The XperiBIRD.be Almanac

Your observation kit throughout the seasons

Dear participants,

Thank you for your participation in XperiBIRD.be, a participatory, innovative and educational science project!

In this document, you will find the instructions to be followed, month by month, to get the most out of this wonderful experience.

Put up the XperiBIRD.be poster in your classroom so that you can keep an eye on the essential steps for a successful year with XperiBIRD.be!

Enjoy your discoveries and observations!

Web site: www.xperibird.be

If you have a question, do not hesitate to contact us at info@xperibird.be!

XperiBIRD.be is an initiative created by:

The Belgian Royal Institute of Natural Sciences
29, Rue Vautier
1000 Brussels

Supported by:

XperiBIRD.be ALMANAC: YOUR observation KIT THROUGHOUT THE SEASONS 3
SEPTEMBER – OCTOBER – NOVEMBER 4
For first time participants in xperibird.be: 4
1. Check that nothing is missing from the kit 4
2. Test the connection for your camera 4
IF YOUR XperiBIRD.be NESTING BOX WAS ALREADY IN PLACE LAST SPRING: 5
1. In case of a new contact person 5
2. Remove the nest from the nesting box 5
3. Remove the camera and store it inside 5
4. Test the connection with the camera 5
5. Reinstall the nesting box in its usual place 5
6. Register your nesting box on the interactive map 5
DECEMBER – JANUARY – FEBRUARY 7
ActivitIES CONCERNING BIRDS, SCIENCE AND/OR TECHNOLOGY 7
1. Feeding the birds 7
2. Observe and recognise bird species 7
3. Participating in another participatory science project 8
4. Develop activities based on STEM and programming 9
GET YOUR BEARINGS IN THE “USER” SECTION OF THE WEB SITE 13
PUT THE CAMERA IN the NESTING BOX 13
MARCH – APRIL – MAY 14
start of the nesting season 14
1. If you have visits to your nesting box 14
2. Identify the first signs of nesting 14
IF A COUPLE OF BIRDS NESTS IN YOUR NESTING BOX 15
1. Leave nature to its own devices: 15
2. Configure the camera and empty the memory card regularly 15
3. Report your observation data 16
4. Banding young birds 16
5. A second brood 17
IF THE NESTING BOX HAS REMAINED EMPTY 17
JUNE – JULY – AUGUST 18
Close your observation data DEFINITIVELY 18

Complete the project evaluation questionnaire 18

SEPTEMBER – OCTOBER – NOVEMBER

FOR FIRST TIME PARTICIPANTS IN XPERIBIRD.BE:

At the start of the school year, we contacted you by e-mail to discover how you wished to collect your XperiBIRD.be kit.

Once you are in possession of the kit, please make sure to:

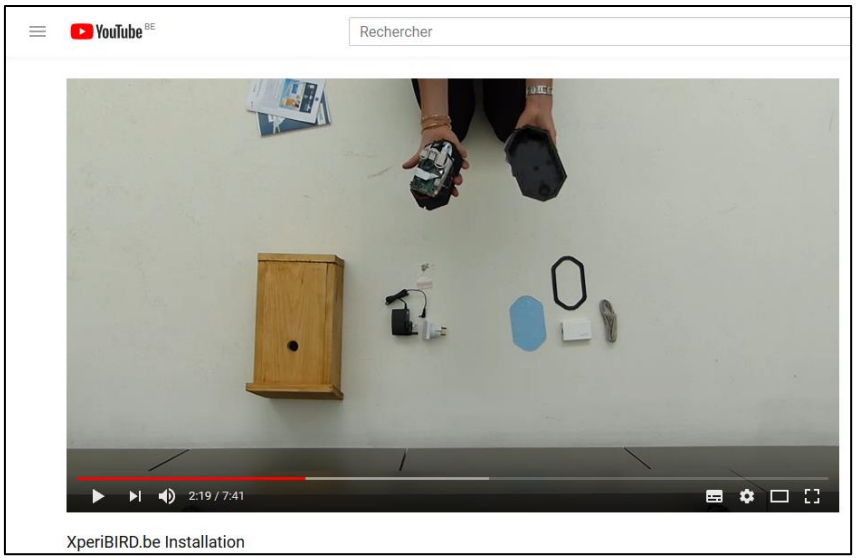
1. Check that nothing is missing from the kit

Your kit comes complete with an installation manual in which there is a list of all the elements present in your kit.

In the case where an element is missing, contact us as soon as possible at info@xperibird.be.

2. Test the connection for your camera

Connect your PC to your camera for the first time following the instruction in the installation manual and this video tutorial.



Next, follow the recommendations below.

If your xperibird.be nesting box was already in place last spring:

1. In case of a new contact person

If the person in charge of the project has changed this year, please send us the new contact person's contact details (name, e-mail address) as soon as possible to info@xperibird.be.

2. Remove the nest from the nesting box

Firstly, if it has been occupied, you must remove the nest from the nesting box. Since passerines do not reuse old nests, you must remove the one that they built the previous season. Nest, clean the bottom of the nesting box with a (metal) brush and, if necessary, a little bit of bleached water to get rid of any parasites that may be present. Use gloves to carry out this task and take the opportunity to check the general condition of the nesting box: whether there are cracks in the wood, if the air vents are blocked, if the nesting box is securely attached, etc.

3. Remove the camera and store it inside

It is strongly recommended to remove the camera and store it inside during winter. The electronic components will last longer if they are not subject to bad weather and extreme temperatures. The electronic equipment is costly, so make sure that you keep it in a safe place.

4. Test the connection with the camera

After this summer break, test that the camera still works correctly. To do this, use the installation manual and this video tutorial.

If you encounter any difficulties, contact us (the sooner the better!) at info@xperibird.be.

5. Reinstall the nesting box in its usual place

Once you have completed the cleaning, reinstall the nesting box in its usual place. You can also take this opportunity to move it to a more suitable place if you did not observe any birds last year (and if there are reasons to believe that it was due to the location of the nesting box).

To increase your chances of the nesting box being used by a couple of birds, install it in autumn. The birds start to look for a place where they can nest very early in the season. Furthermore, it can occasionally be used as a shelter during winter for passerines… or even bats!

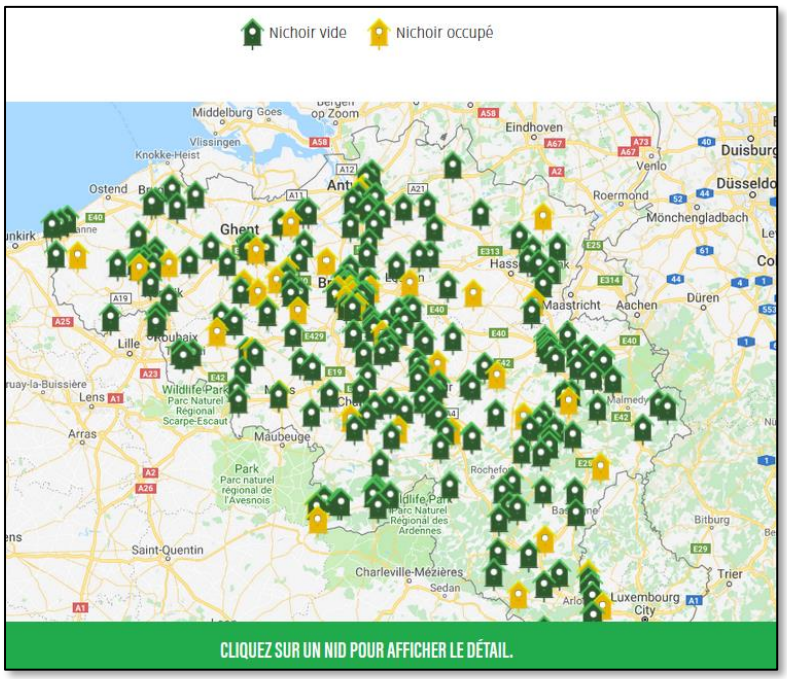
Follow the advice below to choose the best spot:

- ✓ Prefer an open space so that the birds can be sure no predators are present before making their approach.
- ✓ The ideal height for installation is between 2.5 and 5 metres.
- ✓ Choose a place sheltered from the wind and avoid having the front of the nesting box too exposed to bad weather (avoid places facing north or northwest).
- ✓ Do not place the nesting box on a branch or next to bushes, because this may allow access to predators such as cats.
- ✓ Do not place two nesting boxes within 10 metres from one another because tits are very territorial and will not nest if another couple are already nearby.

6. Register your nesting box on the interactive map

To do this, log in to your user space with your user name and password that you received by e-mail and follow the instructions in the data entry manual on the web site. Entry of data such as the location of the nesting box and observations of the brood are essential to make the "Participatory Science" dimension of XperiBIRD.be a success. In fact, all the data that you enter on the web site enables the XperiBIRD.be team to carry out

monitoring of your brood, and it is then analysed by the scientists at the Belgian Royal Institute of Natural Science. What are participatory sciences? What will the data collected be used for? You can find the answers to your questions in the FAQ.



After having carried out this registration, your nesting box will appear on the interactive nesting box monitoring map. Thanks to this map, you can find out about the nesting boxes of other participants in the XperiBIRD.be project and vice versa!

DECEMBER – JANUARY – FEBRUARY

ACTIVITIES CONCERNING BIRDS, SCIENCE AND/OR TECHNOLOGY

Take advantage of this calm period for XperiBIRD.be by setting up activities concerning birds, science and/or technology.

1. Feeding the birds

From mid-November, you can feed the birds. As a result, it will be easy for you to observe them! Make sure that you scrupulously abide by the valuable advice by Natagora. Stop feeding them when the mild weather returns, that is to say until April. At this period of the year, natural sources of food are again more plentiful in the natural environment.

- You can make your own balls of fat and seeds in class: here is an easy and fairly cheep recipe.
- Why not install or even build a bird table and place it in a (quiet) corner of the playground? Various models are available for purchase form the Belgian Royal League for the Protection of Birds, for example. It is very easy to make bird tables in class using recycled materials for instance: you can build them using plastic bottles (see this information sheet or video tutorial) or a milk carton (see this information sheet or video), but there are an infinite number of variants, so let your imagination run away with you! Though it is a little bit more technical, here is an example of a fine wooden bird table.

2. Observe and recognise bird species

If you have set up a feeding station, you can easily familiarise your pupils with observation and recognition of the different common bird species. Here is an observation form produced by the CPN (Federation of clubs for Comprehending & Protecting Nature) to be filled in with your pupils, which could be used as a basis to organise an ornithological trip or, more simply, to observe the birds that visit your bird table!

Each year, Natagora and Aves publish a poster of the most common species encountered on bird tables, to be downloaded or obtained free of charge at their offices in Liège, Namur or Brussels. It is also possible to order the poster of bird table birds from the federation of CPN.

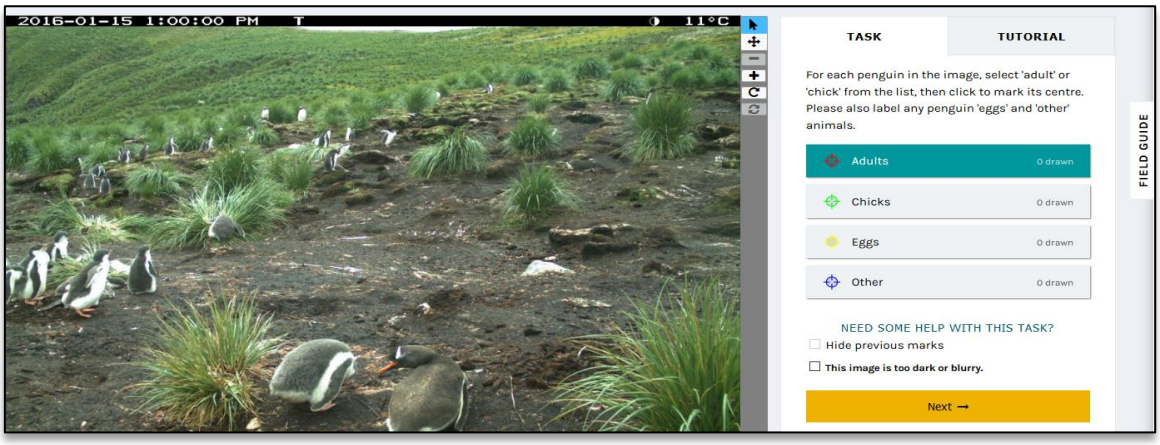
3. Participating in another participatory science project

Participatory sciences, or civic sciences, are research programmes that bring together scientists and "civic" participation by volunteer amateurs. XperiBIRD.be falls clearly into the category of participatory science because the observation data (species nesting, number of eggs laid, etc.) entered by the classes on the web site are then exploited by the scientists at the natural science museum.

Outside the nesting period, you may want to participate in other participatory science projects, so here are a few ideas!

» Take part in the grand annual count of garden birds during the "Guess who comes to eat in the garden" operation, organised by Natagora and Aves on the first weekend in February. The results, published each year, make it possible to monitor the Belgian bird populations.

» Contribute to research from your classroom! The Zooniverse web site lists a multitude of participatory science projects throughout the world. Some of them simply require good observations skills, a bit of time and a computer! Here for example, search for penguins on photos of ice fields and help researchers to assess the state of populations in these far-off zones!



» DITOS (Doing it Together Science) lists more than 500 activities related to civic sciences, in 9 European countries. The museum of natural science is one of the partners in this network funded by the European Union. XperiBIRD.be often features on their web site.

4. Develop activities based on STEM and programming

With XperiBIRD.be, technology, in the form of a nano-computer called Raspberry pi, is used to observe nature and collect scientific data. It is therefore an ideal opportunity to find out how this new technology works and discover its potential! The STEM (Science, Technology, Engineering and Maths) are disciplines which occupy a growing place in today's society, especially in employment terms. Tackling them from an early age in a fun way seems vital in order to equip tomorrow's adults, so that they are fully aware users who employ these new technologies in a relevant way.

» Set up an ICT project in your class.

All that you need to know on digital technology in Belgian schools can be found in this very comprehensive guide called "Digital Schools in Action", published by SPW. It demystifies new technology, gives several recommendations to teachers and especially suggests concrete ideas for projects that you can set up with your pupils!

The ICT passports (Information and Communication Technology) can be downloaded from Enseignement.be at several levels and can help you to assess the independence of your pupils as well as their learning in the field.

In France, there is a portal called "*Enseigner avec le numérique*" (teaching with digital resources), which is brimming with all sorts of resources. Take a look or subscribe to the newsletter to keep up to date with everything that is new!

» Introduce programming to your classes

In computing, programming means, via creating a sequence of simple instructions (also known as algorithms), telling a computer what you expect it to do.

In your XperiBIRD.be nesting box, the Raspberry pi nano-computer controls the camera. Thanks to its interface, you can change the filming parameters, decide to take a photo, choose to record a video, etc. Outwardly, this appears simple, but the code behind these commands is complex!

For example, it was necessary for the "movement detection" mode to be configured by the technicians at Naturebytes in order to trigger a film or photo when a bird passes before the lens and not on each variation in light intensity!

There are many different programming languages, from the most simple to the most complex; In this case, we suggest you work with small and free outreach programs that make it possible to cover algorithms, sequencing and programming in a fun way in the classroom. It is even possible to try out programming without a computer!

On the web site "Hour of Code" you will find a multitude of free software applications to be used for getting acquainted with programming, each of which comes with teaching manuals (in English). For example, you can introduce the concept of instruction sequences thanks to this very intuitive small game (complete with its own manual).

We have a special preference for Scratch which is very comprehensive and free. On the site, there are many video tutorials or printable maps that set out activities you can carry out in the classroom. As a result, you can create a song, a small animation, tell a story or create a video game: there are endless possibilities and they are very intuitive!

If you want to introduce programming into your classes but without using computers, then it is also possible! Here are a few very inspiring videos: the famous "Program your teacher: make a jam sandwich", beaker pyramid (manual), plant a seed, etc.

This guide, published by the University of Laval in Quebec, includes all sorts of technical and creative activities: off-line, on a computer, with des robots, etc. – it's an absolute must!

» Discover your Raspberry pi

The Code Club contains well constructed and illustrated tutorials to get started with your Raspberry pi, for example. If you feel comfortable with it, the Raspberry pi site (in English) is full of all sorts of resources! In particular, their site contains a teacher's section.

» Make mental maps

Mental maps are powerful tools to help to structure the knowledge of your pupils. This manual describes the approach to use and the advantages of this method. Mindmup is a free tool that allows you to make mental maps with ease, regardless of the subject covered!

» Play an Escape Game!

New technology also makes it possible to develop new learning methods, via games and "gamification", for example. Discover or rediscover the "Escape Game" concept with your pupils, or how to leave a room by solving riddles within a time limit!

You can find all that you need to know about educational escape games on the Escape Game or S'CAPE web site.

We have found a game for you that is easy to set up because it takes place entirely on a computer: Escape LRC. The pupils must solve the documentary research related riddles, presented in the form of "Learning Apps" in order to find a person who has disappeared. Start by watching the introduction video, and then access the LRC where the inquest takes place. To enter the game, click directly on "escape LRC". This gives the player access to the doors (symbolised by books) to various spheres: "literary worlds", "the adventures of knowledge", "artists' workshops", "the cabinet of curiosities" and "on the new information highways". In each domain, several games are proposed, with some providing clues that are used to solve the final riddle. Have fun!

» Make a "time-lapse" video

Using the XperiBIRD.be camera, you can easily film a "time-lapse" style video sequence.

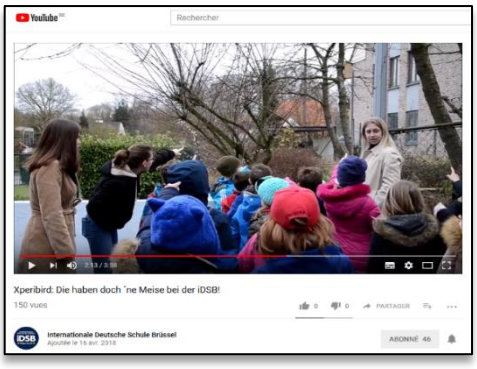
By configuring the camera so that it takes photos at regular intervals (see the camera user manual) and then by compiling these photos, you can make a short video.

Here are several examples that depict, within a period of just a few minutes, the germination of a seed or opening of a pine cone, but there are so many more possibilities!

» Make a video report

New technology (such as smartphones, etc.) makes it easy to film videos and there are many free and intuitive software applications with which you can edit your films, to combine images of the nesting boxes with a small video report.

For example, take a look at the little film made by the International German School of Brussels: the pupils and their teacher have combined communication sciences in a unique project which, in tandem with collection of observation data, aims to present the project to pupils in a neighbouring nursery school.



Several videos have been made by the XperiBIRD.be team which you can use for inspiration.

- The film presenting the kit (fait en stop motion).
- A season of nesting summed up in 1 minute!
- A look back n the 2017-2018 edition

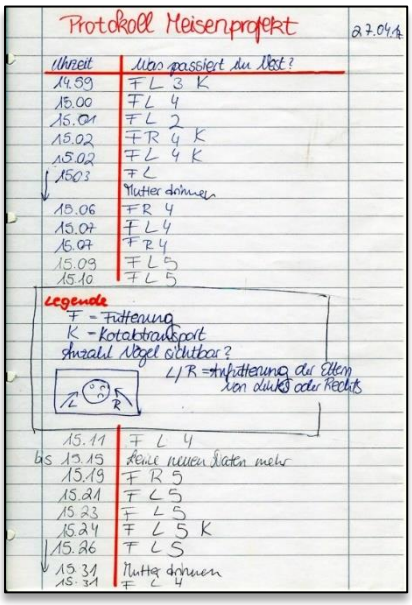
They can be seen on the XperiBIRD.be YouTube channel, so do not hesitate to subscribe.

To make your video clips, we suggest that you use the following (free) software applications, for example: Windows Movie Maker, VideoPad, etc. Animoto, in Google Chrome only, allows you to make fun videos en in just a few clicks.

Have fun! We look forward to discovering your productions!

» Implement a scientific protocol

The camera placed in the nesting box makes it possible to observe the behaviour of the tits without disturbing them. The possibilities of applying a scientific approach to living – and even wild – beings with your pupils are therefore plentiful.



Ideally, it would of course be best to let the questions come from your pupils. However, here are a few examples which you could use for inspiration:

- Behaviour of tits: the place of the adults in the nesting box according to gender.

During their observations, the pupils at the International German School of Brussels noticed that the two adults landed in different zones of the nest. By systematising their observations and basing them on an observation protocol, they were able to specify these preferences in accordance to the individual birds.

- Does the colour of the bird table influence the birds' choice?
- Is the amount of toing and froing of the adults due to the age of their young, the weather, etc.?
- Does the food brought by the adults vary in accordance with the age of their young?
- Etc. We're waiting for your feedback on the blog!

» Create a poster

After having collected information on the different species of birds observed at the feeding station, on the tits' life cycle, etc., the pupils pool their knowledge in the form of poster which can be accompanied by a small presentation. It can also be performed as part of a language lesson!

For secondary school children, ideas can be found on the internet for several scientific posters: on the stages of development in blue tits, or certain statistics about great tits, for example.

» Build wooden nesting boxes

If your school has a workshop, then put forward the suggestion of building a wooden nesting box, which the pupils can then put in their gardens. This detailed information sheet can be used to build a model similar to the XperiBIRD.be one.

» Publish an article in the local press

If you want to present the profession of journalist and the world of the press to your pupils, then XperiBIRD.be is a dream opportunity! The local media will be delighted to report the scientific adventures of your establishment!

If you want to obtain contacts, we could probably help you. Send a request to info@xperibird.be.

» Publish a blog post on the web site

If you have carried out a fun activity in class and you want to share the children's enthusiasm with all the XperiBIRD.be community, then write and publish a blog post on the XperiBIRD.be web site so that everybody can enjoy it! To do this, log in using your user name and password. Discover how to do this by consulting the web site user manual.

GET YOUR BEARINGS IN THE "USER" SECTION OF THE WEB SITE

Thanks to the user name and password that you have received by e-mail, you can long into the "User" zone on the web site. In this section you can:

- Register the specific location of your nesting box.
- Record your observation data.
- Write and publish a blog post.
- Gain access to all the resources (manuals, tutorials and teaching material).

Read the web site user manual to familiarise you with its functions.

PUT THE CAMERA IN THE NESTING BOX

In February, after testing the connection one last time and closed the unit, put the camera in the wooden nesting box.

Configure the "movement detection" mode via the camera interface. As a result, if a bird enters the nesting box, the camera will automatically take a photo (see the camera user manual).

Take advantage to play around with the camera settings and if you encounter any problems, contact us at info@xperibird.be

MARCH – APRIL – MAY

START OF THE NESTING SEASON

As early as March, the warmer weather starts to arrive, but you will still have to remain patient! If everything is ready, all you need to do is await the arrival of the birds and cross your fingers!

1. If you have visits to your nesting box

Identify the species that has entered the box and fill in the “Visiting Species" section on the data recording form (using the data recording manual).

Take a look in the “Find out more” section to learn to differentiate between the great tit and the blue tit (which are the most common species).

If you are having difficulties accurately identifying the species that has furtively visited your nesting box, send us a photo or video to info@xperibird.be.

Here are the different species that are most likely to visit and/or nest in your XperiBIRD.be nesting box:

2. Identify the first signs of nesting

From early March, regularly check the photos taken to detect the first signs of nesting.

If a couple of bird chooses your nesting box to build their nest, you will see an accumulation of various materials used to make the nest at the back of the nesting box. Clearly identify the nesting species and specify its name as well as the date on which you observed initial construction of the nest on the data recording form (using the web site data recording manual).

IF A COUPLE OF BIRDS NESTS IN YOUR NESTING BOX

The various materials are accumulating in the nesting box and you have managed to identify the nesting species: the adventure has started! Here is what you should do.

1. Leave nature to its own devices:

Do not approach the nesting box and especially do not lift the roof up.

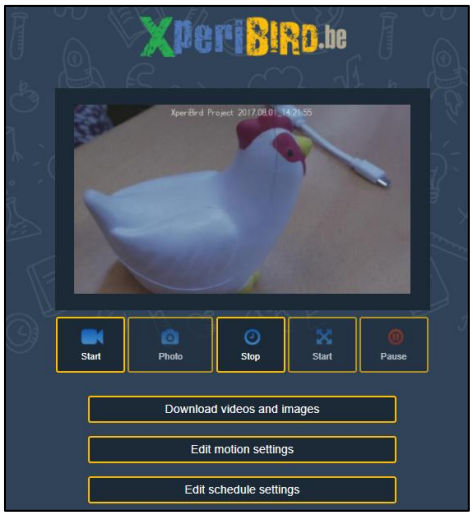
Under no circumstances should you move the nesting box, lift its lid or disturb the brood inside! Even if it seems that an egg is not hatching or that a young bird is in distress, **do not intervene**: nature knows best and it is very likely that this young bird will not reach the flying stage. Such events, as sad as they may be, are part of the cycle of life and are also an important part of your pupils' education.
If you want to contribute to the success of the brood, here is a little bit of advice:

- Ensure that no predators (of which cats are the most formidable) can reach the nesting box.
- Ensure that the brood is not disturbed (avoid going too near the nesting box, lifting the roof, etc.).
- Make the environment conducive to birds by guaranteeing a source of food for them throughout the year. You can feed them during winter (when it is very cold and often) and/or plant native species of trees and shrubs which will provide seeds and fruit as well as playing home to insects or caterpillars on which they feed. Deciduous hedges also offer shelter to young birds when they are taking flight for the firs time.

2. Configure the camera and empty the memory card regularly

If you have configured the camera in "movement detection" mode at the start of the season, change the photo/film mode because the memory card may become saturated due to the increasing toing and froing of the birds!

For example, you may choose to take photos automatically at regular time intervals by selecting the "Time-lapse" mode. Make sure that you leave enough time between two photos to avoid saturation of the memory card. Otherwise, you can simply watch what is happening in the nesting box in "Live" mode with your pupils and take photos or videos at the same time by clicking on the buttons under the image displayed by the camera.

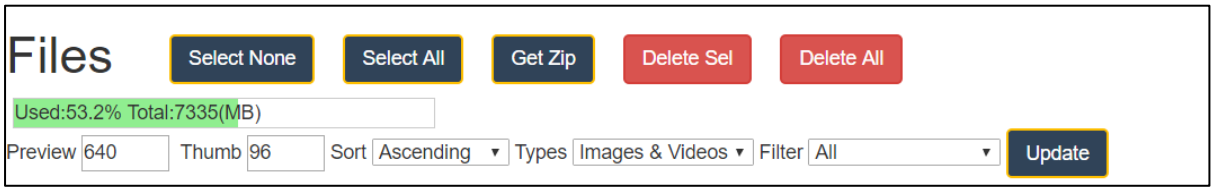


NOTE: Make sure that the memory card is **never more than 90% full**!

To do this:

- **Regularly** upload the photos and videos that you have recorded by following the "Empty the memory card" tutorial.
- Select an adapted photo/film mode and a lower quality image resolution to reduce the number of files or their size (see the camera user manual).
- Select the "Time-lapse" mode with an interval of several hours, during school holidays.

Even if no photos or videos have been recorded, it is normal that the 60% of the memory card's capacity has been used. This is the space used by the software used to control it.



If the card is close to saturation (90%), many problems or bugs may occur! It may occur that your camera indicates that the memory card is completely full even though you have removed all the images.

You need to view the following tutorial. After having downloaded two small free software applications, follow the steps to manually empty the memory card of the "Log" files, which are invisible history files that clutter the memory card. We advise that you request assistance from someone with IT skills in order to do this. Do not hesitate to contact us if you encounter any difficulties (info@xperibird.be).

3. Report your observation data

With your pupils, complete the data collection form (number of eggs laid, brooding start date, number and dates of eggs hatched, number of young birds that have taken flight) using the web site data recording manual.

This information is essential for the scientists at the institute who will be able to study the reproduction rate of the species concerned and monitor their nesting habits over several years. Distribution of nesting boxes throughout Belgium in different environments will also make it possible to compare the data gathered in accordance with the climate and state of the environment surrounding the nesting boxes.

4. Banding young birds

Banding young birds is a means of monitoring and observing wild bird populations: on the bird's foot, a band with a unique number that is used to identify the animal is attached to its foot.

XeriBIRD.be is a partner of the Belgian banding centre (BeBirds). The BeBirds network banding volunteers are put into contact with the schools who wish their young birds to be banded, creating a genuine win-win situation for both the banders for whom it will be easy to identify nest locations, arriving at the ideal date for banding the young birds, as well as the pupils who will have the opportunity to meet an experienced ornithologist who will be able to answer their questions. It is an experience that your pupils are not likely to forget for a long time!

If you want your young birds to be banded, send us an e-mail **as soon as** **hatching has started**, specifying the hatching start date, the number of eggs and the nesting species, as well as the mobile phone number of a contact person.
We will then transmit your details to a bander in your region and he or she will contact you if he or she is able to come and band the brood. Please note that this is often a busy period for them, so we would like to thank you for your understanding if it is not possible for them to come.

5. A second brood

In some cases, a second brood may occur. This is when the couple of tits, shortly after the first brood have taken flight, again lay eggs in the nesting box, which means the process starts all over again!

You should therefore not approach the nesting box and definitely not empty it after the departure of the young birds.

It is also very important to record such data, which is simple to do. After having brought to a close your data records for the first brood, all you need to do is open the “Introduce and consult nesting data” section and a new blank form will be available.

IF THE NESTING BOX HAS REMAINED EMPTY

Shucks, nothing is happening… Despite your patients, crossing your fingers and all the good will in the world, there are no signs of life in your nesting box… What should you do?

Keep the camera configured in “movement detection” mode and regularly monitor the images that it takes. Your nesting box my be occupied late on (or even for a second episode of nesting) until April or May.

Unfortunately, in a certain number of schools, even though it has been installed, **the nesting box may not be occupied**. This may be due to late installation of the nesting box, a location not conducive to nesting or frequent disruptions. The adventure will prove to be much less fun for your pupils, but for the scientists, the absence of a couple in your nesting box is also an important piece of data! At the start of the summer, if you have not observed any signs of nesting, validate your empty form (by checking the box “the nest has remained empty”). Consequently, the lack of nesting will be recorded by the scientists (and thus differentiated from a nesting box that has not been installed.

During the nesting season, the blog is very active: you can follow (from a distance) the XperiBIRD.be adventure of anther school from the region (or not!).

JUNE – JULY – AUGUST

The end of the school year also rhymes with the end of the XperiBIRD.be project. A great majority of the young birds will have taken flight during the month of June, but certain episodes of secondary nesting may occupy your nesting box until July.

CLOSE YOUR OBSERVATION DATA DEFINITIVELY

At this period, it is essential to close down your observation data definitively (to send it to the scientists).

When you do this, we have the certainty that you have entered the entirety of your data and that we can send them to scientists for analysis. Even if your nesting box has not played host to any nesting, close down your observations definitively using an empty form.

COMPLETE THE PROJECT EVALUATION QUESTIONNAIRE

At the end of the project, we will send you an XperiBIRD.be questionnaire evaluation. We would be very grateful if you could complete it so that we can collect your opinions, questions and suggestions concerning the project, in order to improve it for future editions.

A “pupils’” version will also be available, because we want to assess the impact of such projects on the appeal of STEM (Science, Technology, Engineering and Mathematics) for young people as well as their level of involvement in the “participatory science” dimension of d’XperiBIRD.be.

The results drawn from these studies, as well as the scientific output of the project will be sent to all the participants by e-mail, but will also be the subject of press releases and publications on the social networks.

Thank you for your involvement in this project!

We look forward to enjoying this exciting experience with you!

The XperiBIRD.be team.