals
• Stones, seeds, pieces of wood
• Objects made by humans.

What impact do you think the man-made objects have on marine life?
What can we do to reduce the amount of rubbish in the sea?

**ACTIVITY 2: Rubbish trace**

Look at a map of Kenya. Notice where the rivers enter the ocean. Soil from the highlands and rubbish from the towns reach the sea and affect marine life. Trace the path of rubbish from Nairobi to the sea. Classify the waste into various categories such as plastic, glass, metal. Discuss what we can do to reduce this.

**4.2.2 Mangroves**

Mangroves are trees that survive in soil covered by salt water at high tide. There are nine different species (kinds) of mangroves in Kenya. Mangrove trees grow on muddy shores, not on sandy beaches or rocky cliffs. They grow well where streams bring soil and fresh water. Mangroves form an important, sheltered habitat for young fish, prawns and other marine life. Mangrove wood is valuable, as it is strong and resistant to many insects.
**Activity 3: Exploring a mangrove forest**

- Do you notice anything unusual about the way mangrove trees grow?
- What animal life can you see below the mangrove trees?
- Draw a picture of a mangrove tree and a crab.
- Discuss how mangrove forests protect the shore from high storm waves.
- If possible, join a mangrove-planting activity.

Under the sea but near the shore, there are other habitats: coral reefs, sea grass beds, sandy areas and open water.

### 4.2.3 Coral reef

Tiny animals called coral polyps build the coral reef. Each polyp is a simple animal, a tube with tentacles. A polyp takes minerals from seawater and builds a wall around itself. Different species of corals build different kinds of walls. Millions and billions of corals together build the coral reef.

Living things called algae live together with the coral animals. Algae are like plants, they can make food in sunlight. Tiny algae help corals to live and to build.

A coral reef is like a mass of rocks with different shapes. Some are old, dead corals, and others are growing, living corals. There are tunnels and overhangs and other hiding places. Many other living things find food and shelter on the coral reef.

### 4.2.4 Sea grass beds

Sea grasses form grasslands under the sea close to the shore. They are important food for large animals such as Green Turtles and the rare Dugong (a marine mammal). Sea grasses are related to the plants that live on land.

**Activity 4: Exploring a coral reef**

Discuss what animals live in coral reefs, sea grass beds and the open sea.

Large animals include fish of many kinds, sharks, sea turtles, and marine mammals such as dugongs, dolphins and whales.
Do you eat fish? Do you eat prawns?
Do you know the local names of any fish?

Small animals include:
• Corals and jellyfish
• Crabs, prawns, lobsters
• Sea stars (starfish), sea urchins (with round shells full of spines) and sea cucumbers (look like sausages)
• Molluscs (snail-like animals with a shell) and molluscs without shells such as octopus and sea slug
• Tube worms, bristle worms and other invertebrates
• And microscopic animals and plants called plankton

This extraordinary, rich and diverse marine life is threatened by oil spills, silt from erosion, and plastic waste. It’s also threatened by changes in the chemistry of sea water because of burning fossil fuels. What can we do to reduce these threats?

4.2.5 Conservation Issues
Waste from homes, farms and factories ends up in the ocean. This pollution is very dangerous to marine life. Turtles may eat plastic bags, mistaking them for jellyfish, and die. When mangrove trees are cut down, they no longer protect fish nurseries – sheltered sites where young fish and shellfish grow up. When mangroves are gone, there is nothing to stop severe storms. When people collect the eggs of birds or turtles to eat, not enough young birds are born to keep a healthy population of these animals.

Remember Reduce, Re-use and Re-cycle to help marine life.

**Reduce:** use fewer polythene bags

**Re-use:** use plastic containers and polythene bags to store items

**Re-cycle:** Collect the empty plastic bottles in your community. There are factories that re-cycle them. If there are no such factories near you, think of how you can use the bottles. Some people string them on fences or use them to make walls.

Plastic waste that is really dirty and can’t be re-cycled should be buried in the ground.
4.3 Forests

A forest is an area covered with trees and other plants. Many trees make up a forest. Kenya has a wide range of forests, from coastal forest through central high mountain forests to the thick wet forests of the West. Large forests include: Kakamega, South Nandi, Mau Escarpment, Aberdare Mountains, Mount Kenya and Arabuko-Sokoke forests. There are many other, smaller forests, managed by Kenya Forest Service, Kenya Wildlife Service, local communities or private companies.
**ACTIVITY 1:** Make a plant scrap book

Collect plants in the school compound or in a forest. For small plants, collect the whole plant. For trees and shrubs, collect the leaves, and if possible flowers or fruits. Then carefully spread each one out on a piece of paper or cardboard.

To dry the plants, place them between newspapers and put a heavy weight on top. The weight can be a rock, a dictionary, etc. If possible, identify the plant with the local name or the common English or Scientific name. For instance, *Lusiola* tree, Mango tree, Bougainvillea bush, etc.

Write down the uses of the plant in the community. For example, mangoes are food and the trees also provide shade and wood for carving. Adding a photo or drawing of the plant or tree will add value. At the end, the kids will have made their own school plant guide.

**ACTIVITY 2:** Growing a seed

- First find tree seeds. If possible, visit a forest or woodland to look for seeds.
- Most seeds are inside seedpods, fruits or other coverings. Make sure seedpods have seeds inside.
- Write down the name of the tree where you collect the seeds. It can be the local name or common English name. If you don’t know the name, take a photo.
- Plant the seeds soon after collecting them. If you store them, store in a dry place, not in a polythene bag.
- Some seeds sprout easily. But seeds with hard seed coats (including acacias) need treatment before sowing. Treatment methods include:
  - Place seeds in very hot water. Soak some for ten minutes, leave others for a day
  - Soak seeds in cold water overnight.
  - Cut off a tiny bit of the seed coat with a sharp knife or nail clipper. Or scratch the seed coat with a nail. These “nicked” seeds can then be soaked for a few hours.
- Experiment with different methods. You can also ask for advice from a Forest Station.
- Next, find a place for the tree nursery. It should get both sun and shade.
- Get some soil, compost, manure or dung, and sand or small stones.
Collect containers such as cooking fat tins, milk packets, broken clay pots or thick plastic bags.

Make some small holes in the bottom of the containers to let water drain.

Mix soil as follows:
  - Two parts soil
  - Two parts compost or rich topsoil
  - One part sand or small stones
  - One part dry manure or dung (or just use more compost or topsoil).

Fill containers with the soil mixture, and water them.

Plant 3 or 4 seeds in each container.

Plant large seeds deeper than small seeds.

Place the containers in the nursery, water them when the soil gets dry, and wait. (Some seeds take a long time to germinate. Not all the seeds will sprout; some seeds will be too old, or eaten by insects, etc.).

Make a light shade for the nursery. For example, four poles supporting a sheet of wire netting, covered with some dry grass.

Make “rain” by punching small holes in the bottom of a tin. Pour water into the tin with holes.

When the seedlings germinate, they need tender loving care:
  - Water them morning and/or evening
  - Protect them from running children or hungry goats
  - Pull out weeds
  - Cut off roots that grow through the bottom holes; the seedling will develop more roots.

In the next rainy season, plant out your seedlings at home or school.

Once the seedling is planted, water it early in the morning and late evening.

Continue to water the planted tree during the dry season for at least one year.

Build a fence or use thorny bushes to protect the tree from animals.

ADAPTED FROM LEARNING FOR SUSTAINABLE LIVING IN KENYA, Nature Kenya, 2006
Restoring East African Greenheart in Central Kenya

East African Greenheart or ‘Muthiga/Muthaiga’ (Warburgia ugandensis) was once common in Central Kenya. But due to over-harvesting for timber and traditional medicine, it has disappeared in most parts of the landscape. Various parts of this tree are used as treatment of toothache, muscular pains, stomach and chest problems. The Muthiga Restoration Project was started in 2011 through efforts of Mrs. Loise Itotia and like-minded stakeholders. Mrs. Itotia had previously adopted an old Muthiga tree during the centennial celebrations for the Nairobi Arboretum in 2008. A tree nursery was established in Muthiga Primary School, Gatundu. The school and the area derive the name ‘Muthiga’ after the tree. Seedlings are later planted within the school compound and it’s the student’s duty to look after them. Seedlings are also distributed to parents to grow in their farms.

ACTIVITY 3: Exploring a log

- Arrange a visit to a forest or woodland.
- Find a fallen tree – a log.
- Look carefully at the log. Are there any plants and animals on it, in it or under it? If you can’t identify something, make a sketch of it.
- Ask the students why forests aren’t piled with high with fallen trees, branches, and leaves. What happens to trees after they die? [in Kenya, they are collected for firewood!]
- Examine the dead log to find answers to those questions. Assist students to develop other questions, such as:
  - How might the tree have died?
  - Has the tree been dead a long time or a fairly short time?
• What kinds of animals live on the bark? Under the bark? Inside the log? Under the log?
• Where do these animals get the food they need?
• Do any plants live on the log? How can they live without soil?

Students will look for evidence to help answer these questions.
– Insect holes
– Spider webs
– Nest holes
– Animal tracks
– Piles of sawdust
– Patterns in the wood under the bark

If there’s a camera or cell phone, guide the students to take photos of the log and the life around it.

ACTIVITY 4: Make bookmarks and greeting cards

Young people can draw pictures, or glue natural materials on cardboard to make a collage. They may include conservation messages.

Materials required:
  i. Paper or cardboard
  ii. Pencils
  iii. Glue or sticky sap
  iv. Colours (make your own from plants or soils)
  v. Paintbrushes (make your own by crushing the end of a green twig)
  vi. Locally available materials like dry leaves, seedpods, grass, etc.

Forest Conservation
The benefits from forests vary from community to community as they identify their unique values and priorities. The numerous benefits of forests include:
• Trees catch, filter and slowly release rain water. Forests are our main water catchments.
• Trees produce oxygen during photosynthesis. People and animals take in oxygen when they breathe.
• Forests provide us with energy, as wood fuel and as water for hydro-electricity.
• Trees enrich the soil and protect it from erosion.
• Trees provide timber, poles, fibres and other wood products
• Forests also provide non-wood products such as medicines, honey, mushrooms, grazing sites
• Trees shade us from the sun
• Forests provide food and shelter for birds and other animals
• Trees store carbon dioxide, helping to regulate the gases in the atmosphere around the earth.
• Forests provide employment in rural communities.
Forests are also:
- Religious and cultural sites
- Refuges for livestock and wildlife in times of drought
- Places for tourism and recreation
- Good sites for education and research. Community forests can be laboratories for testing innovative forest practices.
- Beautiful!

Ask the young people what activities they can do to conserve trees. These may include:
- Use energy-saving jikos (stoves) to reduce demand for charcoal and firewood.
- Encourage schools and hotels to use biogas or liquid petroleum gas for cooking
- Plant fast-growing trees in farms (See Activity #2)
- Identify trees in the area that are threatened due to over-exploitation, and plant more.
- Don’t buy meat from wild animals. It is not healthy, and destroys the diversity found in nature.
- Don’t buy furniture or crafts made of indigenous hardwood trees.
- Grow medicinal plants as a new type of crop
- Visit a Forest Station, Arboretum, KEFRI office, NEMA office or Nature Kenya office to learn more.

Be a friend to your community forest!!

4.4 Grasslands

Grasslands in East Africa support the greatest numbers of large mammals on Earth. Grasslands are also important areas for livestock grazing and agriculture.

Grasslands are composed of grasses and other non-woody plants. Where there are scattered trees and bushes in grasslands, we call them savannas. Grasses, like other plants, take in carbon dioxide in the process of photosynthesis. They release oxygen that we and other animals breathe.

Conservation issues
People plough up grasslands to grow crops for food and for sale. People change natural grasslands into settlements, tree plantations and farms. This destroys the habitat for mammals, birds, plants and other biodiversity that depends on grasslands.
**ACTIVITY 1: Who am I?**

This game is about biodiversity in the grasslands. Grasslands shelter different species of plants, birds, mammals, reptiles, insects and other invertebrates. They utilise grasslands to find food, build their home, hide from predators and raise families.

Materials needed:
- Pictures of different animals and plants found in grassland. These can be drawn by the students or collected from magazines and newspapers
- Paper (can be recycled magazines, etc.)
- Glue, pins and string.

Game version 1:
- Glue each picture onto a paper
- Each student chooses a picture and attaches it to his or her forehead
- The students ask each other questions about the animal or plant on their forehead to learn its name and its role in nature.
- You can set additional rules, such as:
  - limit questions to 20 questions each, or
  - allow answers to be only ‘Yes’ or ‘No’.

Game version 2:
- Pin a picture to the student’s back, but DO NOT tell the student the name of the animal or plant.
- The student asks questions to find out which picture is on his/her back.

**ACTIVITY 2: Understand a food chain and food web**

A food chain is a simple way of showing energy relationships between plants and animals in an ecosystem. Example of a food chain:

```
Sun > Seed > Mouse > Owl
```

The sun’s energy is used by a plant to make a seed. The seed is eaten by a mouse, which in turn is eaten by an owl.

In reality, an animal might eat many different foods. A food web represents the interaction of many food chains in an ecosystem.

- Ask students to consider a nearby grassland habitat.
- Ask them what plants and animals might be found in this grassland.
  Try to include mammals, insects, reptiles, birds and plants.
• Choose one plant or animal. Ask the children how the rest of the web would be affected if it was removed.
• Add humans to the ecosystem. Ask the students to consider the impact of people.
  – What new pressures would they create?
  – Which plants or animals would be most affected?

**Make a poster of a grassland food web**
• You will need cardboard or poster paper, paper, string, pencils or pens and pins or glue. Or use a chalkboard and chalk.
• The students draw the habitat (hills, streams, etc.).
• Add pictures of plants and animals (See **ACTIVITY 1**). Pin or glue them to the grassland habitat picture
• Connect the living things with others they interact with, using a string.
• Example: Termites mix the soil; they eat dry grass; they also eat animal dung. Ants eat termites. Birds also eat termites. Mammals eat termites too!

**ACTIVITY 3: Monitoring grasslands**
• If there is a grassland near you, plan to go there several times each year with the young people.
• You will need paper to make recording sheets, pencils or pens, and clipboard if possible.
• Select an area of grassland for monitoring. Measure and mark the area with sticks or poles. Several plots can be marked.
• Select certain species for monitoring.
• Ask the students to fill out a recording sheet on each visit *(a sample recording sheet is given below)*.
• Afterwards, discuss the results:
  – Are the grasslands healthy?
  – What threats did you find?
  – What can be done to reduce damage?
**Recording Sheet**

<table>
<thead>
<tr>
<th>Site or plot:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of recorder:</td>
<td></td>
</tr>
<tr>
<td>Weather conditions:</td>
<td></td>
</tr>
<tr>
<td>Season (dry, wet, in between):</td>
<td></td>
</tr>
<tr>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Number</th>
<th>It is used? For what?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants (Use local, English or scientific name)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass # 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass # 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass # 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass # 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bushes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rodents such as mice, rats or mole-rats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hares (in rabbit family)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antelopes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed-eating birds with thick, short beaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect-eating birds with thin, sharp beaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birds of prey such as hawks, eagles or owls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honeybee</td>
<td></td>
<td></td>
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<tr>
<td>Butterfly</td>
<td></td>
<td></td>
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<tr>
<td>Lady bird beetle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grasshopper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praying mantis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reptiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skink (a small fat lizard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grazing livestock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting grass for thatch, baskets, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearing for farming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- After several visits, compare the recording sheets.
- What changes have taken place?
- What impact do the human activities have on the grasslands?
- What can be done so that grasslands continue to serve us for grazing, for our households, for wildlife, for ecological balance?
SECTION FIVE
Birds are all around us, in all kinds of environments. They sing like we do, and most are active by day, as we are. Some birds have been domesticated, providing us with meat and eggs. Birds are part of our daily lives, our art, dances and songs and our myths and legends.

What makes a bird a bird?

(a) Feathers: All birds have feathers, and only birds have feathers. Feathers protect birds from wind, water and weather. Feathers can trap air around the bird’s body, keeping it warm in cold weather. Birds oil their feathers with grease from a gland near their tail. Rain rolls right off a bird’s feathers. Long, strong wing feathers and powerful muscles on their breastbone enable birds to fly. Each wing feather tip can also bend or twist, slowing the flight or changing its course.

(b) Beaks: Beaks are used for eating, but birds also use their beaks as we do our hands. With their beaks, birds pick up objects, weave nests, clean their feathers and feed their young. Birds’ beaks are of many different shapes, which tell us something about how the bird lives. The eagle’s strong hooked beak is well suited for tearing meat. The sunbird’s long thin curved beak helps it to suck nectar from flowers.
(c) **Eggs:** Birds mate and the female lays eggs. Most birds sit on their eggs to protect them as chicks develop inside. When the chick hatches, the parent birds feed it and care for it until it is able to look after itself. As the young bird flies off into the world, many of its actions are guided by instinct. Instinct is a knowledge that it is born with. Most birds have an inborn knowledge of how to sing, feed, and build a nest. Birds also have the ability to learn; some, like crows, learn better than others.

**Where do birds live?**

Birds live in different habitats, or surroundings. Flamingos live on alkaline lakes. Ostriches live in grassland and dry areas. Crowned Eagles live only in forests. House Sparrows are comfortable living in towns. Some birds are particularly well suited to living in certain habitats, or surroundings. When their surroundings change, they may not be able to change and live anywhere else. The kinds of birds who learn new things may be able to change their habits when conditions change.

**ACTIVITY 1: Bird “Bath”**

- To observe birds at close range, provide water to drink or bathe.
- Use a plate or dish made of clay, ceramic or plastic. Fill it with clean water each day.
- Put the “bird bath” on a wooden board or a flat rock, or on top of a large tin. Place it where cats cannot reach it. You can build a platform on a pole, or hang a tray from a tree.
You may also feed the birds. Use natural foods such as millet seeds or leftover pieces of fruit. Be aware, however, that food may attract rats, monkeys or ants.

Observe the birds that come to drink or bathe. Draw pictures of the birds. Ask people if they know the names of the birds.

**ACTIVITY 2: Bird names**

- Find out the names of the birds near you in different languages.
- Ask people who work outside – herders, farmers, hunters, tour guides – for the local names of birds.
- Look in museums, in books, or on the internet for the English names of birds.
- How many kinds of birds can you recognise and name?

**ACTIVITY 3: Bird study**

Observe the birds around you. Use a notebook and pencil to write down your observations and draw pictures of the birds you see.

**(a) What do birds eat?**

- Many birds in farmland eat insects, and help to control insect pests. Some birds like to eat seeds, and may damage crops such as rice or millet.
- We are afraid of owls. However, owls help farmers and everyone by catching large numbers of rats, mice and other rodents. Many hawks and eagles also catch rodents.
• Is there a dumpsite or rubbish heap near you? Do birds go there? What do they eat? Do they eat the rubbish? Or do they eat the insects and rodents that are eating the rubbish?
• Some birds suck nectar from flowers. As they do this, they may pollinate the plant.

(b) Where do birds live?
• Take a walk in different habitats, such as a town, a farm or a forest. Notice the birds in each habitat.
• Crows, Black Kites (“hawks”), pigeons, swifts and House Sparrows may live in towns.
• Yellow and black weaverbirds, colourful sunbirds and starlings and small red firefinches may live in farmland.
• Birds in forests are shy but very beautiful. Different birds live in different forests. What will happen if the forest is cut down?

**ACTIVITY 4: Bird watching groups**

– Form a Wildlife Club or a Bird-watching team at your school
– Put a bird bath in the school grounds
– Plant bushes with flowers to attract sunbirds.
– Ask local tour guides or environment groups to take you on a field trip to a wetland or forest or a museum
– Join a national conservation organisation such as Nature Kenya or the Wildlife Clubs of Kenya.
5.2 Pollinators

Pollination is the way most plants reproduce. Pollen from a flower meets the stigma of another flower. The flower is fertilised, seeds are formed, and the generations continue.

Sometimes a flower can pollinate itself. In most cases, however, pollen from one flower has to reach the stigma of another flower.

Plants need help to transfer pollen from one flower to another. The wind carries the pollen of grasses and some trees. Most wild plants and crops rely on creatures such as bees, hawkmoths, sunbirds and bats for pollination.

After pollination, seeds and fruits are formed. In East Africa, wild insects pollinate crops like cowpeas, pigeon peas, passion fruit, mango, coffee, papaya, eggplant, okra, watermelons, pumpkins and many others.

No Pollinators = No Food

The relationships between insects and flowers are ancient, intricate and fragile. These relationships have evolved together over millions of years. They are important for the continued survival of about two-thirds of all flowering plant species.

**ACTIVITY 1:** A closer look at a flower

- Pick a flower
- Draw and label the various parts. For example, petals, sepals, stamens, stigma, etc.
- Note down the colour of each flower studied.
- Dissect the flower to locate where nectar is stored.

**ACTIVITY 2:** Studying pollinators

- Go to an open area where there are some flowers. Flowers include trees such as acacias, crops such as pumpkins, etc.
- Sit quietly and watch without moving too much. The best time for most insect pollinators (especially bees) is during warm sunny weather when it is not too windy.
  - Note the time and number of flowers visited by a pollinator.
  - Identify each plant visited by a pollinator. (Ask for the local name, or use a guidebook such as “Wayside Flowers”.)
  - Watch flowers at different times of day – some pollinators only visit flowers at specific times.
• If you observe carefully you will note different behaviours by different insects visiting flowers. Some of them might not be pollinators but nectar-robbers that just take the flowers’ rewards.

Tips for conserving pollinators:
1. Use chemical pesticides very carefully. Many pesticides are toxic to honeybees and other useful insects. If you must spray, do so when bees are not flying around.
2. Leave some natural areas and uncultivated land for pollinators to nest in.
3. Plant indigenous trees and wild flowers around the shamba and school gardens.
4. Leave areas of dry bush so that those species nesting in old branches and twigs can use them.
5. Plant borders of flowers or leave areas for wild flowers where pollinators can feed safely. Just like you need food daily, pollinators also need to feed from many different kinds of flowers.
ACTIVITY 3: **Pollinators matter**

(a) Visit a farmer:
- Identify crops in the farm that rely on pollinators.
- Note any insects visiting flowers and write the name of the crops or plants visited.
- Identify practices within the farm that are pollinator friendly and pollinator unfriendly.

Then discuss:
- Why is it important to conserve natural areas such as national parks and forest reserves for pollinators?
- How do pollinators contribute to natural health ecosystems in Kenya?

Amazing facts:
- Pollination is a vital service provided by nature for free that supports human beings.
- One in every three bites of food comes from food pollinated by insects.
- Preserving even small patches of natural habitat helps pollinators. It provides areas for wild pollinators to live in and then travel into cultivated areas to pollinate crops.
- We still don’t know who are the pollinators of most common wildflowers and even crops in East Africa! Perhaps YOU will discover a pollinator.

5.2.1 **The Bee Buzz**

The scientist Albert Einstein said: “If the bee disappeared off the surface of the globe, then man would have only four years of life left. No more bees, no more pollination, no more plants, no more animals, no more man.”

Bees are insects. There are many different types of bees. Over 20,000 different kinds of bees have been found and named by scientists so far. The honeybee is just one of these kinds of bees and there are several different species of honeybee.

Honeybees and humans have a long history together. There are ancient rock art sites in Africa that show people harvesting wild honey thousands of years ago. There are more wild varieties of honeybees in Africa than anywhere else in the world. Honeybees are social bees that live in groups called colonies.

There are two different kinds of honeybees found in Kenya. The Common Honeybee is the one we usually see. It is golden-and-black in colour and is usually seen in grassland, bush, coastal and forest areas. On high
mountains, such as around Mt. Kenya, the Aberdares and Mt. Elgon, the Mountain Honeybee can be found. This is a dark, chocolate-coloured honeybee that is adapted to high altitude areas.

Honeybees are important pollinators of many crops and wild plants. Apart from making honey, they also produce propolis, wax and bee pollen. These are used in industries and for medicine and beauty products.

Other kinds of bees in Kenya include Carpenter Bees, Amegilla Bees, Stingless Bees and Longhorn Bees. Most bees are solitary. Some bees, like honeybees and Stingless Bees, are social.

Bees make good pollinators for several reasons:
- They remain in one area and work hard.
- Honeybees visit the same types of flowers over and over again. This makes them efficient pollinators.
• Bees are good at transporting pollen; they have hairy bodies that pollen sticks to easily.
• Honeybees and most wild bees rely entirely on pollen and nectar for food; so they visit flowers throughout the seasons.

Without bees there would be far less food and wild fruits and seeds available.

**ACTIVITY 4:** All about bee keeping

- Visit a beekeeper and find out:
  - Types of beehives.
  - What to consider when choosing the place to put a beehive.
  - Other hive products apart from honey.
  - Equipment used during honey harvesting.
  - Benefits of bee keeping.
  - Plants in the nearby area utilised by bees.
  - Challenges in beekeeping.

Ask the students to write a report about what they learnt from the visit to the beekeeper.

**ACTIVITY 5:** How to construct a bee hotel

With less natural habitats available for bees it is becoming important to find alternative homes for them.

Bees are important pollinators of crops and wildflowers in our farms and gardens. You can help wild solitary bees by providing a safe nesting site for them:

- This is a deluxe ‘Bee Hotel’. Adjust the size to your local materials. The different layers provide nesting sites for different species of bees. Place in a sheltered area where it will not be disturbed. This will provide a nesting site for many years.
- A simple plastic PVC pipe packed with hollow reeds or bamboo assorted sizes. Hang or tie to tree/fence.
- Wooden block or post old stem/trunk with holes of different sizes drilled in it. Hang or lie in a sheltered area.
Bee hotel © Photo: Caroline Njoki

Build Your Own Wild Bee Hotel!

Bee hotels are important shelters for bees and other bees. They can help protect bees' nests by providing a safe nesting site for them.

(a) This is the basic bee hotel. Adjust the size to your local needs. The different layers provide nesting sites for different species of bees. Place the bee hotels in areas where they will not be disturbed. This will provide a nesting site for many years.

(b) A simple model of a bee hotel. Hang or tie to a tree, fence post, or wire mesh. Use local materials.

(c) Wooden blocks or small pieces of wood with holes drilled. Hang or tie to a tree or fence post.

For more information: 
www.bee-keepers.org

© Illustration – Dino J. Martins/Insect Committee
## ANNEX 1: Critical questions that should be asked

<table>
<thead>
<tr>
<th>Type of habitat</th>
<th>What are the conservation problems and issues in our area?</th>
<th>Who or what might be contributing to the conservation problems?</th>
<th>What are some solutions to these problems?</th>
<th>How can we work with young people to help solve or reduce some of the problems?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wetlands</strong></td>
<td>Reduction in the size of the wetland</td>
<td>Siltation from soil erosion</td>
<td>Protecting wetlands as a community resource</td>
<td>Listening to the young people and discussing with them:</td>
</tr>
<tr>
<td></td>
<td>Reduction in the quality of water and Pollution of wetlands</td>
<td>Drainage for irrigation</td>
<td>Awareness raising on the value of wetlands</td>
<td>• the causes of the problem</td>
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<td></td>
<td>Conversion of wetlands to agriculture</td>
<td>Disposal of industrial, agricultural and domestic waste</td>
<td>Practicing sustainable farming</td>
<td>• the challenges they face in managing or preventing the problem</td>
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<td></td>
<td>Agriculture and industrial development</td>
<td>Leaving natural vegetation along the shores of the wetland</td>
<td>• their ideas for solving the problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor farming methods</td>
<td>Organising better waste disposal</td>
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<td></td>
<td></td>
<td>Lack of information on value of wetlands</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Forests</strong></td>
<td>Reduction in the size of forests</td>
<td>Climate change</td>
<td>Increased awareness on climate change and its consequences</td>
<td>Encourage the young people to participate in conservation initiatives.</td>
</tr>
<tr>
<td></td>
<td>Conversion of forests to other land uses</td>
<td>Charcoal burning</td>
<td>Tree planting</td>
<td>Facilitate young people’s attendance at public events like rallies, community hearings, or fundraising events</td>
</tr>
<tr>
<td></td>
<td>Changes in the type of trees and the kinds of birds they shelter</td>
<td>Cutting of tall trees for timber and cutting of young trees for poles</td>
<td>Using alternative energy such as improved jikos or cooking gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deliberately-set and accidental fires</td>
<td>Setting aside areas of forest as Community Conserved Forests</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human population growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of herbicides and introduction of exotic species into areas surrounding forest fragments</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grasslands</strong></td>
<td>Reduced quality and quantity of grazing</td>
<td>overgrazing</td>
<td>Demarcating grazing areas</td>
<td>Encourage the young people to take leadership roles in the community</td>
</tr>
<tr>
<td></td>
<td>Conversion to agriculture</td>
<td>overuse of fire to maintain grass</td>
<td>Conserving some areas of natural grasslands</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human population growth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## ANNEX 2: Further reading

- **Wayside Flowers of East Africa**, by Theresa Sapieha, 2008

**Online Resources:**
- Pollinators: [www.discoverpollinators.org](http://www.discoverpollinators.org)
- KBA maps and pictures: [http://www.protectedplanet.net/](http://www.protectedplanet.net/)
• Global Forest Change: http://earthenginepartners.appspot.com/science-2013-global-forest
• Bird calls/sounds record: http://www.xeno-canto.org/
• Online testimonials on the problems and promises of natural resources (East Africa): https://enanga.org/
• How to build a bird bath: http://www.wikihow.com/Build-a-Bird-Bath
• Wetlands International: http://www.wetlands.org/
• How to grow seeds: http://www.wikihow.com/Germinate-Tree-Seeds / http://www.wikihow.com/Grow-Plants-from-Seed
• How to make bookmarks and greeting cards: http://www.wikihow.com/Make-a-Greeting-Card / http://www.auntannie.com/GreetingCards/BookmarkCards/
• Wildlife Conservation Film Festival: http://wcff.org/
• Filmmakers for conservation: http://www.filmmakersforconservation.org/
• African conservation fund: http://www.africanconservationfund.org/
• BirdLife International: www.birdlife.org
• Conservation International: www.conservation.org
• Fauna & Flora International: http://www.fauna-flora.org/
• Nature Kenya: http://www.naturekenya.org/
• International Union for Conservation of Nature (IUCN): http://www.iucn.org/
• IUCN Red List of Threatened Species: http://www.iucnredlist.org/

Other Sources:
• Teacher’s guide to Wetland activities: http://www.epa.gov/gmpo/education/pdfs/DUTeachers4-6.pdf
• Wetland Ecosystems: http://www.ducks.ca/assets/2012/06/Grade4-6teacher.pdf

ANNEX 3: Major International Environmental Days

<table>
<thead>
<tr>
<th>Occasion</th>
<th>Date</th>
<th>Website link</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Wetlands Day</td>
<td>2nd February</td>
<td><a href="http://www.ramsar.org/cda/en/ramsar-activities-wwds/main/ramsar/1-63-78_4000_0">http://www.ramsar.org/cda/en/ramsar-activities-wwds/main/ramsar/1-63-78_4000_0</a>__</td>
</tr>
<tr>
<td>Earth Day</td>
<td>22nd April</td>
<td><a href="http://www.earthday.org/">http://www.earthday.org/</a></td>
</tr>
<tr>
<td>World Migratory Bird Day</td>
<td>2nd weekend in May</td>
<td><a href="http://www.worldmigratorybirdday.org/">http://www.worldmigratorybirdday.org/</a></td>
</tr>
<tr>
<td>International Day for Biological Diversity</td>
<td>22nd May</td>
<td><a href="http://www.cbd.int/idb/">http://www.cbd.int/idb/</a></td>
</tr>
<tr>
<td>World Environment Day</td>
<td>5th June</td>
<td><a href="http://www.unep.org/wed/">http://www.unep.org/wed/</a></td>
</tr>
<tr>
<td>World Oceans Day</td>
<td>8th June</td>
<td><a href="http://worldoceansday.org/">http://worldoceansday.org/</a></td>
</tr>
<tr>
<td>World Day to Combat Desertification</td>
<td>17th June</td>
<td><a href="http://www.unccd.int/en/Pages/default.aspx">http://www.unccd.int/en/Pages/default.aspx</a></td>
</tr>
<tr>
<td>Clean up the World</td>
<td>3rd weekend in September</td>
<td><a href="http://www.cleanuptheworld.org/en/">http://www.cleanuptheworld.org/en/</a></td>
</tr>
<tr>
<td>World Responsible Tourism Day</td>
<td>6th November</td>
<td><a href="http://www.wtmresponsibletourism.com/">http://www.wtmresponsibletourism.com/</a></td>
</tr>
<tr>
<td>World Fisheries Day</td>
<td>21st November</td>
<td><a href="http://www.gdrc.org/doyourbit/21_11-fisheries-day.html">http://www.gdrc.org/doyourbit/21_11-fisheries-day.html</a></td>
</tr>
</tbody>
</table>
Site Support Groups (SSGs) are community-based organisations (CBOs) recognised by the community and the local government in a particular geographical area, working together to actively promote the conservation of globally significant biodiversity sites.

SSGs differ from CBOs because they have a higher spirit of volunteerism and are not motivated with the aim of benefiting or acquiring funds. SSGs promote community involvement in natural resource management at key biodiversity areas in a manner that suits the cultural, social, historic and economic circumstances prevailing. Often, SSGs are also known as Local Caretaker Networks and Local community Groups.

The BirdLife Africa Partnership helped establish the first SSGs in 1999 and today there are more than 145 SSGs in 19 countries across the continent of Africa.