



# UNDER ONE Sky

Why animals matter

Information &  
classroom activities

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“Under one sky,  
all animals matter.  
They are a critical  
part of the web  
of life.”

Leonardo DiCaprio



# Why animals matter

For hundreds of millions of years animals have inhabited the land, the seas and the skies of planet earth. From the smallest insects to the largest mammals, animals are vital threads in the web of life that sustains us all.

Animals have been our close companions and workmates for thousands of years. They fascinate and inspire us, and are woven into the fabric of cultures around the world. There are a myriad of

animal wonders to be found, even in your own backyard. It may be a spider's web, which is stronger than its equivalent weight in steel; a rabbit that can see almost completely behind itself without turning its head; or an ant that can carry ten times its body weight. In this educational programme, we will explore the many ways that animals matter.



© WTI/A. Mookerjee



Each year, the International Fund for Animal Welfare (IFAW) launches a new Animal Action education programme focusing on a different theme related to animals and the environment. Free educational materials include: this teacher's guide with background information; lesson plans and student activity pages; plus a companion video; wall poster and extension ideas for individual, group and community action. The materials are locally-adapted in several languages for young people in 16 countries.

Additional thematic packs – on marine mammals, pets and wildlife, among others – are available for download online and may be helpful as additional lessons and information for presenting this programme. All the resources for this programme and others are available online at [ifaw.org/education](http://ifaw.org/education).

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### Credits

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## About IFAW/WTI

IFAW is an international campaigning organization founded in Canada more than 35 years ago. Its mission is to improve the welfare of wild and domestic animals by reducing their commercial exploitation, protecting wildlife habitats, and assisting animals in distress. Recognizing that the fates of people and animals are inextricably linked, IFAW seeks to promote animal welfare and conservation policies that advance the well-being of both animals and people. It has bases in 16 countries and two million supporters worldwide.

Wildlife Trust of India (WTI), is a non-profit conservation organisation, committed to urgent action that prevents destruction of India's wildlife. Its principal concerns are crisis management and the provision of quick, efficient aid to those areas that require it the most. In the longer term it hopes to achieve, through proactive reforms, an atmosphere conducive to conserving India's wildlife and its habitat.

IFAW and WTI formed a partnership in 2000 to strengthen the cause of wildlife conservation and animal welfare in India. The two organizations share concerns for a number of endangered animals. Through this collaboration, IFAW and WTI are developing strategies to find solutions to wildlife threats in India and the surrounding region.



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# Under one sky

Earth supports an incredible diversity of animal life. According to the 2005 Millennium Ecosystem Assessment, which was funded by the United Nations and conducted by 1,300 experts from 95 countries, there are between three and 30 million animal species inhabiting our planet; fewer than two million have been scientifically accounted for.

This rich animal and plant biodiversity combines to form a giant web that is interconnected in ways even scientists don't fully understand. What we do know is that approximately one fifth of all known mammals and twelve per cent of all known birds are threatened with extinction. According to the latest figures from the International Union for

Conservation of Nature (IUCN), which maintains a globally recognised list of endangered species (called the 'Red List'), an alarming 8,462 species of animals – from insects and shellfish to gorillas and elephants – are considered at risk. There are more than 700 in the United States alone, according to the U.S. Fish and Wildlife Service.

The full consequences of biodiversity loss are largely unknown, but we do know that biodiversity plays a critical role in ecosystem function. For example, recent studies suggest that declines in marine biodiversity are impairing the ocean's capacity to provide food and maintain water quality.

On a smaller but no less important scale, loss of genetic diversity can greatly impact the survival of a species. Northern right whales were hunted to the brink of extinction in the 19th century and by the early 20th century, only about 100 individuals remained. Today, some researchers think that the entire northern right whale population may be descendants of only two or three females. As a result, low genetic variation may be one of the factors hindering the recovery of this critically-endangered species.

The good news is that species can, and do, recover. In 2008, the status of 37 mammal species around the world improved and in the past 15 years scientists believe that 16 bird species avoided extinction because of conservation programmes. All are a critical part of the web of life, so when we protect animals we are ultimately protecting ourselves and our future.

© IFAW



## Above

Baby elephants and rhinos are now being rescued, hand-reared and returned to the wild for the first time in India by IFAW/WTI. Recently, three young rhinos were reintroduced to the wild in Manas National Park, a World Heritage site in Assam, India. They are the first rhinos to live in Manas for more than a decade, after a once-thriving population was wiped out by years of political unrest and poaching.

## Online references

- Animal fact sheets, photos and more: [www.ifaw.org/education](http://www.ifaw.org/education)
- Millennium Ecosystem Assessment: [www.millenniumassessment.org](http://www.millenniumassessment.org)
- The IUCN 'Red List' of Threatened Species: [www.iucnredlist.org](http://www.iucnredlist.org)
- UNEP World Conservation Monitoring Centre/Biodiversity and Species: <http://www.unep-wcmc.org/species/index.htm>

The incredible variety of life on Earth is called 'biological diversity,' commonly referred to as **biodiversity**. In part a measure of the richness of life, biodiversity exists on three levels: genetic diversity – the variety in DNA molecules; taxonomic diversity – the number and variety of species and other taxa such as families, orders, and ecosystem diversity – variety among communities of living organisms and their abiotic (non-living) habitats.

**Eco-investigation lesson and reproducible on pages 9-10.**

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## Animal Action Week in India

The International Fund for Animal Welfare (IFAW) and the Wildlife Trust of India (WTI) have been conducting the Animal Action Week in India since 2003. The first theme was 'Protecting the Last Elephants'. Activities were focused in schools on the periphery of Rajaji National Park, where children living around elephant habitat were sensitized to conservation issues related to the elephant.

The second Animal Action Week in 2004 focused on the theme 'Keep Wildlife Wild' and being a much more general theme on wildlife trade, schools all over the country were invited to participate. An all India essay competition on the theme was held and two winners were presented the IFAW Young Achiever's Award.

In 2005, the theme was 'Caring for Our Best Friends, Companion Animals' wherein a live quiz contest was conducted among schools in the Delhi – National Capital Region. The event saw two young achievers as winners of the grand finale.

In keeping with a different theme each year, Animal Action Week in 2006 focused on 'Making Waves for Seals'. Expressions in the form of original art were invited from participating schools to paint seals in their natural environment and two of the best artists were chosen as IFAW Young Achievers.

In 2007, the theme was 'To the Rescue, Emergency Relief for Animals' and the participants painted one of the many

animal species that IFAW-WTI has rescued from natural disasters in the past. Two of the best entries were awarded at the prestigious Venu Menon National Animal Awards function in February 2008.

The theme for Animal Action Week 2008 was 'Beneath the Waves', focusing on conservation of marine wildlife. Slogans and posters on marine wildlife and habitat were received from schools across the country.

This year, Animal Action Week aims at introducing students to the fascinating world of animals, and the immense biological diversity that survive 'Under One Sky'. We invite entries for an art contest, representing one or more of the animals that IFAW/WTI safeguards.



# Complex connections

**A**nimals matter as essential components of **ecosystems** – a scientific term that describes the complex interactions between animals, plants and the non-living factors of their habitats.

Ecosystems come in a variety of sizes. They can be as small as an anthill or as large as the Earth's biosphere. From a rotting log to the rainforest, a forest stream to the ocean floor, a farm field to a school yard, ecosystems provide habitat that is just as important to animals as homes and neighbourhoods are to people. They provide essential food, cover, migratory corridors, and breeding and nursery areas for animals of all kinds.

Each species has its own habitat requirements that are essential to survival. A whale that is adapted to the saltwater ocean could not live in a freshwater lake; a polar bear could not survive in the desert. But all habitats share four essential elements: water, food, cover and space.

Humpback and right whales, among others, travel thousands of miles in a seasonal migration between multiple habitats. IFAW works to protect migrating whales from being hit by ships, entangled in fishing gear and other threats.

© IFAW



Some animals migrate between habitats on a seasonal or even daily basis. Harp seals, for example, journey over 5,000 km (3,000 miles) on a round-trip following the formation of ice floes from northern feeding grounds to more southerly waters, where they give birth and nurse their young.

The amount of suitable habitat for a wildlife species determines, in part, the number of individuals that can survive in any given area. When this habitat is reduced or fragmented into disconnected patches, some species may find it more difficult to disperse or migrate. Some populations may decline or go locally extinct while others may increase, and the overall composition of the animal and plant community changes.

Some animals not only rely on an ecosystem for habitat, but are also themselves essential in supporting that ecosystem. Without them, a cascade of local extinctions could occur. These animals are known as **keystone species** because many other species in the ecosystem depend on them in the same way that the keystone keeps a stone arch from falling.

For example, elephants are considered a keystone species in maintaining the African savannah. They preserve the grasslands by knocking down and weeding out trees and shrubs.

Without elephants, much of the savannah would turn into woodland. And in some forest habitats, certain tree species rely on elephants to digest their seeds for germination to occur.

Many other animals play a similar role in maintaining functioning ecosystems, from grizzly bears and wolves to sea otters, oysters and starfish.



## Above

Grizzly bears, like elephants, are vital in sustaining the ecosystems in which they live. IFAW recently supported the first successful rehabilitation and release of an orphaned grizzly bear in Canada. IFAW works worldwide to protect bears, including brown bears in Russia and moon bears in China.

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© IFAW/B. Jones

## Below

Asian elephants are as important in their forest ecosystems as African elephants are to the savannah. In the Wild Elephant Valley of southwest China, IFAW's unique Asian elephant conservation initiative promotes successful solutions to human/wildlife conflict that has plagued this remote, forested region.



© WTI/Kadambani Mainkar

"We had an amazing encounter with a curious young right whale in Canada – it swam around the boat peering at us with its head on one side, known as spy-hopping, to have a better look at us all standing staring at it on the stern deck of the boat. It was close enough to reach out and touch!"

**Anna Moscrop,**  
Team and Programme  
Manager,  
*Song of the Whale*

## Animal answers

**Q** How is an elephant like an oyster?

**A** Both are considered keystone species, vital to sustaining the ecosystems in which they live.



# One home for us all

**H**ealthy, functioning **ecosystems** provide vital homes for both animals and people. Unfortunately, research conducted by 1,000 scientists involved in the Millennium Ecosystem Assessment concluded that humans have altered the Earth's ecosystems more in the past 50 years than any other period in our history. As a result, biologists believe that we are now seeing species extinctions at 1,000 times the natural rate. Many believe that planet earth is currently experiencing its sixth mass extinction.

Causes include: pollution; overhunting and overfishing; habitat encroachment (from housing developments, agriculture, ranching, mining operations or logging); invasion of non-native species (sometimes introduced inadvertently

Many species of falcons, hawks, owls and other birds of prey have sharply declined due to habitat loss, hunting and other human impacts. In China, IFAW's Beijing Raptor Rescue Centre saves these breathtaking birds, like this owl, from illegal wildlife trade, habitat loss and other threats, with the goal of sending them back to the sky.

© IFAW



via shipping or as a result of illegal trade in exotic species); and unnatural temperature changes in the environment.

**Habitat fragmentation** due to human activities such as urbanisation, transportation, agriculture and resource extraction is an ever-increasing threat to many animals. Maintaining or creating **wildlife corridors** – linear patches of habitat that connect two or more adjacent areas – can help animals move between patches of suitable habitat. Hedgerows, for example, are used by small mammals, insects and birds to avoid predators while moving through farmland. Corridors are increasingly important for species such as elephants and tigers that migrate or roam across landscapes that have become fragmented.

Most scientists now agree that climate change is taking place in the world due to global warming caused by human activities. According to the results of a comprehensive scientific study conducted on four continents, this climate change could cause the destruction of ecosystems, ranging from coral reefs to mountain meadows, and drive more than a million animals and plant species to extinction by 2050.

This may be one of the greatest threats animals will face during our lifetime.

The destruction of rainforests, home to two-thirds of all known species and the greatest terrestrial source of the air that we breathe, is another threat to our planet.

At present more than an acre of rainforest is lost every second, endangering the survival of myriad species that rely on this vital ecosystem.

© IFAW/J.M. Barredo



**Above**

Pollution in all forms is one of the biggest threats to wildlife and habitats. IFAW is a world leader in successfully rescuing and cleaning penguins and other seabirds caught in oil spills so they can return to a healthy life in the wild.

© IFAW/S.Cook



**Above**

For the last decade, ice cover off Canada's east coast has been at its lowest for more than 30 years, with dire consequences for harp seals, who need the ice floes to give birth and nurse their pups. IFAW has been working for more than 40 years to protect these fascinating animals, which face the largest marine mammal hunt in the world.



© IFAW/S.Cook

"When you actually get to see the animals you are trying to help it's very special. Harp seals are pretty neat little animals, and after you hang out with them for a while, they start to show different personalities... I feel really very lucky and fortunate that I have been able to go to the ice to see the harp seal nursery."

**Sheryl Fink**,  
Senior Researcher and  
Projects Specialist

## Education for Sustainable Development

This IFAW/WTI Animal Action education programme is allied with the United Nations Decade of Education for Sustainable Development (2005-2014, DESD), which aims to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. The foundation of this global initiative is respect: respect for others; respect in the present and for future generations; respect for the planet and what it provides to us.

**For more information about the DESD, visit:** [www.unesco.org/education/desd](http://www.unesco.org/education/desd)  
Sustainability education resources can also be found at: [www.sustainabilityed.org](http://www.sustainabilityed.org)

**Habitat and ecosystems lessons and reproducible on pages 9-12.**

# Animals and us

Look back in time or around you today and you will see the powerful bond that exists between animals and people. Animals are featured in childhood fables and great works of literature; in 3,000 year-old cave drawings and modern art; in the 12 symbols of the ancient Chinese zodiac and as the mascots of modern sports teams.

Millions of people in every country in the world share their home with animals, from cats, dogs and horses to rabbits and pigs.

Among the first domesticated animals were wolves, used for hunting by prehistoric humans more than 10,000 years ago. Now, dogs are the only animal found in virtually every human society on this planet. The ancient Egyptians domesticated wild cats 6,000 years ago, probably to protect their grain stores

Animals are not only victims when disasters strike but are also among the bravest heroes. When a devastating earthquake shook China in 2008, IFAW emergency relief teams were among the first organisations on the ground, working alongside search and rescue dogs to find survivors – both animals and people. Exhausted from searching the wreckage, this rescue dog fell asleep with his special protective boots lined up before him.



## Did you know?

Dogs and their human owners share 97 percent of the same genes.

from rodents. Cats became important to early agricultural societies, just as dogs had become important to earlier hunting cultures.

For many people, companion animals truly are their best friends and part of the family. Working animals, such as guide dogs and donkeys, are vital to their owners' daily lives. Some animals, including dogs, cats, and horses, have also been recognised by health professions for their therapeutic effect. This ranges from relieving stress and lowering blood pressure to helping children overcome physical, mental and emotional disorders.

One of the oldest of all occupations was hunting for food for survival. But the 21st Century looks very different from the early days of human civilisation. Our soaring population is now using the planet's resources – including animals – at rates well beyond sustainable levels. According to a 2007 report of the United Nations Environment Programme, hunting and trade are among the key factors pushing many wildlife species to the brink of extinction.

Today we need to find different and creative ways of living with animals. For example, responsible whale watching can be a viable economic alternative to whaling, promoting appreciation and protection of whales while generating more than a billion US dollars of annual income for coastal communities worldwide. In India, some coastal towns have adopted the whale shark as their mascot because of growing appreciation for this largest living fish species which is vulnerable to extinction. Whale sharks were once hunted by fishermen in many of the communities that now protect them.



© IFAW/J. Hrusa

### Above

From the townships of South Africa to the Navajo Nation in the United States, IFAW provides crucial veterinary care for dogs and cats in impoverished communities around the globe, caring for some 50,000 companion animals worldwide each year.



© IFAW/S. Cook

"Wildlife is something which is all around us – it doesn't just live in far away locations you see on the television, it is in your garden, and on every bit of land, water and air that you see. We need to learn to live alongside wildlife, and not kill it by carelessness or get rid of it because it is in the way. Seeing and appreciating wildlife all around us makes every day richer."

**Dr. Ian Robinson,**  
IFAW veterinarian  
and Emergency Relief  
Programme Director

### Below

Hundreds of whales, dolphins, seals and other marine animals receive hands-on help from the IFAW Marine Mammal Rescue Team each year, from the shores of Cape Cod in the United States to the African island of Madagascar.

© IFAW



The *Under one sky* companion video and lessons on pages 7-8 can help students explore the bonds between animals and people and why animals matter.



# Lesson plan – Activities 1 & 2

## Activity 1:

## What's your view?

### Learning outcomes

- Development of listening skills
- Expression of views and a basic understanding of issues affecting human-animal-environmental relationships
- Understanding, discussion and debate of conflicting view points

### Lesson plan

- Put up the following signs in each corner of the classroom: **strongly agree**; **agree**; **strongly disagree**; **disagree**.
- Read each of the Viewpoint statements from the panel out in turn.
- After each statement ask the students to move to one corner of the room marked with the sign which best represents their response and discuss their response with the other classmates there.
- You can explain that they can change their minds and move to a different corner as a result of discussions.
- After the exercise ask the class what they have learned from each other. Were there any surprises? How do they generally now feel about the importance of animals?
- Record the number of students who agreed/disagreed with each statement.

Please also bear in mind that discussions about animal welfare can evoke strong feelings in students. You may wish to establish ground rules for discussion to encourage good listening; understanding; co-operation and sensitivity to different view points.

© IFAW/M. Booth



### Resources

Four large signs: strongly agree; agree; strongly disagree; disagree.

### Viewpoint statements

- Primates are our closest relatives and so they deserve more protection than other animals.
- Animals should not be kept as pets.
- Respect for animals is as important as respect for humans.
- Humans should be allowed to kill animals that damage their crops or eat their livestock.
- Wild animals should stay in the wild.
- Animals are important to the natural environment.
- Schools should teach students why the welfare of animals is important.
- People don't need to spend time in nature.
- It is Ok to use animals for human purposes.
- It is not important to consider animals when planning development projects that meet human needs, such as housing.
- People need to be tolerant when sharing space with animals.

## Activity 2: Video

For this activity, students will be watching the video produced for this programme, *Under one sky: Why animals matter*, and doing a quick quiz to test their listening and comprehension skills.

- Before you show the film, ask the students to bear in mind the statements they agreed/disagreed with from the first activity.
- After viewing the film, have students complete the quiz on page 8.
- Go over the answers and invite discussion on the open-ended questions 8 – 10.
- Ask for ideas on what they could do as individuals, as a class or even a whole school to make the world a better place for animals. You may want to provide the *Take action* leaflet and *Habitat protection pledge* provided in this pack or online at [www.ifaw.org/education](http://www.ifaw.org/education) as possible resources for how they can have positive impact both individually and collectively.

Finally, revisit the agree/disagree statements. Have their views changed as a result of the film, the discussion and new knowledge gained? Record the new disagree/agree results.

As an extension activity or homework, invite your students to creatively explore – through artwork or in writing such as an essay, short story or poem – the topic: *A day in a world without animals*.

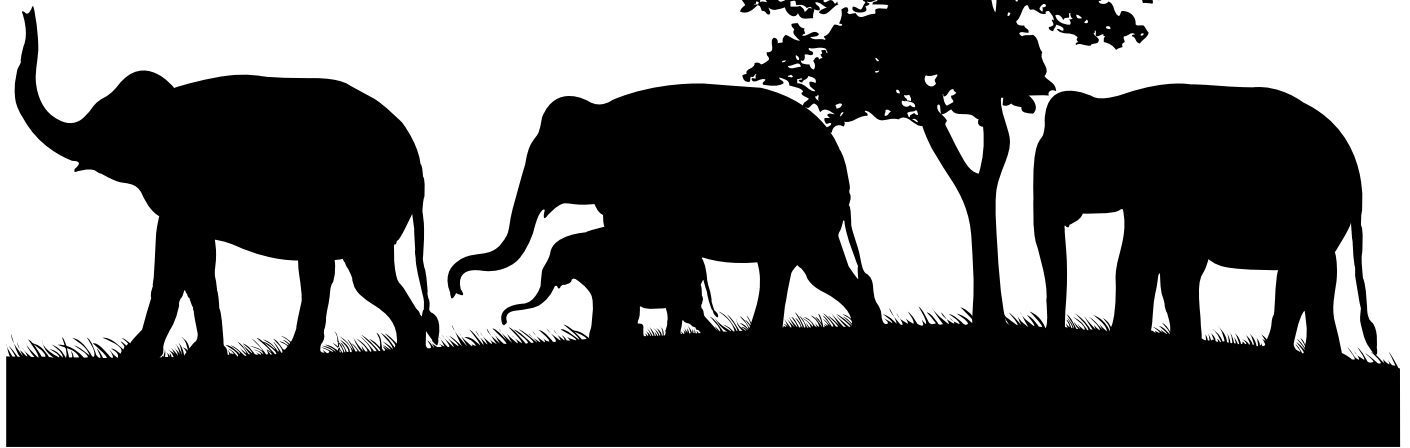
© Richard Sobol/IFAW



# What's your score?

What have you learned from the film you have just seen?

Tick the correct answers below.



**1** How many species of animal on earth have scientists named?

- ☐ a) approximately 10 million  
☐ b) more than 1.8 million  
☐ c) less than 800,000

**2** The variety of species on earth can be described as:

- ☐ a) biodiversity ☐ b) true biology  
☐ c) an ecosystem

**3** Elephants are the largest land animal on earth.

- a) True ☐ b) False ☐

**4** Hummingbirds can flap their wings at:

- ☐ a) 220 beats per second  
☐ b) 20 beats per second  
☐ c) 200 beats per second

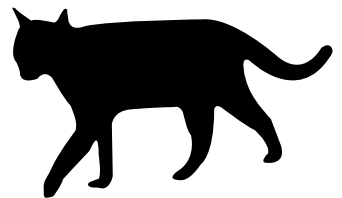


**5** To navigate and find food, whales use:

- ☐ a) their excellent senses of smell  
☐ b) echolocation  
☐ c) translocation

**6** Cats are believed to have been first domesticated by:

- ☐ a) the Egyptians  
☐ b) the Hebrews  
☐ c) the Americans



**7** Which of the nations listed below continue to hunt whales?

- ☐ a) Norway ☐ b) Japan ☐ c) Iceland

**8** Why do you think that companion animals can relieve stress in some people?

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**9** If responsible whale watching protects whales and generates revenue, why do you think some countries still hunt whales?

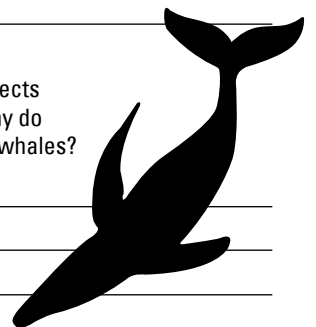
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**10** What simple things could you do to make the world a better place for animals?

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Answers: 1. b; 2. a; 3. True; 4. c; 5. b; 6. a; 7. a,b,c; questions 8-10. It's your decision!



# Lesson plan – Activity 3

## Eco-investigation (field work)

### Learning outcomes

- Understanding the term, and concept of, **biodiversity**
- Knowledge and practice of basic fieldwork techniques that introduce students to local biodiversity through visual identification
- Understanding the impact of human activities on animals and habitat

### Lesson plan

1. Explain technical terms such as **biodiversity**, **ecosystem**, **biotic** and **abiotic**, and use real life examples to help connect students to the importance of these concepts.
2. Explain to your students that they will be going outside to a study area you have identified (e.g. to the school yard, nearby park, meadow, savannah, etc.) to discover the local animal biodiversity through practical field work.
3. Briefly describe the general ecology and any human built features of the study area to your students. Ask them the following questions (and record their answers on the board for future reference): What plants and animals do you expect to find in the study area? What is this based on? (Remind your students that time of year, time of day, weather, etc., will also influence what is found).
4. Develop a code of conduct (how to behave outside the classroom) when working in and with nature. Remind students that we can affect the habits and comfort of animals just by being there so recommend creating as little disturbance within the study area as possible and taking nothing away from their sample sites.
5. Head to the study area. Before entering the study area, hand out the data collection sheets and have students stand quietly as a group and observe the entire area. Ask them to record overall conditions, such as weather, plants, animals, species interactions, and human impacts or disruptions of the area.
6. Next, divide the class into pairs. Each pair will be responsible for **randomly choosing** a 2 meter (6 foot) square sample site within the study area. Students can use the rope to mark the perimeter of their sample site.

Explain that it is important that sample site size and data collection techniques are standardised so that results can be compared and the study repeated by others in the same, or a different, study area.

### Resources

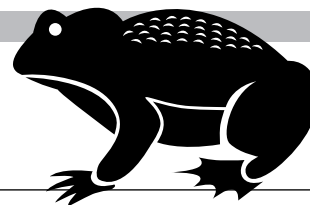
- **Biodiversity** and **ecosystem** definitions on pages 3– 4
  - Field guides/pictures of animals specific to local region
  - Magnifying glasses/binoculars/cameras (optional)
  - String or rope to mark study area; rulers and measuring tape
  - Eco-investigators data collection sheets reproduced from **page 10**
  - Pencils, clipboards and extra sheets of paper for sketches, diagrams etc.
7. Explain that each group will be using the sheet to collect as much information as they can on their sample site over a half-hour period. Explain that the combined class results will give them an idea of the community of animals that the whole study area supports.
  8. Remind students to look and listen for all types of animals, and signs of animals too, like footprints, scat, browse marks and even bird songs. Note that they will also have room to record plant types and abiotic – non-living – factors like soil, rocks, rotting stumps and even dew drops. [Note: you may wish to assign one partner the role of ‘recorder’ and the other as ‘observer’, and then switch roles after 15 minutes].
  9. Emphasise that they are welcome to use field guides – if available – but when filling out the data sheet they don’t have to know the correct names of plants and animals, they can simply describe them (‘small, red mouse-like animal with black feet and short tail’ is a good start!). Encourage them to sketch or take photos of all the different components and to record location relative to other components within their sample site.
  10. After data collection, give students time to identify the plants and animals they saw in their study sites using field guides, internet resources, discussion with others. Discuss the results as a class. With input from the class, sketch the study area and the location of each group’s sample site.
  11. Referring back to the recorded list of what students expected to find, ask the students if they found what they expected. Did they find anything they didn’t expect? Did any groups find something unique from all the others? What were the factors of the study area or sample sites that influenced the overall class results and differences between the results of each group (e.g., animals were hiding from the noise of the class, area on a slope, etc.).
  12. Choose a few species found by the class – what were these species doing in the study area? What resources were they using and how? (This is an indication of the habitat needs – food, water, cover and space – of each species, and will be useful when discussing habitat in the next lesson.) What did they learn about their local ecosystem?
  13. Discuss with the class the impacts of human activities on the ecosystems around us. What did they learn about these impacts on some of the species in the study area? What might they do differently now that they know?

As homework or an extension activity, provide students with the Eco-investigation follow-up worksheet available for download online at [www.ifaw.org/biodiversity](http://www.ifaw.org/biodiversity) lesson.

© IFAW/J. Hrusa

© IFAW

# Eco-investigators data collection sheet



Name \_\_\_\_\_ Sample site no. \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

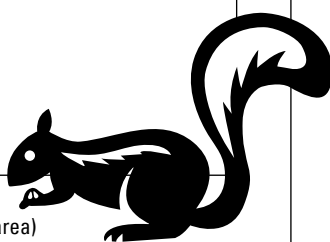
Weather (tick all that apply) Sunny ☐ Light rain or snow ☐ Light wind ☐  
Cloudy ☐ Heavy rain or snow ☐ Strong wind ☐

Other \_\_\_\_\_

## Sample site description

(quick sketch of your site in reference to obvious landmarks – note unique features)

## General observations (about the entire study area)



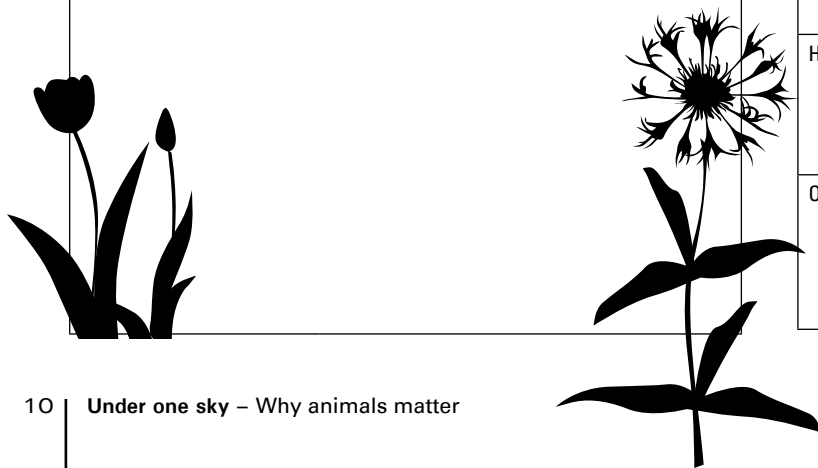
Record as much information as you can about the living and non-living components of your sample site. Include data such as name, description, number of individuals and location within site.

Attach separate sheets with your sketches, diagrams and other notes or observations, including human impact or disturbances.

## Plantae

Look for: colour, texture, patterns, shape and size of leaves, bark, branches; life cycle signs (buds, new growth, flowers, seeds).

(trees, shrubs, grasses, vines, ferns, mosses, herbs...)



## Fungi

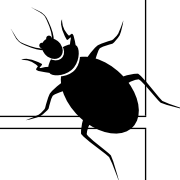
(mushrooms, molds, lichen...)

## Animalia

Look for: behaviours (flying, jumping, crawling, eating, hiding, nesting, hissing, curious...) and animal signs (tracks, scat, eggs, browsing, owl pellets, gnawing, bones, fur on a branch, nests, songs and calls...)

VERTEBRATES (mammals, birds, fish, reptiles and amphibians)

INVERTEBRATES (insects, spiders, worms, molluscs...)



## Abiotic

Non-living

SOIL (color, texture...)

ROCKS (size, number...)

SOURCES OF WATER

HUMAN FEATURES

OTHER (leaf litter, logs...)



# Lesson plan – Activity 4

## Understanding habitat

### Learning outcomes

- Understanding how an area provides suitable habitats for different species of wildlife
- Understanding concepts such as habitat fragmentation and migration corridors
- Understanding how human activities impact animal habitats and possible solutions to help protect habitat
- Understanding the elements of persuasive writing and public speaking

### Lesson plan

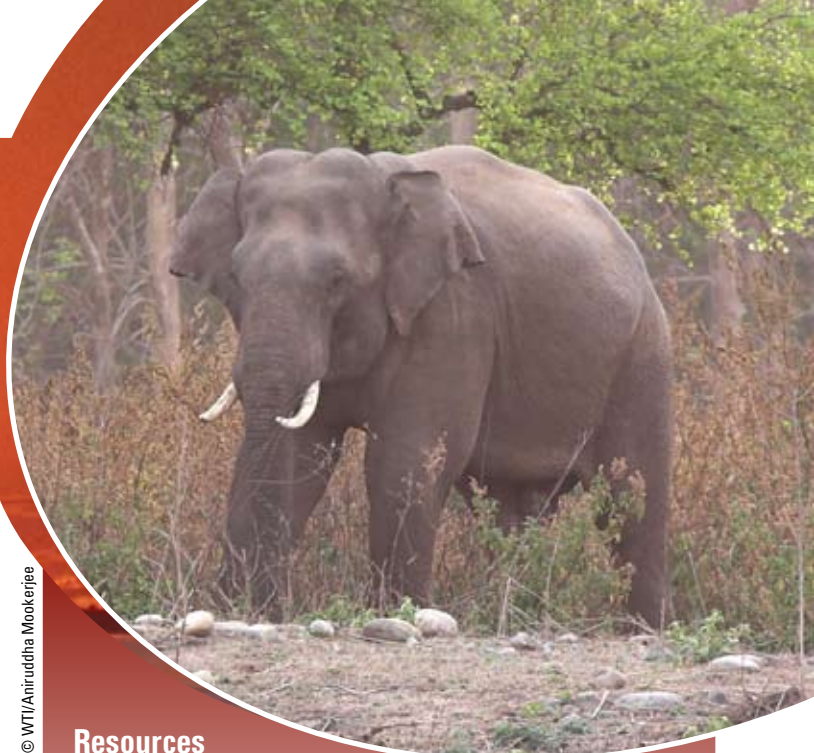
- Discuss the term animal habitat and write the following definition on the board:

**A species' habitat can be defined as the combination of resources (e.g. food, water) and environmental conditions (e.g. temperature) present in an area that makes it possible for that species to survive and reproduce.**

- Describe and explore the four main elements (resources) of habitat: **cover, food, water, and space.**
- Ask the class to imagine what would happen to various kinds of animals, – insects, birds, fish, mammals, reptiles and amphibians, – if just one of the four main habitat elements was taken away or changed in some way.
- Stress to the class the interdependency of the four elements. It is no good, for example for elephants if there is lots of **space, food and cover** in their territory, but they can't actually get to their **water holes** anymore because a big road is being built that splits the territory in half.
- Use this example to introduce the term **fragmentation** and explain that it is caused when large areas of habitat are broken up, in part, by human activities, such as roads, development, agriculture, settlements or logging.
- Invite the class to give some examples of things that might have caused **fragmentation** in their areas and to name some animals that they think might have been affected.
- Explain to the class that a key way of helping animals affected by fragmentation is to create and preserve **wildlife corridors**. A **wildlife corridor, or green corridor**, is an area of habitat connecting wildlife populations separated by human activities.
- Invite the class to think about why corridors are important. Try to draw out answers in relation to the four main elements of habitat. For example, corridors provide the space that many species require. By increasing landscape connectivity, the corridors expand wildlife ranges and offer opportunities to breed with other populations of the same species, which lowers risks of inbreeding and increases local and regional populations of endangered species.



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### Resources

- Background information on pages 4 – 5 of this guide.
- Newspaper article reproducible on page 12 of this guide.
- IFAW press releases:  
[http://www.ifaw.org/ifaw\\_united\\_states/media\\_center/press\\_releases/06\\_17\\_2008\\_41711.php](http://www.ifaw.org/ifaw_united_states/media_center/press_releases/06_17_2008_41711.php)  
[http://www.ifaw.org/ifaw\\_united\\_states/media\\_center/press\\_releases/12\\_20\\_2007\\_41363.php](http://www.ifaw.org/ifaw_united_states/media_center/press_releases/12_20_2007_41363.php)
- <http://www.wti.org.in>
- Provide students with the fictitious newspaper article hand-out on page 12: **Road puts 1,000 elephants at risk**. As an additional resource, hand out the IFAW press releases on real-life solutions to habitat fragmentation challenges.
- Divide the class into four groups, representing the various parties who will speak at a public meeting about the proposed project. Each group will be assigned a role:
  1. Government official in charge of the project, who needs to get support for the road from local inhabitants and conservation experts
  2. Expert with international conservation organisation working to protect elephants and other wildlife in the area
  3. Villager who has a rice farm at the edge of the wildlife reserves
  4. Local small business owner who will be better connected to potential customers and whose transportation costs will be lower if the road is built.
- Give each group 15-20 minutes to draft a persuasive statement that reflects their point of view and nominate a spokesperson who will take on the assigned role. Caution your students against stereotyping during their role playing. Review classroom ground rules encouraging good listening and sensitivity to different view points.
- Bring the groups back together and have the designated spokespeople make their group's presentation to the rest of the class, who represent the public audience attending the meeting. Remind your student audience to take notes of the key points raised and write down any questions that come to mind in preparation for the discussion period.
- At the end of the presentations, provide an opportunity for questions and suggested solutions from the 'audience'. Afterwards, have the class evaluate each of the presentations and summarise lessons learned.

For homework, invite the students to choose a wild animal and ask them to research its habitat needs and how its habitat may be fragmented or otherwise altered by human activities. What is being done, if anything, to help protect the species and its natural habitat? Suggest they use the four elements of habitat – space, cover, food and water – to extend their answers.

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# SOUTH INDIA Gazette

An IFAW publication. September 2009



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## Road puts 1,000 elephants at risk

**New highway could cut through vital wildlife habitat in Southern India.**

**T**he lives of more than 1,000 wild elephants are at risk from a road that could cut through their habitat in Southern India. Conservation groups believe that the road, as currently proposed, will cut through a critical corridor of land linking two important wildlife reserves and will stop the elephants moving safely along their natural migratory routes between the protected areas for foraging and breeding. About 47 percent of wildlife corridors in India already have national or state highways passing through them.

"It is crucial that something is done to help these elephants," said conservationist and elephant expert Anand Kumar. "Today, there are only 25,000 wild Asian elephants remaining in the whole of India. They are suffering greatly

from poaching, habitat loss and fragmentation. This piece of land is also key to the survival of several other species. We must work with the Indian government to protect it now."

The corridor between the two reserves is a narrow strip of land (0.5 km wide and 2 km long), currently owned by local people. The land is not only used by the local elephant population, but by other animals such as leopards and tigers as it links two forested areas cut off from each other by deforestation and agricultural land.

**"It is crucial that something is done to help these elephants,"** said conservationist and elephant expert Anand Kumar.

Government officials in charge of the project say the new highway would better connect human settlements to the north and south of the reserves. However, a road cutting through the forest could threaten the ability of elephants to move safely between the protected areas for foraging and breeding, and it could also result in collisions between vehicles and animals straying on to or crossing the roadway.

Local villagers are also divided in their views of the proposed road. Some want it built to help their area develop and allow them to commute more easily to towns nearby. Others are concerned that the road will split the corridor and confine the elephants into small pockets of forest, forcing them to stray into local villages and fields looking for food. The elephant herds could destroy crops and endanger their families, increasing human-animal conflict in the region.

"People have very little money here and depend on the crops they grow to feed their families. When elephants stray on to farmland they tear up crops with their trunks to eat and their huge feet can ruin a whole year's harvest. Sometimes people get injured and killed when they try to frighten them off their land," explains Karthik Gowda, who lives near the wildlife reserve.

If the road is given the go-ahead by the Indian government, work could begin within the next 18 months.

In the meantime, said Kumar: "We will be working with all parties to come up with solutions that not only protect the elephants' habitat and stop them being lost to India forever, but that will help local people and the government too."



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