



Workbook for participants #5

Interactive worksheets for distance learning



Pollinators under threat

Why do we need bees, flies and moths?



Full name Group/class

E-Mail address

Phone number Date



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Dear teachers and parents,

The following **workbook for participants** is part of the learning pack “Pollinators under threat – Why do we need bees, flies and moths?”. It is aimed at **students and participants** in projects working through this learning pack in online classes.

Instructions on using the learning pack should be issued by a **teacher**. Teachers can find further information on this as well as other learning packs at [dw.com/learning-environment](https://www.dw.com/learning-environment)

Most worksheets require a program compatible with PDF files, such as [Adobe PDF-Reader](#) or similar. These are free-of-charge and enable participants to fill out forms. You will need a stable internet connection to watch the films.

i Help

Dear student,
Dear participant,

This **workbook** relates to the issue of “Pollinators under threat – Why do we need bees, flies and moths?”.

You can fill out the worksheets on the computer or laptop and save them. There are some helpful tips below.

How do I fill out the worksheets?

1. Go to the worksheet you wish to use.
2. Read the task thoroughly. Add your answers to the text field on the worksheet. Keep your answers as short as possible. You can only write in the text field.
3. Once you have filled out all the text fields, rename the PDF document and save it. If no file name has been agreed upon, it should include your last name (the file name should not be too long and should not contain any special characters).
4. You can now send your teacher your work in the saved PDF file, for example, as an attachment.

Before you begin, write your name and contact information on the [▶ title page](#).

How do I find films and articles?

Watching films

On some worksheets, you will be asked to watch a **film**.

By clicking on a film title, you will be taken to the web page where you can watch the film. If that doesn't work, you can copy the link in brackets into the search box of your browser.

Reading articles

Other worksheets relate to articles you will need to read in order to complete certain tasks. Each article is included with the corresponding worksheet.

By clicking on the title of an article, you will be taken directly to the article without having to scroll.

Tip

At the top of each page, you will find a navigation menu.

By clicking [↶](#), you will return to the page you last looked at.

The [?](#) will take you to this help page.

Click [→ table of contents](#) to go back to that page.

You can use the arrows [←](#) and [→](#) at the bottom right of the page to move between pages.

Something isn't working?

If there is anything you don't understand or if you are having technical problems (such as with the internet or the PDF file), please ask an adult for help!



Worksheet 2

Fill in the blanks for the film

“A plant’s best friend – the importance of pollinators”

Watch the > film “A plant’s best friend – the importance of pollinators” (dw.com/p/3QMNj).

The terms can be found at the end of the text but are not in the correct order. Tick the terms you have used in the past.

Many insects are attracted by the scent and color of blossoms, and land on them to collect nectar and pollen. This is how they feed themselves and their offspring. But as they collect _____, they transport it from blossom to blossom, thereby helping the plants to reproduce. This process is called _____. The animals are called pollinators.

A pollinator’s work is extremely important. Some _____ percent of food crops worldwide are pollinated by insects. In the case of blooming plants, the number stands at _____ percent. The rest are pollinated by _____, for instance. Many different kinds of insects transport the pollen, including _____: Moths, ants and butterflies are also diligent pollinators, as are birds and _____ in some parts of the world.

The honey bee is perhaps the most famous insect pollinator. But there are not enough of these farmed bees to pollinate the whole world’s food crops. The wild mason bee, for instance, can pollinate many more _____ than a honey bee. Farmers have the best and largest harvests when many different insects pollinate their crops. This is why _____ is important.

But this very diversity is under threat. Pollinators are losing habitat in which they can find enough food, and so are dying out. This is partly because farmers often focus on _____, meaning they only plant one crop. Farms also regularly use _____ that are bad for the animals. As pollinators disappear, so too will certain kinds of fruits and vegetables.

It’s important to maintain _____. One way to achieve this is to use less pesticide and fertilizer or to stop using it altogether.

- pollen
- habitats
- pollination
- bats
- monocultures
- 75
- 90
- pesticides and fertilizers
- wind
- apple blossoms
- bees, flies and beetles
- biodiversity



Worksheet 3

Table for the article “How to stop an insect apocalypse”

Read the [▶ article “How to stop an insect apocalypse”](#).

Take particular note of the **graphics** in the article.

The article includes causes and consequences of, as well as solutions, to the decline in insect numbers. Use bullet points to add this information to the **table** below.

Reasons for insects dying out	What does that mean?	What can be done to prevent it?
Intensive farming		
Climate change		
Urbanization		

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Article 1

How to stop an insect apocalypse

We might not love creepy-crawlies, but if insects were to vanish within a century, as some scientists predict, there would be dire consequences for us humans. Is it too late to save bees, bugs and butterflies?



Insects are threatened worldwide

We often pay little attention to insects unless one happens to bite, sting or generally bother us. But lately, they've become an unlikely source of nostalgia.

People have started to notice their absence, reminiscing about unwittingly swallowing tiny flies while cycling through the countryside, about car wind-screens splattered with dead bug bodies at the end of a long journey or moths flocking to the light when a window was left open.

And science is backing up such anecdotal observations. A recent study published in the journal Biological Conservation says insects are hurtling down the path to extinction.

More than 40 percent of species are in decline and a third is endangered, the analysis found. Worldwide, we lose 2.5 percent of insect biomass each year, and if numbers continue to fall at their current rate, there could be no insects left in 100 years.

The results are "shocking," says Francisco Sanchez-Bayo, environmental scientist at the University of Sydney and co-author of the study. He predicts "catastrophic consequences."

"The word catastrophic is appropriate because the disappearance of insects brings with it the starvation of myriad vertebrates that depend on them, and therefore the collapse of entire ecosystems," he told DW.

Insects don't only play an important role in our food production, by providing a free pollination service, but are themselves food for all kind of animals. Without bugs, amphibians and birds would starve to death and fish would struggle to find enough to eat .

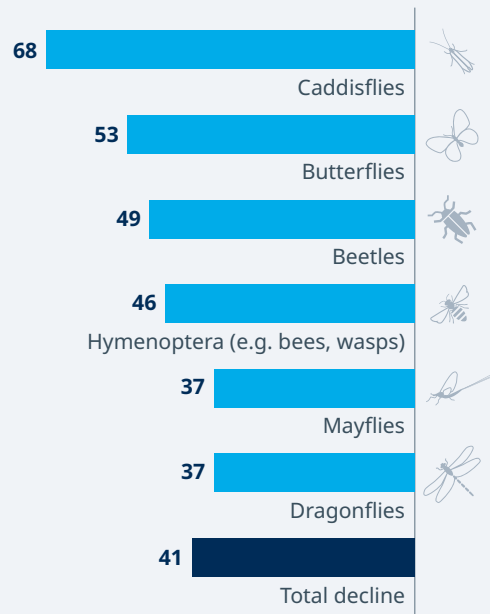
The six-legged helpers also clear away carcasses of animals that die in the wild and decompose plant waste. Without bugs, life as we know it would come to a halt.

Intensive agriculture is bug-unfriendly

According to the meta analysis, the steepest declines in insect biomass have occurred in the past 30 years. Sanchez-Bayo says this is the direct result of agricultural intensification.

Insects are disappearing

Decrease of insect populations over the past decade, in percent



Source: Sanchez-Bayo & Wyckhuys, Biological Conservation | 2019

©DW

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Article 1

The Green Revolution of the 1950s and 1960s changed the way farmers tended their fields. Fallow practices were abandoned, monocultures were developed and artificial fertilizers were introduced as a means of avoiding nutrient depletion in the soil.

Insecticides and herbicides became common features of pest and weed control, and trees and hedgerows were eliminated to generate more space.

Though this resulted in a huge gain in yield, it also implied a loss of insect habitat and led to chemical residues contaminating nearby waters.

Sanchez-Bayo says the world needs to change the way it grows food. One way forward could be a farming method known as Integrated Pest Management (IPM), which combines traditional agricultural practices with modern technologies.

“IPM advocates the use of natural means of pest and weed control, rotation of crops to maximize biodiversity of beneficial insects and avoid nutrient depletion, and only uses pesticides as the last tool to control a pest or weed outbreak,” Sanchez-Bayo told DW.

By way of example, he cited the International Rice Research Institute in the Philippines, which managed to reduce the use of insecticides in rice crops by 93 percent without losing yields.

Climate change could cause major insect wipeout

Although intensive agriculture has been identified as the main driver for insect declines in Europe, scientists say the main culprits in other parts of the world are climate change and deforestation.

Even in pristine, virgin tropics, far away from fertilizers, pesticides and insecticides, insect numbers have steadily dropped.

In Puerto Rico’s Luquillo rainforest, for example, there are as many as 60 times fewer insects now than there were in the 1970s. During the same period, forest temperatures have risen 2 degrees Celcius (3.6 degrees Fahrenheit). The number of lizards, frogs and birds that eat insects has declined synchronously.

Calculations by researchers at the Tyndall Centre for Climate Change Research highlight the correlation between global warming and insect survival.

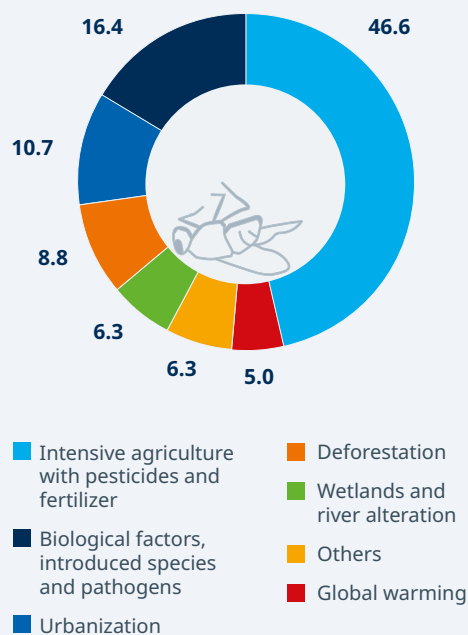
Their projections suggest that if we experienced global warming of 3.2 degrees Celcius above pre-industrial levels, as is likely on the basis of current pledges made under the Paris Climate Agreement, 49 percent of insects would lose half of their geographic range.

If we limited warming to 2 degrees Celcius above preindustrial levels, 18 percent would lose half of their range. In a 1.5 degree scenario, however, the number would drop to six percent.

Rachel Warren, lead author of the study, says it’s very possible that population decreases would actually be even larger than projected because they didn’t factor such things as intensive agriculture into their calculations.

Main drivers of insect decline

Worldwide, in percent



Source: Sanchez-Bayo & Wyckhuys, Biological Conservation, 2019

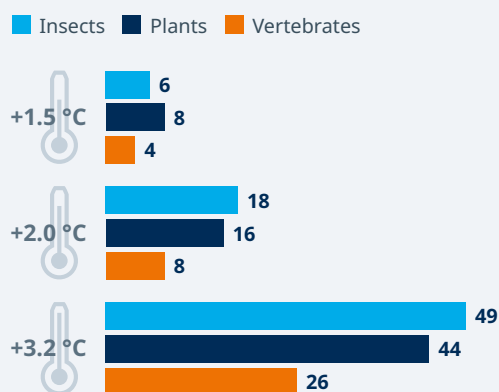
©DW

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Article 1

Impact of global warming on biodiversity

Percentage of species expected to lose more than half their range by 2100



Source: Warren *et al*, Science | 2018

©DW

“It’s no question that there are many pressures on insects and if we don’t achieve the goals of the Paris Climate Agreement, there will be another big pressure on them,” Warren told DW.

She says it’s not only important that we manage to achieve the 1.5 C degree goal, but how we achieve it.

“Land availability is a major factor for insect losses. If we use too much land to grow plants for biomass energy, that would be bad for biodiversity,” she explained. “So anything we can do to reduce our energy and land demand, such as using less power and eating less red meat, is great.”

Urbanization – let your garden grow wild

Big cities and concrete landscapes also play a significant role in insect numbers, and with two-thirds of the global population expected to be living in urban areas by 2050, that impact is set to grow.

Densely built neighborhoods and sealed, concrete roads strip bees and bugs of their natural habitats, while light pollution leads nocturnal insects astray.

Researchers are therefore calling on governments to create more green spaces in cities by rewilding public parks and private gardens, and planting wild flowers along roadsides and on traffic islands.

A study by the University of Basel in Switzerland found that nature-friendly gardens, with deadwood, compost, unmowed grassland and native flowers, can greatly increase the biodiversity of flying and soil-dwelling insects and largely compensate for the negative effects of urbanization.

The wilder and more diverse the gardens, the more insects the researchers counted, including rare millipedes that have not yet been found anywhere else in Switzerland.

Brigitte Braschler, biologist at the University of Basel and co-author of the study, has been researching insects her entire life and says that although the decline in biodiversity “is very strong”, it’s not too late to change the trend.

“The public is waking up to the problem and is willing to act. Certain species are already lost but I’m positive we can stop the decline or at least slow it down,” Braschler told DW.



Wild and diverse gardens will attract more insects

01.03.2019

Katharina Wecker
[dw.com/p/3EF7H](https://www.dw.com/p/3EF7H)



Worksheet 4

Listing unknown and technical words from the interview “We cannot survive without insects”

Biology professor Dave Goulson says a world without insects would be sterile and dull. Please read the >Interview “We cannot survive without insects”.

The text contains some uncommon words. Three of those are in the **table** below. Are there any other words in the text that you don’t understand? Note them in the table.

What do these words mean? Research online or in books. Please write their definitions in the right-hand column.

I don't know this word	The word means
Ecosystem	
Pesticides, for example neonicotinoids	
Bee diseases	

Discuss your list with the others. Have you forgotten anything? Add it!

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Article 2

We cannot survive without insects

Many people see insects as annoying pests. But British biologist Dave Goulson cautions: A world without insects is a dull place without coffee and chocolate – and with dead animals and cow patties piling up.



Dave Goulson researches insects, and gives them a voice

DW *How many insects are there in the world?*

Dave Goulson Insects are the dominant lifeform on the planet. We've named well over a million species of insects, and there could be 5 or 10 million. As for the number of individuals, it's safe to say that there are many more insects than anything else, excluding microorganisms like bacteria.

DW *Why are insects disappearing?*

Dave Goulson Most people agree that it's a combination of factors, primarily associated with the way farming has changed in the last hundred years. We've moved to this kind of industrial farming system with very big fields with monocultures of crops that are treated with lots of pesticides. It's very difficult for most insects to survive in.

DW *Why should we care about the insect die-off?*

Dave Goulson People should be jumping up and down and be concerned over this, because we cannot survive without insects. Pollination is probably the best-known example of what insects do for people. Sometimes it's bees, sometimes it's flies, beetles or whatever. Most of the fruits and vegetables we like to eat, and also things like coffee and chocolate, we wouldn't have without insects.

Insects also help to break down leaves, dead trees and dead bodies of animals. They help to recycle nutrients and make them available again. If it weren't for insects, cow pats and dead bodies would build up in the landscape.

DW *Sounds like a dystopia. What would a world without insects look like?*

Dave Goulson Pollination is necessary for most wild flowers. So if we lose most of our insects, then we're going to lose our wild flowers, which means that anything else that likes to eat wild plants will disappear. Insects are at the heart of every kind of ecological process you can think of. Without them, we would live in a sterile, dull world where we eke out a boring existence of eating bread and porridge.

DW *What about pests like mosquitoes? Do they also have an ecological purpose?*

Dave Goulson All insects are doing something. They are either food for something, or they pollinate something or whatever. But not every organism has to have a purpose. It may be the case that one or two insect species go extinct and it wouldn't have any noticeable effect on anything. The concern is that if we lose more and more of them, ecosystems will slowly unravel.

DW *Researchers found that insects in a nature reserve in Germany declined more than 75 percent. But that hasn't necessarily affected us and our crops, right?*

Dave Goulson The biggest crops grown in Europe don't depend upon insect pollination; wheat, for example, is wind-pollinated. Other parts of the world are starting to see the impacts of the loss of pollinators: In parts of China, they now hand-pollinate their apple and pear trees because they don't have enough bees left to do it.

DW *So you are saying, we haven't experienced the full impact of the insect die-off?*

Dave Goulson That's right. We've got a growing human population trying to grow more and more food, and we've got a rapidly declining population of pollinators. Those two things are going to crash into each other. It can't be more than 10 years away, and probably less would be my guess.

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Article 2

DW *Why are particularly bee colonies in such bad shape?*

Dave Goulson Intensification of farming has resulted in a landscape with very few flowers, and when there are flowers, they're very likely contaminated with pesticides. That has made life pretty difficult for bees. Moreover, we've accidentally spread a whole bunch of bee diseases around the planet with moving domestic honeybees around. If you're a bee and you are sick and poisoned and hungry all at the same time, then it is not surprising you might die.

DW *Will the ban on the open-air use of neonicotinoids in the European Union save the bees?*

Dave Goulson No. Some people wrongly believe that neonicotinoids are the main problem that bees face. Neonics do harm bees, and stopping using them is a wise and sensible thing to do. But we currently use about 500 different pesticides in Europe. Banning three of them, probably the worst three, is a good start – but there's still an awful long way to go. If you withdraw one pesticide, the farmer just wants to know which pesticide he can use instead. We really need to look at this whole system of farming and find a way to massively reduce pesticide use.

DW *Which insects will suffer most from climate change?*

Dave Goulson Bumblebees are a classic example. They are big furry insects that are well adapted to cold climates, to cool wet temperate conditions, and they are really going to struggle as it gets warmer. There are predictions that many of our European bumblebees will disappear by the end of this century.



Industrial agriculture uses large amounts of pesticides



Soon to be extinct? Bumblebees are suffering greatly due to climate change

DW *Will some species of insects also benefit from climate change?*

Dave Goulson Certainly some insects. The ones that can breed fast, that have big populations, that are adaptable. Those tend to be the ones that are pests, the ones that we don't want. Whereas butterflies, dragonflies and bumblebees breed much more slowly, they're less adaptable. So we do run the risk exterminating most of the beautiful and important insects that we love. And being left with lots of flies and cockroaches.

02.07.2018

Sonya Angelica Diehn conducted the interview, which has been shortened and edited for clarity.
dw.com/p/2zrkn



Worksheet 5

Word puzzle for the film “China’s plants blossom without bees”

Watch the [film “China’s plants blossom without bees”](https://www.dw.com/p/2wNIB) ([dw.com/p/2wNIB](https://www.dw.com/p/2wNIB)).
The film focuses on fruit farmers in China.

Connect the relevant parts of the sentences with each other. To connect them, click on the black arrow between the sentence beginnings **1 – 7** and the sentence endings **A – G**.

<p>Fruit farmers have to do something 1</p>	<p>A but there aren't enough of them left in this region.</p>
<p>The bees should really be the ones distributing the pollen, 2</p>	<p>B because they can crawl into the flowers.</p>
<p>Therefore, the fruit farmers must 3</p>	<p>C that would normally be taken care of by nature.</p>
<p>Each tree has to be 4</p>	<p>D pesticide per hectare as a European farmer.</p>
<p>In China, there aren't many bees left, 5</p>	<p>E because too many chemicals are used in agriculture.</p>
<p>A farmer in China uses on average more than twice as much 6</p>	<p>F pollinate the blossoms by hand.</p>
<p>Bees are better than people at pollinating blossoms, 7</p>	<p>G pollinated three times.</p>



Worksheet 6

Research and poster: Our lives without pollinators

Without pollinators, our world would be a very different place in which many things would no longer exist. What would that mean for you? Answer the following **questions** in bullet point form.

Use books or the internet for research and re-read the **› Interview “We cannot survive without insects”**.

If there were no more pollinators...

1. ... I would miss the following varieties of **fruit and vegetables** :
.....
.....
.....
2. ... I would have to live without these **drinks** :
.....
.....
.....
3. ... I would no longer be able to use these **cosmetics and medical products** :
.....
.....
.....
4. Which other products can you think of that would cease to exist without pollinators?
.....
.....
.....
5. What does that mean for you?
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Make a **poster** based on the findings of your research.

Tip

Design your poster as a sketch on a piece of paper before you start gluing things down.



Worksheet 7

Flyer for the film “Mexico: Protecting vanilla’s only natural pollinators”

Watch the [Film “Mexico: Protecting vanilla’s only natural pollinators”](#) (dw.com/p/3Hykz).

The film is about the Mexican environmental organization BIOMA, which is fighting for the protection of the vanilla plant. Your task: Help the foundation to design a flyer that appeals to children and young people.

These **questions** will help to fill your flyer with information. Use bullet points to answer them:

1. What is the project?

.....
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2. What is its aim?

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.....

3. Why is this project important?

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.....

4. Who supports the project?

.....
.....

5. How can people who read the flyer help the project?

.....
.....

6. What do you use vanilla for and when?

.....
.....

Sketch a design for your flyer on a piece of paper, folding it if necessary. Is it easy to read?

Design your flyer. Come up with images that fit with your text. You can draw, paint or collage.





Worksheet 8

Game of priorities: How can we protect pollinators?

Read the [▶ article "To stop an insect die-out, the world needs pollinator-friendly policies, scientist warns"](#). It includes ways to protect pollinators.

Afterwards, look at the **table**, which also includes examples of how pollinators can be protected. Mark five statements that you personally find important.

We can protect pollinators by ...	The 5 most important
... using less plastic, because it pollutes the environment.	
... setting up beehives.	
... avoiding monocultures as they don't provide enough food for pollinators.	
... setting up insect hotels. Wild bees, for instance, can nest there.	
... establishing protected areas for insects.	
... demanding that politicians implement sustainable agricultural policies.	
... planting herbs as they're particularly popular with insects.	
... not cutting the grass in our gardens. Many insects like to hide in long grass.	
... using less pesticide and fertilizer, as they are toxic for pollinators.	
... eating less meat, as cattle ranches often mean loss of habitat for pollinators.	
... preventing deforestation.	
... planting native flowers. Exotic plants often don't provide food for insects.	
... buying honey from local beekeepers. Beekeepers often advocate for wild bees as well as their honey bees.	
... buying regional food products. These don't have to travel far to get to us, thereby helping to protect the climate.	
... putting insect screens on our windows, so the creatures don't end up in our homes, where they won't survive.	

Explain why you chose your selected five points.:

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Article 3

To stop an insect die-out, the world needs pollinator-friendly policies, scientist warns

Insects are among the most successful creatures on the planet. But they're in decline and that would have serious consequences for the world. Entomologist Josef Settele talks to DW about stopping the insect die-off.



Josef Settele says we need insect-friendly farming to stop pollinator decline

Creepy-crawlies are among the oldest life forms on this planet. Before dinosaurs ever walked the Earth, insects were certainly already there. Some estimates date their origins to 400 million years ago. They're also extremely successful. Of the 7-8 million species documented on Earth, around three quarters are likely bugs.

But several insect species could disappear for good in the next few decades and that would have serious consequences for humans.

Insects like bees, butterflies and even certain species of beetle and ant incidentally pollinate our crops when they collect protein-rich pollen and sugary nectar, ensuring we have enough to eat.

DW spoke to Josef Settele, a professor and entomologist at the Helmholtz Centre for Environmental Research (UFZ) in the eastern German city of Halle, about whether we need to worry about our food and how politics and business could intervene to halt the insect decline.

Settele was in the global spotlight in May 2019 when the United Nations IPBES Global Assessment Report on Biodiversity and Ecosystem Services was

published. In the report, the entomologist and his colleagues determined that around 1 million plant and animal species are threatened with extinction.

Insects are being hit particularly hard. The scientists estimate that around 10% of all insect species are threatened with dying out over the next few decades – and that's a conservative calculation.

DW *In the report, you conclude that in some world regions 40% of wild, pollinating insects, particularly wild bee species, are already facing extinction. Why don't we just put up bee boxes and hives everywhere?*

Josef Settele That will only help so much. The wild cousins of the honeybee don't necessarily live under the guardianship of humans. And the honeybee is responsible for pollinating only a certain percentage of our crops. For instance, they pollinate just a small portion of our apples. Wild pollinators whether they be hoverflies, bumblebees, or other insects like butterflies are more important in this regard.

DW *So my apple harvest could be less bountiful if the honeybee is the only species available to pollinate it?*

Josef Settele Correct but even more importantly, certain plants can't be pollinated by honeybees in the first place. Bumblebees, for instance, typically pollinate broad beans. Honeybees can't do much here really.

Broad-bean blossoms are closed and the bumblebee can easily force its way in with its wide body. Another example is alfalfa, an important forage crop that is dependent on the bumblebee. Honeybees just can't get into the blossom.



Solitary pollinators like the leafcutter bee like to nest in tunnels, such as in this insect hotel

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Article 3

DW *What would the global community have to fork out if all pollinating insects suddenly disappeared and our food crops had to be pollinated by hand?*

Josef Settele Global pollination (by insects and other animals) is worth at least \$235 billion a year, according to our conservative estimates. And you'd really have to expend considerable resources to imitate the animals' pollination performance. Humans just haven't mastered the technique. Look at the use of brushes. The yields are always paltry in comparison to natural pollination.

The other question is: where in the world am I doing it? If I'm in a country where the labor costs are low, then it could provide some kind of alternative. But there would be no point in trying that in Germany, for instance. Your apples would suddenly be ten times more expensive when you take our labor costs into account.

DW *Considering those prospects, you would think that politicians and businesses would have a big interest in stopping species loss. What courses of action are there for policy makers? What shape would pollinator-friendly politics take?*

Josef Settele Many different factors contribute to the disappearance of insects but a lot of it is very much connected to our land use. A more sustainable use of our land needs to be encouraged. That could be achieved by, for instance, having a higher diversity of habitats and by reducing pesticides, particularly insecticides.

We really need policy that would heavily promote the production of sustainable products. So, groceries that require fewer pesticides and make more sense from an energy perspective. That means eating more plants in our diet and fewer animal-based products.

I'm not a vegetarian but the strong preference in Europe and North America for consuming meat, has to change. Our high meat consumption fuels the demand for soy, which is used as a feed for cattle. By importing soy from South America, we're contributing to species extinction. That's because forests and areas that were full of species-rich ecosystems are often turned into plantations. These are grave changes that are causing habitats to disappear.

DW *But are large, blooming monoculture plantations not good for wild pollinators?*

Josef Settele Pollinators need more than just food. They need nesting habitats. Solitary wild bees lay their eggs in holes in the ground or hollow stems, the likes of which are mimicked in insect hotels. Those are basically reproductions of the shelters found in nature and where they lay their eggs.

DW *What can I do as an individual?*

Josef Settele Being aware of the impact of how you consume is a good start, although, that is often difficult to navigate. It's always a good idea to make sure you've got a diversity of flowering plants around your home. Even just getting in touch with nature is good.

DW *So, just get outside into nature?*

Josef Settele Yes! Out into nature. And bringing nature to your own front door.



Pollinators love wild summer meadows with native flowers and grasses

20.10.2019

Kerstin Palme conducted the interview, which has been condensed and edited for clarity.

[dw.com/p/3Qexc](https://www.dw.com/p/3Qexc)



Worksheet 10

Job advertisement for the article “Buzz of success in Zimbabwe’s forests”

Please read the > **article “Buzz of success in Zimbabwe’s forests”**.

The organization Environment Africa wants to boost the number of beekeepers in Zimbabwe.

Now imagine that you work for Environment Africa. You’re looking for new beekeepers to start immediately and your task is to write an advertisement for a job vacancy.

You may use the following questions as a guideline:

- Who is being sought for a job?
- Where is the job?
- When does the job start?
- Who is advertising the position? Describe the organization briefly.
- What duties and tasks will the new beekeeper have?
- What are the earnings?

You will find the information needed to write the advert in the article and on this worksheet. The following key words could also help you:

- 250 beehives
- save forest
- wildfires
- honey production
- feed families
- trees are important for flowers
- bees need flowers
- plan: produce your own honey
- 1100 members of the beekeepers’ association
- \$1000 per month
- three to four harvests a year
- \$2.30 for a kilo of honey

Beekeepers wanted

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Article 4

Buzz of success in Zimbabwe's forests

As organic beekeeping spreads like wildfire across eastern Zimbabwe, the industrious little insects are helping to preserve forests and prevent woodland fires.



© Columbus S. Mavhunga

A beekeeper and his bees

To start his day, Benjamin Chatambura inspects his 250 beehives scattered over a small plot – to make sure that no unwanted visitors – that is, thieves – have come overnight.

“It gets me motivated,” the 39-year-old soft-spoken beekeeper told DW as his children watch from a distance. After that, he checks to see if any hives are ready for harvesting. His kids are afraid of bees, but they like what they produce. “It is sweet and it pays their school fees,” he said.

Until recently, beekeeping was of little interest to most Zimbabweans living in the country's eastern district of Mutasa, a lush green mountainous region about 350 kilometers (217 miles) from the capital Harare. It was a niche business like many others.

That has changed dramatically since the nonprofit organization Environment Africa started encouraging locals to get into the beekeeping business as a means of providing alternative livelihoods and protecting the forests.

The project, which is active in other parts of Zimbabwe and several other African countries as well, is financed by the European Union and managed by the UN Food and Agricultural Organization (FAO).

“This project has changed not only the lives of people in this community, it has managed to preserve trees,” said Lawrence Nyagwande, the field officer for Environment Africa in Manicaland province. “Deforestation had become the order of the day here and had reached alarming levels.”

Busy bees prevent fire

In the past, logging had been the primary source of income in this region – but rampant deforestation threatened the entire industry. Now, beekeeping has almost caught up with timber in terms of economic importance, and has even helped give the logging business new life.

“It was going to be difficult to stop deforestation without coming up with an idea that would solve what causes it,” Nyagwande told DW. “Most people burn grass to make hunting easier, or they cut trees for firewood,” he explained.

Violet Makoto, the spokeswoman for the government's Forestry Commission, told DW in an interview that the beekeeping project had drastically reduced wildfires and deforestation in Zimbabwe.

“In Zimbabwe, we now want the beekeeping concept to maintain a stronghold as one of the projects that communities must take up, until we get to a level where we totally eliminate the problem of veld fires and cutting down of trees,” said Makoto.



© Forestry Commission of Zimbabwe

Beekeeping could provide an alternative to logging and collecting wood in Zimbabwe

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Article 4

Alternative livelihoods best logging deterrent

According to official figures, the country had been losing 1.5 million hectares of forest a year until 2015. Even hefty fines for setting fires and cutting down trees for firewood could not deter Zimbabweans from cutting down trees to earn a living.

One of them was Chatambura. "I used to cut trees without planting any," he said. But now that he's joined the beekeeping project, he doesn't want to see anyone cutting down or burning the forests.

"It is not that I like trees very much. But trees provide flowers, which are the food that lets the bees produce honey – and honey is now my livelihood."

Before he entered the beekeeping business, Chatambura was never formally employed, which is not unusual in Zimbabwe. While reliable statistics are difficult to obtain, some estimates put the national jobless rate at more than 85 percent.

Chatambura has been doing very well since he started producing honey about four years ago. His family now always has enough to eat, and he has even bought a motorcycle.

Beekeepers are top earners

Within three years, the beekeeper's association in Mutasa district has grown to more than 1,100 members, says the head of the organization, Paddington Nemaunga.

On average, each farmer has 250 beehives. The beekeepers are trained by Environment Africa, which also provides them with equipment.

Beekeepers harvest three or four times a year, Nemaunga said, with some farmers earning an average of as much as €894 (\$1,000) a month. That's a lot, considering that a typical government worker in Zimbabwe only earns around €450 a month.

Scaling the project up

But for Environment Africa, the job isn't done yet – the group wants to expand the project to other parts of the country.

As things stand, beekeepers don't process their own honey – instead, they sell it to buyers from Harare for around €2.05 per kilogram (\$2.30). The honey is processed in the capital, and the end product is sold in stores across the country for almost five times the purchase price.

Environment Africa is considering whether the beekeepers should process their own honey, which could increase profits significantly.

And then there is still the matter of the trees – Environment Africa doesn't want to leave that to chance. The head of the organization in Zimbabwe, Barnabas Mawire, said: "We are also into tree planting – we actually increase the hectareage where the bees can forage."



Bees provide an income and protect the climate

27.06.2017

Columbus S. Mavhunga
dw.com/p/2fRzp



Worksheet 11

Constructing an insect hotel

You can build an insect hotel yourself. But you have to keep a few important things in mind, otherwise insects won't be able to use it.

Firstly, you'll have to find **the right spot** for your insect hotel. This place must be protected from the rain, be dry, warm and sunny. Within the group, discuss where the hotel could be placed. It's important to note that the passageways in the hotel must be positioned horizontally to allow the creatures to crawl inside.

Insects also need **plants** they can visit and feed from near their hotel. Use some books or the internet to find out what suitable plants your region has to offer. Perhaps there's an expert in your area who could answer any questions you have about insect hotels.

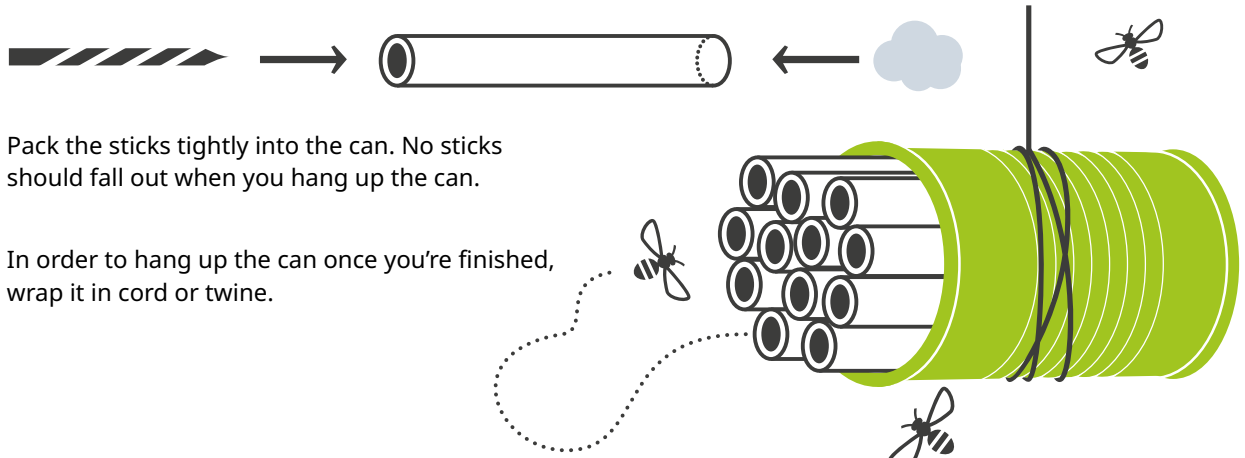
To build the insect hotel, you will need

- Empty, clean cans
- Can opener
- Sandpaper or pliers
- Hollow wood or sticks, for instance, bamboo cane*
- A small saw
- A wood drill (either hand drill or electric drill)
- Cotton wool*
- String or cord

** The amount of hollow wood or sticks and cotton wool required, depends on the size of the cans and sticks.*

Instructions **If you require help with any of the steps, ask an adult.**

1. Remove the bottom of the can. You can use a can opener for this. If the edges are sharp, sand them down or bend them in.
2. Saw the hollow wood or sticks into small pieces. They should be slightly longer than the can.
3. Are the sticks completely hollow? If not, use a drill to hollow out the rest, but be careful.
4. Seal the sticks at one end with cotton wool.



Imprint

Publisher

Deutsche Welle (DW)
Global Ideas
Voltastraße 6
13355 Berlin
Germany

Telephone: +49 30 4646-6401
Mail: globalideas@dw.com
Web: dw.com/globalideas
Twitter: [@dw_environment](https://twitter.com/dw_environment)
Facebook: facebook.com/dw.globalideas
Instagram: instagram.com/dw_globalideas

Department

DW Business, Science, Environment

Responsible

Manuela Kasper-Claridge

Didactical implementation

mct media consulting team Dortmund GmbH

Design

DW Design

Publication date

November 2019

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Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

based on a decision of the German Bundestag

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The multimedia environment magazine

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Global Ideas is more than just television. Think interactive specials such as a visit with Africa's wild animals or explainers that answer complex questions like "does global warming really exist?" The magazine also has an educational element in the form of carefully crafted "learning packs" on key environmental topics. Available free of charge in German, English and Spanish, these learning materials include videos, articles, worksheets and teacher handouts, as well as other educational materials such as posters, picture cards and practical experiments.

globalideas@dw.com
dw.com/globalideas

 @dw_environment
 facebook.com/dw.globalideas
 @dw_globalideas

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