



Notes for Eco-Assessment Tutorial Presentation





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This is a simple fieldwork exercise that will guide you in assessing an area for ecological health. A site is considered ecologically healthy when there is a high level of biodiversity, and a variety of habitats for plants and animals to live in. A healthy site will also have low levels of pollution, few to no invasive species and little human disturbance.

The tutorial is made up of three parts. While we recommend using all three parts of the tutorial, it is not essential to complete Part 1 & 3 to partake in the IMPRINT+ project or to gain a greater understanding of your local landscapes by using Part 2 on its own.

Part 1 – Pre-fieldwork Research. Poses topics for an individual or group to research before arrival at the site. With the knowledge acquired through this research you will be better able to assess the site accurately.

Part 2 – Onsite visual assessment. The assessments are made through simple visual and auditory observations. These observations are the first stage in ecological science. From these observations you can draw some simple conclusions about the area being studied. The more experience you gain with this kind of observational research, the greater the accuracy of your research.

Part 3 – Back in Class or at Home. This section provides some suggestions for school and youth groups of final activities that can be done after the site/habitat visit, to consolidate learning and take the information and research to a deeper level of understanding.

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Materials: You will need access to online or hardcopy resources that have information about the area you are researching such as local blogs, conservation groups, environmental protection websites, plant, vertebrate and invertebrate identification guides, geological guides and detailed maps. You will need a notebook or electronic device to record your research.

Optional: Poster boards, paper, glue, markers, scissors, printers, computers etc...

Duration: This can take as long or as little time as you have available. If your time is short then just focus on one or two of the suggested research questions. Or alternatively divide your group or class into teams that can each tackle different parts of the research.

Choosing a site

The Purpose:

For this activity you can choose any natural site you wish to know more about and investigate how healthy it is in ecological terms. It may even be a site you wish to carry out some conservation work on, by increasing habitats through installing insect homes, bat boxes, bird boxes or even a pond. Or

you may wish to restore the site through removal of invasive species or by planting trees or suitable native species. This tutorial will give you a sense of the health of your site and whether such conservation actions would be necessary there. Sites can range from local parks, wildlife reserves, to back gardens, community gardens or patches of 'wasteland' in a village/town or even the area around a school or community centre. The IMPRINT + App can assist you in finding what conservation action is suitable for your area and will provide links so you can learn how to do the various actions. You can use the App to record your action, allowing everyone to see the great conservation work happening all over Europe.

Location:

Ideally the site will not be too far away from your home or school, so you can cut down costs and emissions on travel.

Size:

The site can be any size but to make assessment manageable we recommend no less than 10 students/volunteers to 0.3 hectare/3000m². You can have more students/volunteers on a smaller site, but with less than 10 on a large site, you may miss some important aspects of the assessment.

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This is the list of questions that will act as a guide in assisting you in learning as much as possible about your chosen site.

A little reminder:

The main focus of the research is -

What can I expect to find at the site?

What information will I need to know when I get there, so I can carry out the field work assessment successfully?

For schools and youth groups carrying out this activity, we recommend that students use the information from their research for a purpose such as;

For a communications project. They can create their own poster boards about their site to educate their local community or rest of the school.

For a media project to raise awareness of the site (newspaper, blog, radio, video, website).

For an exhibition to inform and raise awareness about the site.

For a scientific report on the site which outlines what they anticipate finding when they go there. Students can divide into groups and research different aspects of the kind of habitat they will study during the fieldwork. Students are encouraged to work together in teams. Similar to scientists in an

ecological consultancy which would be comprised of a number of specialists in a various scientific fields.

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The aim of this assessment is to determine the health of a chosen site or habitat. This information should not be considered a guide for research or environmental assessment in a professional capacity in anyway. Ecosystems are complex environments with many varying factors that cannot be easily summed up in a single assessment.

Now that you have chosen your site and done some background research you can prepare for your field work.

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Time Period

Decide how long you wish to spend on your fieldwork. Choose a set period of time to carry out the fieldwork, it can range from one hour total or 30 min per day over a week or longer. It is up to your group to decide the schedule and timeframe that is right for you.

During the allocated time record the ecological factors in the survey below. The longer your study period the greater the accuracy of your results however, it is not always practical to study a site for a long period of time and it is important to remember your results will reflect a snapshot in time, which will vary from season to season, year to year.

Materials: Field notebook, camera, pens and pencils, ruler, measuring tape or meter stick and a length of twine or string.

Optional: A bin bag and gloves to collect rubbish found.

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How to record your results?

As a group, decide who will be responsible for recording the different data sets. This will save time and avoid confusion when you are at your site.

Create a group notebook where all the final results and information will be stored. This can be digital or a hardcopy. You will need pencil and paper for taking notes when in the field as laptops and phones can be damaged by weather. Look up the weather for the date you are due to carry out the fieldwork so you can be prepared with appropriate clothing and equipment.

Now we shall run through the various data sets that you will collect.

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For the species identification section, if working with a group of people, divide the group into three subgroups.

Each sub-group will focus on either plants (data set 1), invertebrates, (data set 2) or vertebrates (data set 3).

In doing so, each group will not have to compare results and avoid duplicate identifications. You do not need to be an ecologist to count how many species of plants and animals in an area. In fact, you do not need to even know the names of the plants and animals.

You simply need to be good at observing detail. Through your observations you should be able to tell if one specimen (individual) is different enough from another so that it can be considered a different species. There are many ecology texts and websites that can assist you with how to identify different species and what to look out for during your observations.

We recommend using a camera (*place in a clear plastic bag if bad weather is due*) and taking photos of all the different species you see and then deleting the doubles. Then just count your photographs to give you the final number.

You can do this when recording invertebrates (bugs, insects, all animals without a backbone) and vertebrates (mammals, birds, amphibians and any animal with a back bone) and even plants (trees, grasses, lichens, mosses, mushrooms and flowers).

Remember to count just the number of species, not the number of individuals found. If you record a ground beetle but see ten ground beetles, this is still just a recording of one single species.

Using an A4 sheet write Vertebrate Species or Plant Species or Invertebrate Species. Then on a second sheet write a number. This way you can just change the no. next to your species type. Then take a picture of the "Vertebrate Species No. 1", before you take photographs of the species you have found. Then on the next species you change the no. to the next in the sequence. This process gives you the opportunity to take a few pictures of an individual for accurate identification while still knowing it is the same species. It is useful to have a ruler next to the specimen if possible, as size can be difficult to determine in photographs when back at home or in school.

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Data Set 1, 2, 3 - Images

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Layer 1 – Emergent Layer

The tallest trees are the emergents, towering as much as 60 meters above the forest floor with trunks that measure up to 5 meters around. Most of these trees are broad-leaved hardwoods or evergreens. Sunlight is plentiful up here. Animals found are eagles, bats and butterflies.

Layer 2 – Canopy Layer

The tallest, most mature trees form the canopy of a woodland. The leaves of species such as Beech (*Fagus Sp.*) are so effectively patch worked and angled to catch the maximum amount of light, that they cast a very dense shade. This allows few plants to survive underneath. Ash (*Fraxinus Sp.*), by contrast, with its finely divided leaves, allows more light through to the woodland floor, so that layers are more likely to develop.

Layer 3 – Middle/Shrub Layer

This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions. These characteristic understorey trees sometimes have a sprawling sideways growth form. For example: Hazel (*Corylus Avellana*), Strawberry tree (*Arbutus unedo*), Common hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*). This enables them to increase the surface area available to trap light filtering through the upper canopy. Invasive, non-native species such as Rhododendron, may dominate this layer in some woods.

Layer 4 – Herb Layer

The ground layer will largely consist of a great variety of different mosses. It may also include ivy growing along the ground rather than climbing up in the trees. Mosses require constant high moisture levels, so this layer will be less well developed in drier woods.

Layer 5 – Field Layer

The field layer is usually best developed where substantial amounts of light reach the woodland floor, for example in clearings, or newly coppiced areas of woodland.

Slide 13**Data Set 5 - Percentage of ground cover**

Measure out a 1 meter x 1 meter square and in that square estimate how much space the vegetation (plants, grasses, trees) take up. Then estimate how much bare soil or dead leaves you can see, these figures should add up to 100%. If time allows, do this several times around the site and work out an average percentage.

Data Set 6 – Habitat Count

A habitat is the area where a plant or animal spends the majority of its daily life. This is different to its home. For example, a squirrel's home is its dray (a kind of nest) in a tree, however the squirrel's habitat is the entire forest. The forest is considered a macro habitat as it covers a large area.

You may also find micro habitats (smaller areas can also be a habitat to smaller species), a single oak tree can support up to 300 different species of invertebrates that may spend their entire life on the

tree. This data set includes both macro and micro habitats. However, if you have a particularly large site, you may wish to just focus on macro habitats.

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Explain now about the scoring system and how to determine where their site is on the scale?

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Human Impacts

There are a number of factors to consider under this data set.

For this section, there are guide images in the appendix that give examples of a severe, moderate and no impact for each impact. As a group estimate where the site falls between these guides, and circle the relevant number on the scale for the chosen site.

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Now that you have all of your recordings and observations, you can add up all of the points you have allocated to your site. The total will fall under one of the following categories which will give you an indication of where your site falls in terms of ecological health.

Out of a possible 600 points - what did your habitat score?

High score [400-600] – Healthy

Your ecosystem appears to be healthy, scoring such a high mark indicates low levels of pollution and a potentially high degree of biodiversity. A healthy ecosystem is considered to be one that is self-sustaining. It can cope with a certain degree of stress in the form of weather damage, animal grazing or mild human impacts such as walking. It does not require replanting each year or the provision of food for the organisms that live there. All resources for the survival of its organisms are found within the ecosystem.

Moderate score [200-399] – Moderately healthy

A moderately healthy ecosystem is one that is experiencing some stresses that are too much for the ecosystem to bounce back from. As a result, visible impacts can be seen, such as bare soil from trampling or litter that is not biodegradable or water pollution that is too much for the water cycle to clean. It generally will not take a lot of work to restore a site such as this to full health. For suggestions on how to help habitats and biodiversity use the IMPRINT+ App and see what you can do to help.

Low Score [0-199] – Unhealthy

If your site scored below 199, it will not be a very healthy area, ecologically speaking. Some species may live there but there will be a lower diversity as not many species are able to cope with the environmental stresses an unhealthy area. Stresses include human activity such as trampling and waste or they could be environment caused such as a lack of water due to drought or no food source due to low biodiversity. In sites like this, we can be incredibly beneficial as we can make a huge difference to the plants and animals that live in an area like this, through very simple and easy actions. For suggestions on what actions you could take to improve the health of this site, check out the IMPRINT+ App.

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By now you will have a lot of data from your fieldwork. The data gives you information on your site's ecological health as well as the opportunity to create visual communications that illustrate the key findings.

Or create a species guide to the site. Use the photos that you took and the pre-fieldwork research to create a guide for other users of the area.

Create an art project inspired by the site. This could aim to raise awareness of local environmental issues.

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Finally, now that you have carried out your assessment, is there a way you can help leave a positive footprint on your site? Can you help improve its health in anyway?

For suggestions on ways to improve the health of your ecosystem, check out the IMPRINT+ App.

Share your findings with us on our Facebook page and CONGRATULATIONS and thank you for your hard work on behalf of our biodiversity and natural resources!

