WHAT DO **WE** DO FOR BIODIVERSITY?

THE EUROPEAN STRATEGIES FOR HABITAT CONSERVATION

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Search International edition The Guardian

Humanity has wiped out 60% of animal populations since 1970, report finds[1]

The huge loss is a tragedy in itself but also threatens the survival of civilisation, say the world's leading scientists

^ Cattle in the Amazon rainforest.
Photograph: Michael Nichols/National Geographic/Getty Images

Damian Carrington,
Environment editor

Humanity has wiped out 60% of mammals, birds, fish and reptiles since 1970, leading the world's foremost experts to warn that the annihilation of wildlife is now an emergency that threatens civilisation.

The new estimate of the massacre of wildlife is made in a major report produced by WWF and involving 59 scientists from across the globe. It finds that the vast and growing consumption of food and resources by the global population is destroying the web of life, billions of years in the making, upon which human society ultimately depends for clean air, water and everything else.

> "We are sleepwalking towards the edge of a cliff" said Mike Barrett, executive director of science and conservation at WWF. "If there was a 60% decline in the human population, that would be equivalent to emptying North America, South America, Africa, Europe, China and Oceania. That is the scale of what we have done."
>
> "This is far more than just being about losing the wonders of nature, desperately sad though that is," he said. "This is actually now jeopardising the future of people. Nature is not a 'nice to have' – it is our life-support system."
>
> "We are rapidly running out of time," said Prof Johan Rockström, a global sustainability expert at the Potsdam Institute for Climate Impact Research in Germany. "Only by addressing both **ecosystems** and climate do we stand a chance of safeguarding a stable planet for humanity's future on Earth."

Many scientists believe the world has begun a **sixth mass extinction**, the first to be caused by a **species** – *Homo sapiens*. Other recent analyses have revealed that humankind has destroyed 83% of all mammals and half of plants since the dawn of civilisation and that, even if the destruction were to end now, it would take 5-7 million years for the natural world to recover.

[1] The online version of the paper from the British newspaper *The Guardian* is available in this link.

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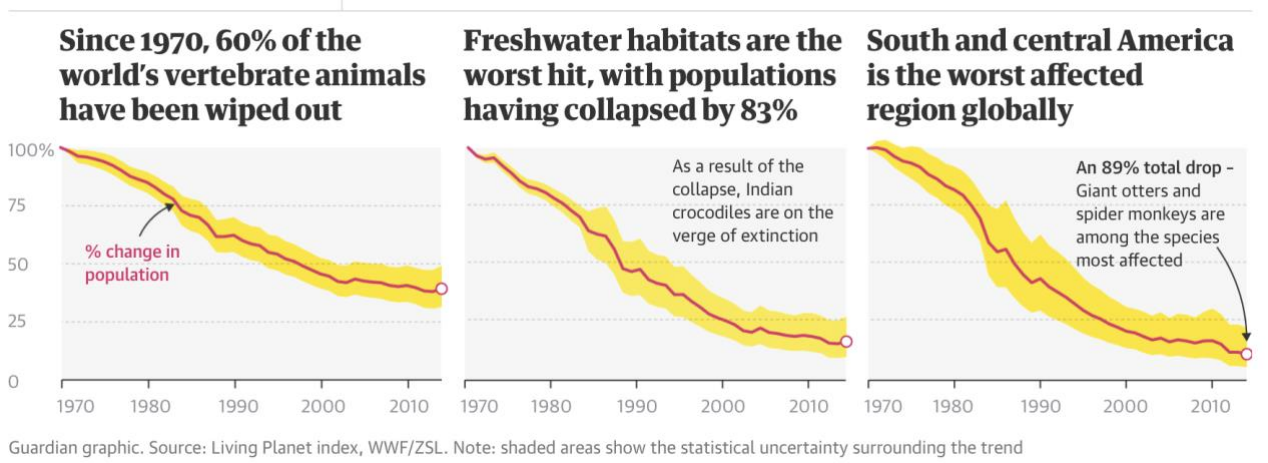
The Living Planet Index, produced for WWF by the Zoological Society of London, uses data on 16,704 populations of mammals, birds, fish, reptiles and amphibians, representing more than 4,000 species, to track the decline of wildlife. Between 1970 and 2014, the latest data available, populations fell by an average of 60%. Four years ago, the decline was 52%. The "shocking truth", said Barrett, is that the wildlife crash is continuing unabated.



"Wildlife and the ecosystems are vital to human life," said Prof Bob Watson, one of the world's most eminent environmental scientists and currently chair of an intergovernmental panel on **biodiversity** that said in March that "the destruction of nature is as dangerous as climate change."

"Nature contributes to human wellbeing culturally and spiritually, as well as through the critical production of food, clean water, and energy, and through regulating the Earth's climate, pollution, pollination and floods," he said. "The Living Planet report clearly demonstrates that human activities are destroying nature at an unacceptable rate, threatening the wellbeing of current and future generations."

The biggest cause of wildlife losses is the **destruction of natural habitats**, much of it to create farmland. Three-quarters of all land on Earth is now significantly affected by human activities. Killing for food is the next biggest cause – 300 mammal species are being eaten into extinction – while the oceans are massively overfished, with more than half now being industrially fished.

Chemical pollution is also significant: half the world's killer whale populations are now doomed to die from PCB contamination. Global trade introduces **invasive species** and disease, with amphibians decimated by a fungal disease thought to be spread by the pet trade.

The worst affected region is South and Central America, which has seen an 89% drop in vertebrate populations, largely driven by the felling of vast areas of wildlife-rich forest. In the tropical savannah called Cerrado, an area the size of Greater London is cleared every two months, said Barrett.

"It is a classic example of where the disappearance is the result of our own consumption, because the deforestation is being driven by ever expanding agriculture producing soy,

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which is being exported to countries including the UK to feed pigs and chickens," he said. The UK itself has lost much of its wildlife, ranking 189th for **biodiversity loss** out of 218 nations in 2016.

^ WWF report warns annihilation of wildlife threatens civilisation - video.

The **habitats** suffering the greatest damage are rivers and lakes, where wildlife populations have fallen 83%, due to the enormous thirst of agriculture and the large number of dams. "Again, there is this direct link between the food system and the depletion of wildlife," said Barrett. Eating less meat is an essential part of reversing losses, he said.

The Living Planet Index has been criticised as being too broad a measure of wildlife losses and smoothing over crucial details. But all indicators, from **extinction** rates to intactness of ecosystems, show colossal losses. "They all tell you the same story," said Barrett.

Conservation efforts can work, with tiger numbers having risen 20% in India in six years as habitat is protected. Giant pandas in China and otters in the UK have also been doing well.

But Marco Lambertini, director general of WWF International, said the fundamental issue was consumption: "We can no longer ignore the impact of current unsustainable production models and wasteful lifestyles."

The world's nations are working towards a crunch meeting of the UN's Convention on Biological Diversity in 2020, when new commitments for the protection of nature will be made. "We need a new global deal for nature and people and we have this narrow window of less than two years to get it," said Barrett. "This really is the last chance. We have to get it right this time."

Tanya Steele, chief executive at WWF, said: "We are the first generation to know we are destroying our planet and the last one that can do anything about it."

Quick guide

Wildlife losses around the world

African elephants: With 55 being poached for ivory every day, more are being poached than are being born, meaning populations are plunging.

Orangutans: More than 100,000 were lost in Borneo alone between 1999 and 2015, largely due to forest destruction for timber and palm oil, leaving the great apes critically endangered.

Whale sharks: Numbers of the largest fish have collapsed by two thirds in the last 75 years in the Indian and-Pacific Oceans, due to overfishing and ship collisions.

Wandering albatross: Populations are declining rapidly, driven largely by accidental catches in long line fisheries. One monitored population on South Georgia fell by half between 1972 and 2010.

Jaguar: The razing of forests in South America is driving the decline of this big cat, which prefers to live in dense jungle.

Gharials: There are now just 200 breeding adults of the fish-eating crocodile in the wild in India and Nepal, the result of rampant fishing, poaching and drops in river flow.

Chinese giant salamander: This creature is one of 545 critically endangered amphibians, decimated by hunting for food, destruction of rivers and lakes and pollution.

Hedgehog: This animal is among the fifth of UK mammals at high risk of extinction, with populations having fallen hugely in both urban and rural locations.

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WORK INDIVIDUALLY

Read carefully the news and underline the words that you don't understand (10').

WORK IN PAIRS

Compare the words you underlined with your partner, and try to guess their meaning. If you still have unknown words, you can use a dictionary, like www.wordreference.com (10'). Write them down with their translation to your language:

.....

.....

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Read the text again, comment it with your partner and answer the following questions (15'):

Q1 Which is the main text's idea?

.....

.....

Q2 What do the graphics represent?

.....

.....

Q3 Where do the data come from?

.....

.....

Q4 Which is the biggest cause of wildlife losses, according to the text?

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Write a small summary of the text in your own language (10'):

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POOLING

Let's share your comments with the rest of the class (10').

Now look at the words written in bold. Do you know what they mean? Could you explain their meaning?

Complete the following KPSI[2] questionnaire writing YES or NO. Do it honestly (5'):

	I don't have any idea what are you talking about	*I think I know it*	*I think I know it and I could explain it to someone*
What is an ecosystem?			
What are the elements of an ecosystem?			
Which is the structure of an ecosystem?			
How can an ecosystem be altered?			
Which is the difference between habitat and ecosystem?			
Which are the main causes of species extinction?			

[2] (Knowledge and Prior Study Inventory)

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A TALE OF SUCCESS: BEHIND THE IBERIAN LYNX TRACKS

The Iberian lynx (*Lynx pardinus*)* is the world's most endangered feline species. In the early 19th century the Iberian lynx inhabited in Spain, Portugal and Southern France. It declined steadily during the 20th century, and there were less than 100 individuals in two isolated populations in 2002. Conservation measures have been really successful: there are almost 800 lynxes living in freedom in the Iberian Peninsula.

You can check the changes in its geographical distribution in the figures 1 and 2.

Fig. 1. *Lynx pardinus* distribution around 1980.[3]

Fig. 2. *Lynx pardinus* distribution in Spain. Data from 2013, according to the Population Census of Iberian Lynx. LIFE-Nature project[4]

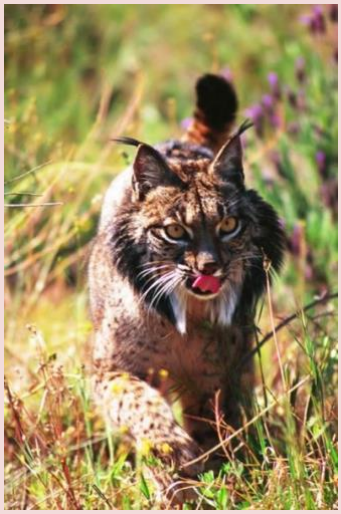

Fig. 3. Iberian lynx in *Doñana National Park*, Spain.[5]

*NOTE:

Species of living things are formally named by its scientific names according to the **binomial nomenclature** system established by Carl Linnaeus in his work *Species Plantarum* in 1953. It is a two-term naming system, both of which use Latin grammatical forms, in which the first part of the name – the **generic name** – identifies the genus to which the species belongs, while the second part – the specific name or **specific epithet** – identifies the species within the genus. For example, humans belong to the genus *Homo* and within de genus to the species *Homo sapiens*; the Iberian lynx belong to the genus *Lynx*, like other lynxes around the globe: *Lynx canadensis* (Canadian lynx), *Lynx lynx* (Boreal lynx), *Lynx rufus* (red lynx) and *Lynx pardinus* (Iberian lynx). Note that the genus starts with a capital letter and both words are always written in italics.

[3] Public domain – https://commons.wikimedia.org/w/index.php?curid=471116

[4] De Juenti el toju - Trabajo propio, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=45534903

[5] De José María Alvarez - http://www.consumer.es/web/es/medio_ambiente/fotografias/2008/11/17/182803.php (Consultado el 24 de marzo de 2009), CC BY 2.5, https://commons.wikimedia.org/w/index.php?curid=6324022

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1. UNDERSTANDING NATURAL WILDLIFE - What does the Iberian lynx need to survive?

Activity 1.1. The components of the ecosystem

Before answering the question, look at the pictures below. Each one of them represents one different ecosystem that you can find in the Iberian Peninsula. Think about them for a couple of minutes.

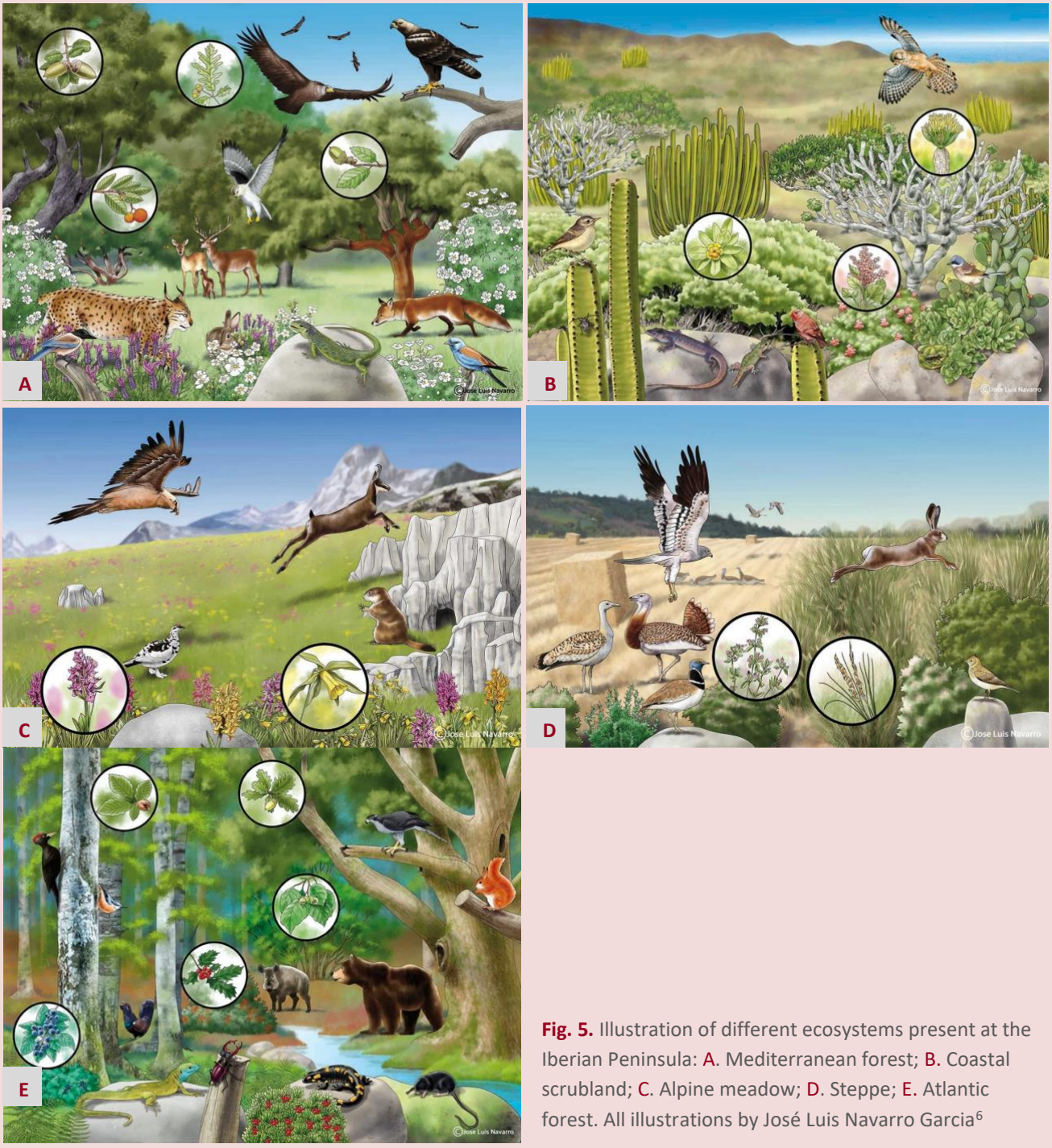

Fig. 5. Illustration of different ecosystems present at the Iberian Peninsula: A. Mediterranean forest; B. Coastal scrubland; C. Alpine meadow; D. Steppe; E. Atlantic forest. All illustrations by José Luis Navarro Garcia[6]

[6] http://nosolodelcuentoviveelhombre.blogspot.com/2017/06/nuevas-ilustraciones-de-ecosistemas.html#comment-form

Q1. Why do you think these ecosystems are different? List some factors that you believe are important (5').

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.....

.....

.....

.....

Q2. Could you classify these factors in two groups? Write a word that defines each of the groups (5').

.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
Group 1.....	Group 2:.....

POOLING

Let's share your factors with the rest of the class, and rewrite the list if necessary (10'):

.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
Group 1.....	Group 2:.....

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Ecology is the science that studies the relationships between the living beings and the physical environment that surrounds them. The unit of study in ecology is the **ecosystem**: it includes both the **biotic** factors, also called **biocoenosis**, and **abiotic** factors, also known as **biotope**.

Therefore, biocoenosis or ecological community includes the different populations of organisms that live in an ecosystem, and biotope the physical environment occupied by the biocoenosis.

Habitat is the area where an organism lives (and a species, by extension). It has the environmental conditions that a species needs to live.

Look at the alpine meadow from figure 5, and classify these components into biotic or abiotic components. Write at least to more factors of each category other than the listed ones (5').

Bearded vulture (*Gypaetus barbatus*)	High altitude	Presence of snow	Pyrenean lily (*Lilium pyrenaicum*)
Low temperature	Marmot (*Marmota marmota*)	High insolation	Limestone rocks

Biotic components: .....

Abiotic components: .....

Write down the translations and definitions in your own language (10')

Ecology: .....

Ecosystem: .....

Biotope: .....

Biocoenosis: .....

Population: .....

Species: .....

Biotic factor: .....

Abiotic factor: .....

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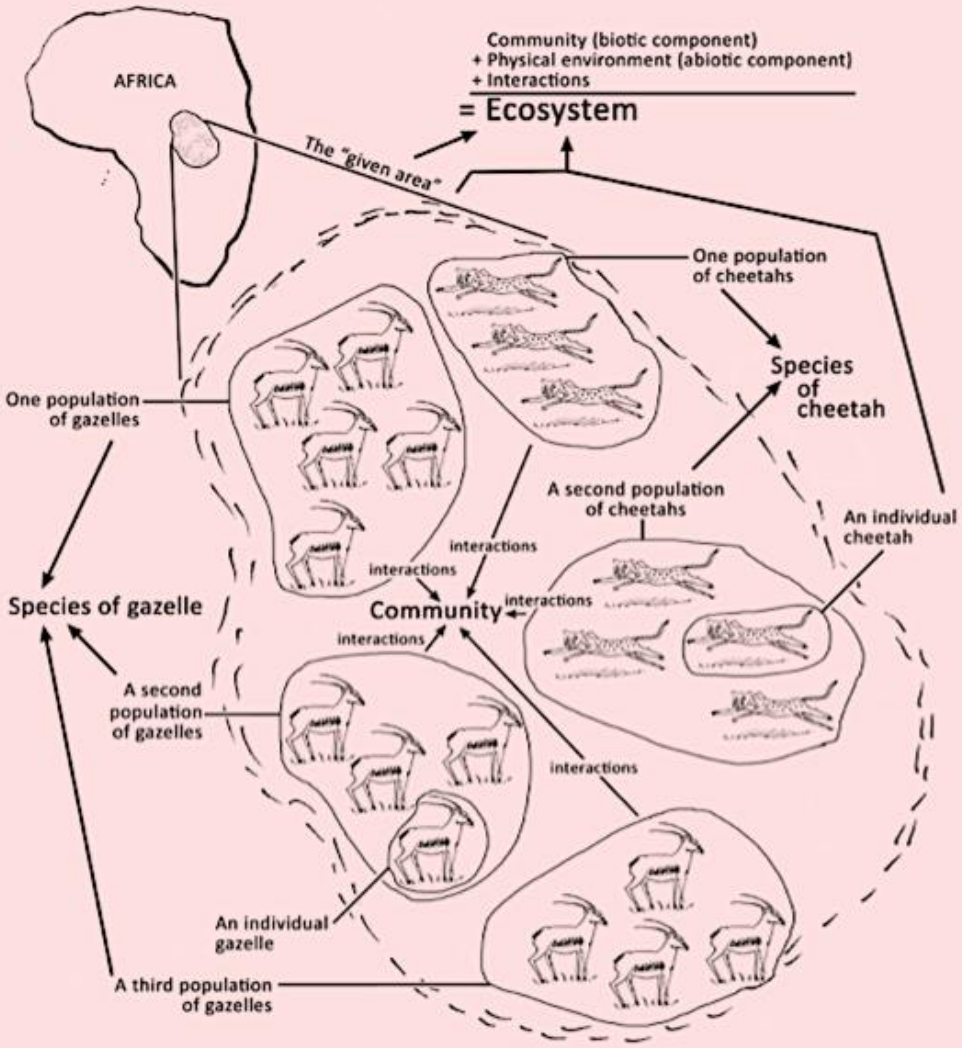

Fig. 6. Ecological levels: from individuals to ecosystems[7]

[7] https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-introduction-to-ecology/a/ecological-levels-from-individuals-to-ecosystems

Activity 1.2. The limits of the ecosystem

The common ivy (*Hedera helix*) is a species of flowering plant native to most of Europe, commonly present in the Atlantic forest (figure 5E). It is an evergreen climbing plant that prefers moist, shady locations and avoids exposure to direct sunlight.

Fig. 7. *Hedera helix* climbing on a tree[8]

The graphic in figure 8 shows the data obtained in a study about survival of different individuals of the common ivy that have been exposed to different temperatures:

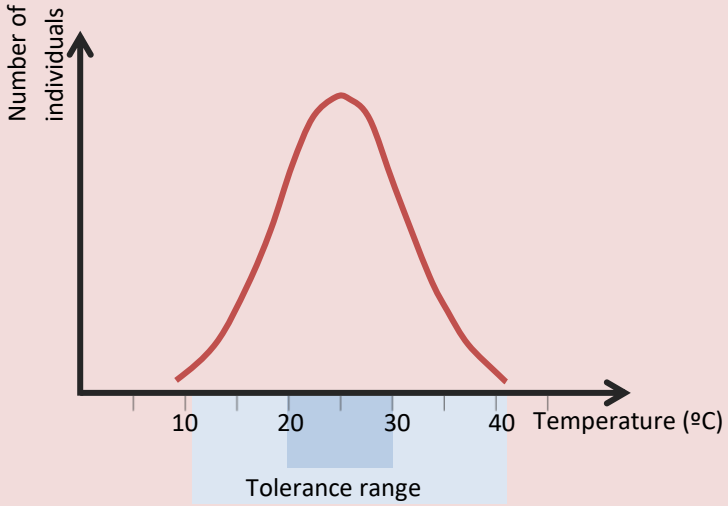

Fig. 8. Survival of *Hedera helix* individuals exposed to different temperatures[9]

ANSWER THESE QUESTIONS (15')

Q1. Determine if these temperatures are optimum, limiting or letal values: -2 ºC, 9 ºC, 21 ºC, 14 ºC

- 21 ºC is an _____ value, because is inside the zone for _____ values, which goes from _____ to 30 ºC.
- 14 ºC is _____
- 9 ºC _____
- -2 ºC _____

[8]Public domain – https://pixabay.com
[9]Elaborated by the author

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Q2. How would you define tolerance range? Use these words in your definition: *grow*, *descendant*, *survival*.

Q3. The elements that don't allow an organism to grow are called limiting factors. These can be biotic or abiotic. Which could be the limiting factors of the common ivvy? Think at least three of them

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Q4. Look at the images of figure 5. Choose three ecosystems and select one animal or plant species for each one. Think about the most important limiting factors for them:

Ecosystem 1 ---

Ecosystem 2 ---

Ecosystem 3 ---

Which could be the limiting factors for the **iberian lynx**?

POOLING

Let's share your factors with the rest of the class, and note any additional comment, if necessary (10'):

Activity 1.3. The functions in the ecosystem

The great spotted woodpecker (*Dendrocopos major*), the Eurasian nuthatch (*Sitta europaea*) and the European robin (*Erithacus rubecula*) are three bird species that are commonly found in the Atlantic forest, which are mainly or partially fed by an insectivore diet.

Fig. 9. From left to right: great spotted woodpecker (*Dendrocopos major*)[10], Eurasian nuthatch (*Sitta europaea*)[11] and European robin (*Erithacus rubecula*)[12].

Q1. Although the three of them feed on small invertebrates, do they compete for the food? Investigate which are the differences between the feeding of these species (10').

The ecological niche is the role and position a species has in its environment: how it meets its needs for food and shelter, how it survives, and how it reproduces. A species' niche includes all of its interactions with the biotic and abiotic factors of its environment. It is advantageous for a species to occupy a unique niche in an ecosystem because it reduces the amount of competition for resources that species will encounter.

There are species which need a very defined ecological niche to survive (specialist), like the capercaillie (*Tetrao urogallus*), while others, like the wild boar (*Sus scrofa*), can live in a wide range of variated ecological niche (generalist).

Fig. 10. A capercaillie (*Tetrao urogallus*)[13] in the Pyrenees and a wild boar (*Sus scrofa*)[14]

[10] By Gerry Zambonini - Own work, CC BY-SA 2.0, https://commons.wikimedia.org/w/index.php?curid=77308232
[11] By Isiwal/Wikimedia Commons/CC BY-SA 4.0, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=74974549
[12] By © Francis C. Franklin / CC-BY-SA-3.0, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=31367900
[13] De Arturo de Frias Marques - Trabajo propio, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=28963698
[14] By Valentin Panzirsch - File:Wildschein, Nähe Pulverstampftor.jpg, CC BY-SA 3.0 at, https://commons.wikimedia.org/w/index.php?curid=46902117

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Q2. Which species, the generalist or the specialist ones, do you think that can stand better the impacts over the ecosystems? Explain it with an example. Do not forget to use the scientific name of the species you mention (5').

Q3. Share your answer with your partner, explain him/her your example and discuss the differences, if is the case. (5').

ANSWER THESE QUESTIONS (15')

Q4. There are some species, even entire animal groups, that can occupy different ecological niches at different stages of their lives. Describe the differences between the niches occupied by the frogs in their larval and their adult stages. Think about their habitats and feeding.

Q5. Are ecological niche and habitat the same thing? Explain the differences between the two concepts.

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Activity 1.4. The structure of the ecosystem

The following three species are common in Mediterranean open forests. These species have established relationships according to their feeding (one eats the other).

A

B

C

D

Fig. 11. A. Short-toed snake eagle(*Circaetus gallicus*)[15]; **B.** Ladder snake (*Zamenis scalaris*)[16]; **C.** Evergreen oak (*Quercus ilex*)[17]; **D.** Wood mouse (*Apodemus sylvaticus*)[18]

ANSWER THESE QUESTIONS (15')

Q1. Could you order them according to the flux of matter between them?

..... → ..... → ..... → .....

Q2. How does the first organism in the row from above feed?

.....

.....

Q3. Think about these words: producer and consumer. Try to write a definition and assign these concepts to each of the species from above.

Producer: .....

.....

Consumer: .....

.....

Secondary consumer: .....

.....

[15] De MarioM - Trabajo propio, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=2737085

[16] De Benny_Trapp_Rhinechis_scalaris_Portugal.jpg: Benny Trappderivative work: Papa Lima Whiskey 2 - Este archivo deriva de: Benny Trapp Rhinechis scalaris Portugal.jpg:, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=18779634

[17] Pixabay

[18] De David Perez - Trabajo propio, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=29032568

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Q4. Select two of the ecosystems from figure 5 and write at least 3 producers and 3 consumers for each one. Try to decide if they are primary or secondary consumers.

ECOSYSTEM 1: .....

.....

ECOSYSTEM 2: .....

.....

ECOSYSTEM 3: .....

.....

Q5. Bacteria and worms, among others recycle dead plants and animals into chemical nutrients, such as carbon and nitrogen, which are released back into the soil, air and water. How would you relate them with the species from above? Mark their relationship with arrows.

..... → ..... → ..... → .....

Bacteria, worms, fungi…

POOLING

Let's share your answers with the rest of the class, and note any additional comment, if necessary (10'):

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.....

.....

Activity 1.4 (cont.). The structure of the ecosystem

The interaction among organisms aimed at getting food are called feeding or trophic relationships. In an ecosystem, some organisms produce their own food from the non-living environment and some others feed on other organisms. Depending on how they get their food, the organisms of an ecosystem are grouped into trophic levels:

Producers

Autotrophs are the producers in an ecosystem. These organisms take inorganic matter from their environment and produce their own food by using an external energy source. In most ecosystem, producers are typically plants, algae (unicellular and multicellular), or cyanobacteria. These organisms get energy from sunlight and transform inorganic matter – their food – through photosynthesis. Producers are the source of organic matter that, directly or indirectly, will feed all consumers and decomposers

Consumers:

Heterotrophs are the consumers in an ecosystem. These organisms need to feed on other organisms or on the matter these organisms produce.

- Primary consumers are consumers that feed on producers – mostly herbivores, animals that feed on plants.
- Secondary consumers are consumers that feed on primary consumers – mostly carnivores, or omnivores if these animals also feed on producers.
- Tertiary consumers are predators that feed on secondary consumers, while quaternary consumers feed on tertiary consumers, and so on.

Decomposers

Decomposers are heterotrophs that eat the remains and wastes of other organisms: non-living plant matter, excrement, dead animals, etc. Decomposers are essential to all ecosystems: they cause the transformation of organic matter into inorganic or mineral matter. Without this matter, producers wouldn't be able to produce food. In land ecosystems, decomposers live in the soil. There, the action of tiny invertebrates (earthworms, insects, etc.) on wastes precedes the action by bacteria and fungi, ultimately responsible for the transformation of organic matter into inorganic matter.

Fig. 12. From up to down: producer, primary and secondary consumers, and decomposer. Images[19]

[19] Pixabay

Look at these food web and answer the questions: (15')

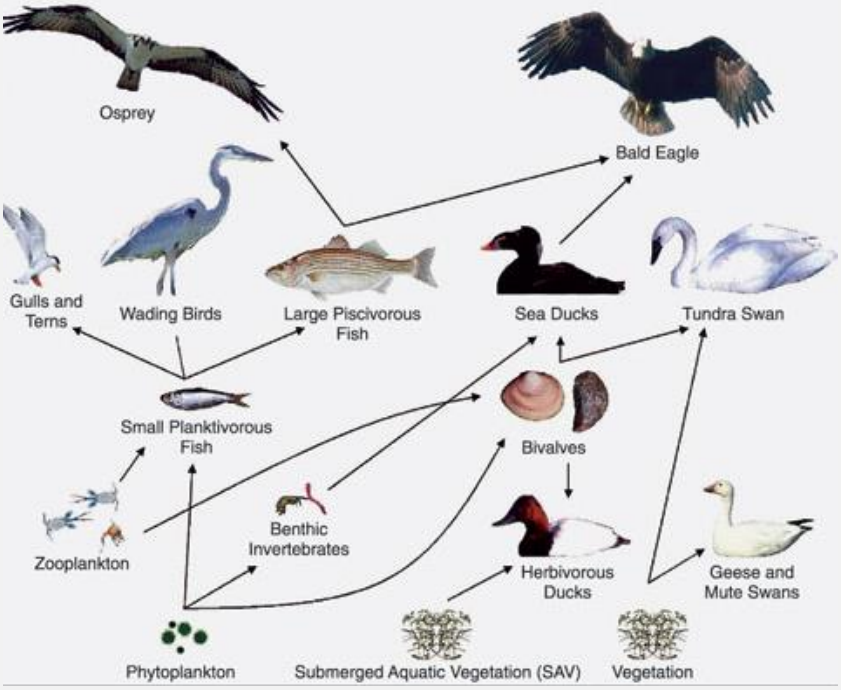

Fig. 13. Foodweb from a coastal area.[20]

Q1. Tell whether the following statements are true or false:

	T	F
a. Tundra swan feed on bivalves and vegetation		
b. Bivalves feed on zooplankton and herbivorous ducks		
c. Osprey and bald eagle feed on sea ducks		
d. Phytoplankton serves as feed to small planktivorous fish and benthic invertebrates		
e. Sea ducks feed on phytoplankton		
f. Bald Eagle and osprey compete for large piscivorous feed		
g. Small planktivorous fish feed on phytoplankton, only		

[20] Public domain

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Q2. Indicate the role each of the living organisms in this food web play:

OSPREY: *Tertiary consumer*

LARGE PISCIVOROUS FISH: .....

BIVALVES: .....

PHYTOPLANKTON: .....

TUNDRA SWAN: .....

BENTHIC INVERTEBRATES: .....

SUBMERGED AQUATIC VEGETATION: .....

HERBIVOROUS DUCKS: .....

BALD EAGLE: .....

WADING BIRDS: .....

ZOOPLANKTON: .....

GULLS AND TERNS: .....

GEESE AND MUTE SWANS: .....

VEGETATION: .....

SEA DUCKS: .....

SMALL PLANKTIVOROUS FISH: .....

Q3. Why a trophic chain or web always start by the producers?

.....

Q4. Which trophic level is missing from this food web?

.....

Q5. Consider the following feeding relationships and build a food web:

- Mice feed on the acorns from the oak tree
- Pine bark beetles feed on pine tree trunks
- Hawks feed on rats, snakes, and wrens
- Snakes feed on rats, wrens and salamanders
- Salamanders and wrens eat pine bark beetles

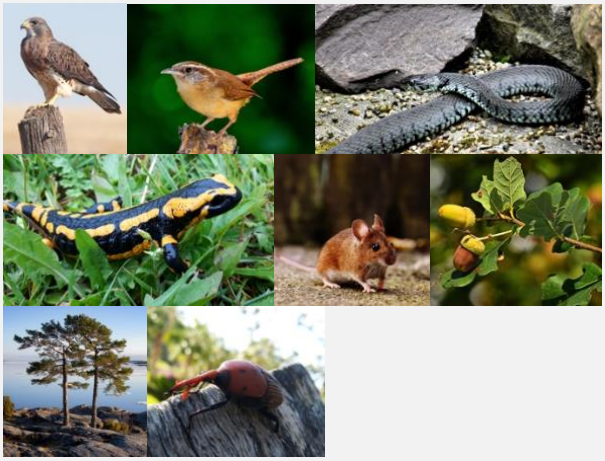

Fig. 14. From left to right and from top to down: hawk, wren, snake, salamander, mouse, aak tree, pine tree, pine bark beetle. Images[21]

[21] Pixabay

When one organism feeds on another, a flow of energy occurs between them.

The energy flow of an ecosystem follows the path of the existing feeding relationships. It is firs transferred from producers to primary consumers, then from primary to secondary consumers, etc., until it reaches decomposers through organic wastes.

All organisms extract the energy they need to survive from food. Once it has been used, energy is lost in the form of heat and cannot be reused.

Therefore, food is consumed as it moves through trophic levels, and the energy stored in this food is absorbed until it is all used up. That's why energy also needs to be obtained from an external source: this is the only way producers can produce new food.

When the energy transferred from one trophic level to the next is represented in an orderly manner, you can see how the amount of energy available quickly decreases.

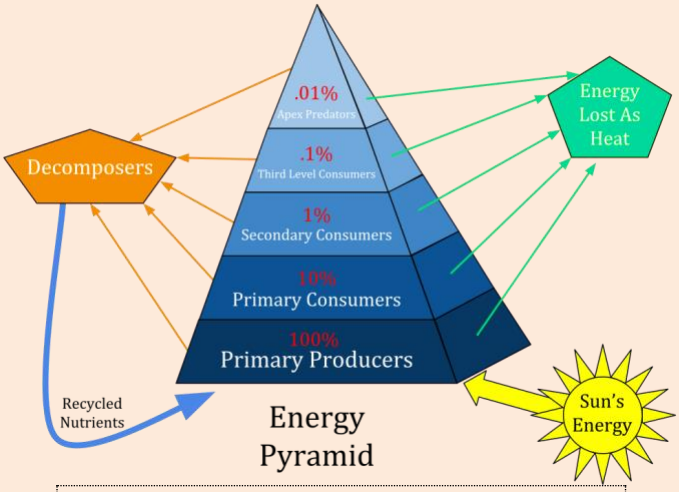

Fig. 15. A pyramid of energy[22]

The model that represents the flow of energy between levels is a diagram called an energy pyramid. The pyramid structure is the same for all ecosystems, and shows how the energy available decreases from one level to the next one.

The decrease in available energy happens for these reasons:

- Within each trophic level, organisms consume most of the food through cellular respiration to get the energy they need to survive.
- Some of the food available is not consumed and it moves directly to the decomposer level.

[22] By Swiggity.Swag.YOLO.Bro - Extracted from this Commons file, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=85276916

ANSWER THESE QUESTIONS (15')

Q1. Look at the energy pyramid and tell whether the following statements are true or false:

	T	F
a. All energy is recycled through ecosystems		
b. All the energy that reaches a trophic level is transferred to the next		
c. All trophic levels transfer energy to the environment in the form of heat		
d. Since heat is lost in all trophic levels, tertiary consumers have less energy available than producers		
e. The energy lost as heat can be reused in some trophic levels		
f. Producers transform sunlight energy into chemical energy		
g. The energy lost in the form of heat is related to the energy that living organisms use to carry out life processes.		
h. Each level in the pyramid represents the energy produced by one species		
i. Decomposers use the energy that has not been used in the previous trophic levels		
j. The stored energy decreases in each level as we move up the pyramid		
k. The energy that is not used in a trophic level is available for the next trophic level		
l. The energy used by the living organisms in any given trophic level may be reused by decomposers		

Q2. Which is the external source of energy that sets ecosystems in motion?

.....

Q3. How much energy is transferred from one level to the next one, in average, according to the diagram in the figure 15?

.....

Q4. Why this energy decreases from one level to the next one?

.....

Q5. Why ecosystems cannot have many trophic levels?

.....

Co-funded by the Erasmus+ Programme of the European Union

Rabbits (*Oryctolagus cuniculus*) are the main prey of the Iberian lynx. Epidemics, such as myxomatosis and the haemorrhagic disease, have affected rabbit populations over the years, which has in turn affected the Iberian lynx population.

Fig. 16. European or common rabbit.[23]

What do you think could be one of the main causes for lynxes population decreases? What does the Iberian lynx need to survive?

OPTIONAL RESEARCH

Investigate about the food web in which the iberian lynx is involved and draw a sketch about it.

PUTTING SOME ORDER

Review the texts and activities and elaborate a conceptual map with, at least, the words marked in red.

[23] Public domain

2. IS NATURAL WILDLIFE ENDANGERED? - What can we do to help the Iberian lynx to survive?

ONCE REGARDED BOTH AS AN ATTRACTIVE HUNTING TROPHY AND AS A VERMIN[24]

The Iberian lynx has been brought to the brink of extinction because of a combination of threats that include the radical decrease of rabbits, the lynx's principal prey; a serious reduction in habitat; being caught in snares set for rabbits; accidental deaths caused by speeding vehicles on the expanding road network, and illegal hunting.

Decreasing food base

Rabbits form the main prey of the Iberian lynx. Epidemics, such as myxamatosis and the haemorrhagic disease, have affected rabbit populations over the years, which has in turn affected the Iberian lynx population.

Car hits

The construction of high speed roads and highways, **splitting up** the Lynx habitat, is another of the main threats for this wild cat. 2014 was a black year: 22 animals died under the wheels of a car. A very high number, given the small population of the species.

Habitat loss and degradation

Infrastructures like roads, dams, railways and other human activities contribute to the **loss and fragmentation** of the Iberian lynx distribution area, creating barriers between the different populations and obstructing the exchange of individuals among them, which raises fears for its genetic viability and resistance to disease. It is thought that between 1960 and 1990, the Iberian lynx suffered an 80% loss in its range. Look at the figures 1 and 2 to see how fragmented the Iberian lynx habitat is.

Illegal Hunting

Ironically, in the past the species was regarded both as an attractive hunting trophy and as a vermin. Hunters prized its valuable fur and its meat, and although some landowners appreciate its tendency to keep fox and rabbit numbers down, most perceive it as a threat to their game populations. The Iberian lynx was legally protected against hunting from the early 1970s, but they are still the victims of guns, traps and snares, particularly those set for other animals.

Climate change

Under future climate change conditions, it is unclear if the regions where the lynx currently lives will still be suitable for the species. The current reintroduction programme, which is expanding the lynx's range to the north, could improve its resilience to climate change.

[24] Modified text from: WWF. (s. f.). Iberian Lynx - Threats. Recuperado 15 de junio de 2020, de https://wwf.panda.org/our_work/wildlife/profiles/mammals/iberian_lynx/ibelynx_threats/#:~:text=Infrastructures%20like%20roads%2C%20dams%2C%20railways,genetic%20viability%20and%20resistance%20to

Protected areas to stimulate the survival of the lynx

The Spanish government has proposed 72 sites to be included in the **Natura2000 network** (European Habitat Directive) to conserve the lynx habitat, covering more than 2,750,000 hectares (approximately the surface of the Galicia region).

The relevancy of each area differs from one to the next. WWF-Spain/Adena considers that these areas do not cover all the important habitats for the lynx. In particular, **some important corridors have not been included**. For this reason, WWF/Adena has compiled a new list of relevant areas and corridors to be included in the Natura2000 network (74 sites with a total surface of 2,7 million hectares).

Habitat loss is probably the greatest threat to the variety of life on this planet today[25]

It is identified as a main threat to 85% of all species described in the **IUCN's Red List** (those species officially classified as "Threatened" and "Endangered"). Forest loss and degradation is mostly caused by the expansion of agricultural land, intensive harvesting of timber, wood for fuel and other forest products, as well as overgrazing. Human impact on terrestrial and marine natural resources results in marine and coastal degradation. Population growth, urbanization, industrialization and tourism are all factors.

After reading the text, answer these questions with your partner.

Q1. Which are the main causes of Iberian lynx population decreasing?

Q2. Which actions do you think could be made in order to help the lynx to avoid extinction?

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[25] Adapted from: WWF. (s. f.-b). Losing their homes because of the growing needs of humans. Recuperado 15 de junio de 2020, de https://wwf.panda.org/our_work/wildlife/problems/habitat_loss_degradation/

Q3. Which are the international programmes for conservation mentioned in the text? Which institutions are involved in this strategies? Which are their objectives? Look for some information.

1

2

Q4. What is the UICN's red list? In what categories are the species divided? Look for the Iberian lynx file and write down a small text explaining what kind of information is included.

Q5. Explore the database and look for five species with different categories from your area of interest.

Q6. WWF-Spain/Adena considers that the Natura2000 network does not cover some important corridors. What is a corridor, in this context? Why do you think is important to include them in the network?

Q7. Go to Natura2000 Network website and explore it. Write down any interesting information you found there.

POOLING

Let's share your answers with the rest of the class, and note any additional comment, if necessary (10'):

INVESTIGATE ABOUT NATURA2000 NETWORK

In this activity you must investigate about one site included in the Natura2000 Network, preferably from a place that has significative relevance for you. To do that you can check the Natura2000 public viewer, select a site and look for the information. All this information must be uploaded in a Padlet platform, so all the students from INCLUDE project can check it.

Information to be included:

- Name and location of the site
- Main habitats included
- Habitats general description, including elements like:
  - biotic and abiotic factors
  - main limiting factors
  - representative species
  - trophic relationships
  - endangered species
- Threats for the site
- etc.

BONUS TRACK

Search the taxonomic classification and common name in your own language of all the species that have been mentioned in the text:

Common name	species	genus	family	order	class	phylum	kingdom
Lince ibérico (Spanish)	*Lynx pardinus*	*Lynx*	Felidae	Carnivora	Mammalia	Chordata	Animalia
……	……	……	……	……	……	……	……
……	……	……	……	……	……	……	……