THE QUARRY LIFE AWARD

ROSELIERE
Suivi de la biodiversité

HEIDELBERGCEMENT

1. Contestant profile

▪ Contestant name:	Parisot Marion
▪ Contestant occupation:	Project leader
▪ University / Organisation	Association ROSELIERE
▪ Number of people in your team:	2

2. Project overview

Title:	Raise awareness and involve stakeholders through a standardized biodiversity monitoring
Contest: (Research/Community)	Community
Quarry name:	Bazoches

Abstract:

Raising the awareness of external and internal stakeholders of the Bazoches quarry about biodiversity was the guideline of our project. To do this, the first step was to develop, on a neglected area of the quarry, an educational space gathering the main types of environments that can be encountered on the quarries of the Bassée (south-east of Paris). In support of this space, events and workshops were organised in order to present to the various stakeholders the issues of biodiversity conservation and more specifically those related to species and groups of species present on the site, through the application of monitoring protocols.

Participatory science concepts were also addressed to encourage participants to help improve knowledge by making observations using identification tools.

A secondary phase of the project consisted in developing interactive tools to facilitate the application of the protocols by the structures participating in the ROSELIERE programme.

The audiences who benefited from the project were varied: schoolchildren, employees, the general public, elected officials and naturalists.

Introduction:

The goal of our project is to create an educational space to welcome schoolchildren and the general public in order to present the biodiversity of the site, its challenges and the standardised methods used to inventory species, particularly those of the ROSELIERE programme. This space thus supported the organisation of several activities and workshops. It means that the main natural environments of the quarry can be grouped on a small space: meadows, shrubs, pioneer area, a lake, a pond, supplemented by some apple trees of local and old varieties.

The ROSELIERE programme, a standardised monitoring programme for fauna and flora applied on some fifty sites in France (programme-roseliere.fr), has been in place on the Bazoches site since 2011. It monitors 11 groups on the site (plants, birds, bats, reptiles, amphibians, butterflies, dragonflies, grasshoppers, aquatic invertebrates, spiders and ground beetles) in a standardised way and studies the evolution of the species in connection with the advancing exploitation, management and the maturation of environments. The application of the programme at Bazoches made it possible to identify a total of **359 species** and to highlight the strong positive impact of the rehabilitation in terms of hosting biodiversity. These results were able to be appreciated within the framework of the project and made it possible to present to the stakeholders the emblematic species identified, as well as their evolution on the site and to approach the question of monitoring and the participatory sciences.

The targets aimed at by the project consisted of the main external stakeholders (schoolchildren, general public, elected representatives, associations) and the employees of the company. The naturalist structures participating in the ROSELIERE programme are also targeted by interactive tools.

The project team is made up of the employee of the project leader, the ROSELIERE association. An employee of the association Seine-et-Marne Environnement also participated in school events as part of a partnership of this structure with the regional union UNICEM [National Union of Quarry Industries and Building Materials] Île-de-France in order to raise awareness on the exploitation of quarries. Finally, the GSM employees of the site as well as the area's land and environment manager also greatly contributed to the project by participating in the development of the educational space and in activities and workshops.

Actions and activities:

1. Development of the educational space

The desire to create a space dedicated to welcoming schools, employees and the public emerged as soon as the project was built. Its objective was to group within a restricted scope the various major types of environments characteristic of local quarries and to highlight the various stages of environmental succession. In this way it makes it possible to support activities and workshops by being included as part of the exploitation still in progress (track and conveyor belts nearby) both without being impacted (secured and easily accessible space) and without creating disruption in the rehabilitated and potentially sensitive areas of the site.

A neglected area of the quarry corresponding to the location of the former social areas was chosen due to its easy bike or pedestrian access from the village of Bazoches and the opportunity it offered to re-create the different succession stages of the environments. A pioneer section was in fact preserved as it was, while the top soil was treated over a section of the surface and then sown with a prairie mixture. The existing shrubby areas were preserved and supplemented by the planting of a hedge (35 linear meters) to delineate the perimeter. A pond was dug and an observation promontory was constructed to provide a view of the lake and its central island. Access to the lake is also possible by skirting the promontory. The adjoining rehabilitated areas provide access to a more "mature" grassland area as well as to closed and forested areas. Three apple trees of old and local varieties were planted on the space.
These different environments thus provide privileged support for the realisation of activities while also making it possible to compare the evolution of the different environments and to study their colonisation by the fauna and flora over time and following the exploitation.
The surface area of the space (3300 m²) makes it into a human-sized area for channelling people, especially children, and for facilitating its follow-up over time.

The development made it possible to involve the employees of the company, who cleared the remains of installations and other wastes, dug the pond, laid out the promontory, treated the topsoil, planted the seed, and prepared the soil for planting. The pupils of the Bazoches primary school (levels CE2 [8 to 9 years old] to CM2 [10 to 11 years old]) planted the three apple trees and the hedge during a site visit organised in March 2018.

2. School project with local schools

The activity programme was developed with the teachers of the three classes of Balloy and Bazoches primary schools in the course of prior meetings and telephone exchanges. Various themes were proposed to the teachers, who chose one or two to preferentially approach during the activities. The Bazoches classes wanted to deal with aquatic fauna and flora and insects and soil fauna, while the Balloy class targeted bats. The Bazoches school also wanted to get involved in the layout of the educational space.

Five events were organised during the project and helped raise the awareness of **66 pupils**:
- site visit for developing the educational space with the planting of trees and shrubs,
- in class workshop with presentation of the monitoring methods used and the iconic species observed in quarries,
- presentation of the biology and way of life of bats,
- activity on aquatic fauna and flora with fishing in the water and identification of the gathering,
- presentation of the various techniques and equipment for monitoring species (reptile plates, butterfly nets, traps for the soil fauna or pollinators, binoculars, botanist's magnifying glass etc.) and put into practice with botanical plots and comparison of the results between the various succession stages.

The pupils were able to discover both the biology and the living environments of the large fauna and flora groups present locally, but also study the colonisation of the site by the species. The botanical plots are well suited to this purpose: the pupils were able to identify the main kinds of plants present on three plots (one on the most

pioneer space, one on the recently spread topsoil area, and the last one on the grassland area rehabilitated for several years) and compare diversity across the three stages. Fishing within the lake also evoked the colonisation by aquatic species of the water bodies created by the exploitation.

In parallel with the activities, the school of Balloy decided to build **15 shelters for bats**. Made entirely by the children and wood-burnt with the name of the school, some of these wooden shelters were given to GSM and installed in the quarry by the employees and the others were placed in the village with the roadmender.
The children's work was also presented to the parents during the end-of-year school party.

3. Involvement of employees

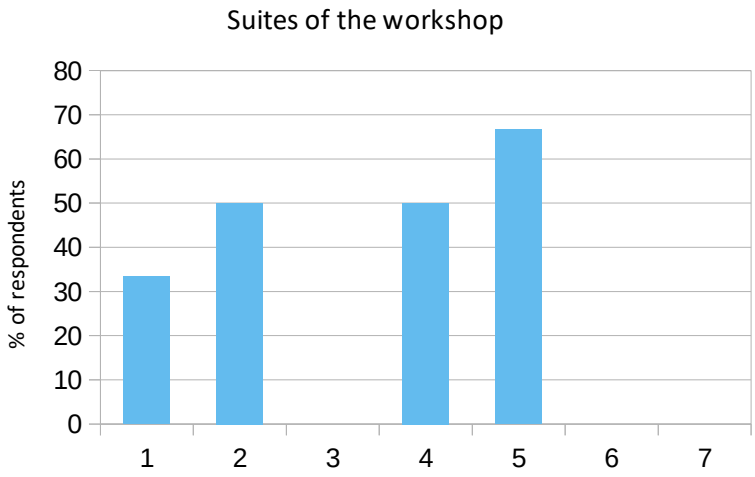
As previously mentioned, the site's employees were involved as soon as the educational space was set up. They actively participated in setting up the various environments and securing the space so that this same would be as welcoming as possible.

In addition, **two biodiversity workshops** were organised for the quarry and the screening team. These workshops presented to the employees (9 out of a team of 11, one of the absentees being on annual leave, the other being on sick leave) local biodiversity issues and, on a larger scale, the monitoring methods used and the results obtained as part of the ROSELIERE programme applied to Bazoches since 2011. These elements made it possible to link the information already available to the employees (Ecocard of the site listing the species and habitats at stake and the biodiversity actions to be realised on the quarry, regular meeting of the naturalists) with more precise results and the presentation of some emblematic species. **A booklet to aid recognition of easily identifiable species** (butterflies, amphibians, common birds...) and an observation booklet were also made available to encourage them to trace their almost daily observations at their work location or at their home.

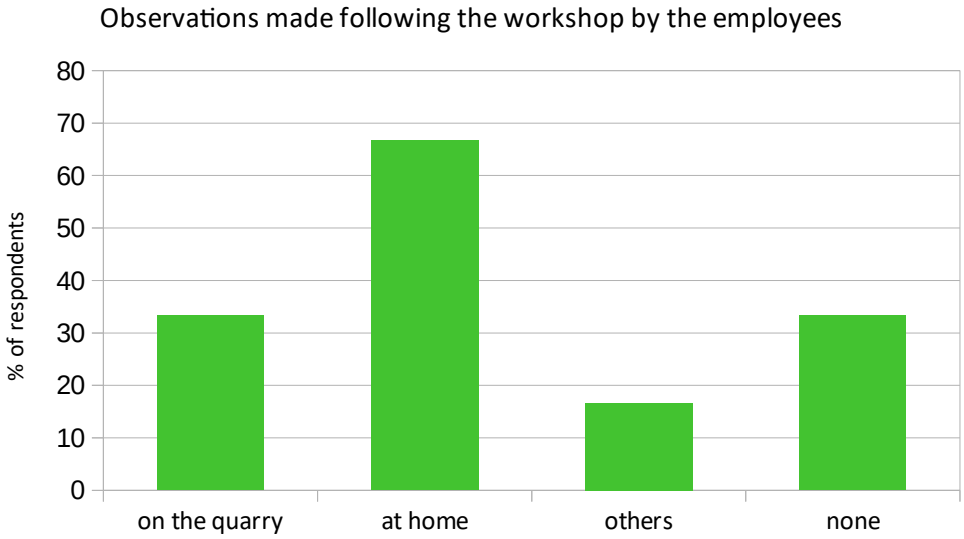
A few weeks after the workshops, the employees were asked to answer a questionnaire in order to evaluate their interest for the biodiversity subjects and assess their feelings on the workshop. **The feedback was very positive**; the employees were mostly satisfied and found the documents distributed clear and useful. Some felt that the workshop was too short (one considered it too long) and the majority expressed their wish to complete it with a field trip which was subsequently organised in September. They were all willing to participate in monitoring on their working time and most of them wished to be more informed about the monitoring carried out on the site and the species observed.

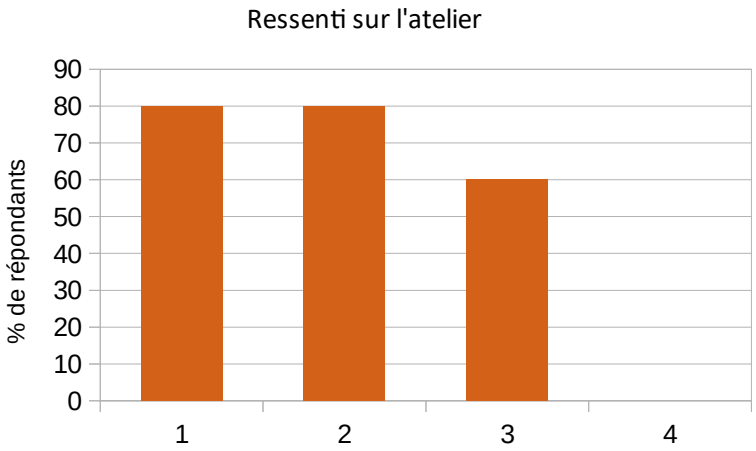
Regarding the consequences and follow-up of the workshop, the three graphs on the following page present the results of the questionnaire.
Similarly, some of the employees were interviewed with the same objectives in order to gather their opinions and feelings about the actions carried out (videos available on the project's web page).

In accordance with the expectations of the participants, **a field trip was organized in September** with the employees. This allowed the participants, 8 in number, to discover the rehabilitated areas of the site that some did not know or on which they had not returned for a long time. Despite the season well advanced, they were able to discover some species or groups of emblematic species of the site: great burnet (*Sanguisorba officinalis*) and wet meadows species, blue-winged grasshopper (*Oedipoda caerulescens*) and bitter candytuft (*Iberis amara*) on the pioneer zones, dragonflies and helophytic vegetation in aquatic banks, western marsh harrier (*Circus aeruginosus*)... A new opportunity for the employees to discover the wealth of the site and to note results obtained following the rehabilitation.



1: new look at biodiversity
2: discussion with family or friends
3: documentation on the species
4: discovery that local species were threatened
5: use of the distributed booklet
6: research on participatory science programmes
7: enrolment in a participatory science programme





1: astonishment at the species present on the site
2: interest in the results obtained on the site
3: interest in the methods of monitoring the species
4: wish to participate in participatory science programs

4. Activity with general public and elected representatives

An open day animation intended for the general public and a presentation and inauguration by the local elected representatives had been planned as part of the project. However, these could not be realized within the official limits of the competition due to the busy schedules of the various stakeholders (holidays, events calendar dense in spring...). We thus preferred to postpone this event to optimize the number of people welcomed and ensure the presence of the two local mayors, rather than do it at all costs before the end of the competition with little of people present.

5. Development of interactive tools

A secondary focus of the project was to develop interactive tools for naturalistic structures applying the ROSELIERE programme, but which could also be used by the employees or anyone wishing to participate in the follow-ups. The objective of these tools, consisting of videos, tutorials and synthetic sheets presenting the protocols is to improve the pedagogical character of the existing tools (application guide, website etc.) making these more didactic and more enjoyable to use.

When submitting the project, this axis was proposed secondarily. In fact, **priority had been given to the creation of the educational space and to the related animations**. In addition, the realisation of the tools planned can be time-consuming and they will be developed depending on the possibilities over a time period that will certainly be longer than the timing of the project. Nevertheless, during the official period of the competition, several tools have already been developed in whole or in part: some of the programme's protocols have been given a summary presentation form, videos have been produced during field trips and must now be set up and assembled with tutorials presenting the entry of data on the naturalistic database Cettia-ROSELIERE, used as part of the programme. The programme includes a dozen protocols; these tools will therefore be performed for each of them in the near future. The project has thus launched a dynamic that will continue beyond the competition.

6. Stakeholders involved

Schools	Awareness raised of 66 pupils, three teachers, accompanying parents
Employees	14 GSM employees involved (educational space, biodiversity workshop, jury visit)
Associations	Two local associations involved (association ROSELIERE and Seine-et-Marne environment)
Others	UNICEM IDF [Île-de-France] (provision of time as part of a partnership with Seine-et-Marne environnement), one nursery gardener (supply of apple trees)

Discussion and perspectives

The choice of the location of the educational space led to a number of debates, both following the questions of the national jury when selecting projects, and initially between the members of the team. In fact, the possibility of using an existing rehabilitated sector had been studied but discarded in favour of the area of the former social areas in order to take advantage of this "industrial" context integrated into the exploitation still in activity (conveyor belts, track, stocks etc.) and the pioneer areas still present in this place in contrast to the rehabilitated spaces. Thus, this choice made it possible to centralise, over **an easily accessible small surface area**, the various stages of evolution of the environments in order to be able to present them to the participants of the activities and workshops without disturbing the rehabilitated sectors and without creating disturbance vis-à-vis potentially sensitive areas installed on these quiet areas. The configuration of the developed space also means several classes can be welcomed, where all the children can be kept in sight while being given the freedom to move over the entire surface area.

Some difficulties were encountered during the development of the space; the pond was not waterproof, which meant that the water could not be preserved lastingly during the dry periods; however, this point will be improved with a more extensive treatment of the clay deposit. The observatory originally planned has not been installed at the moment due to the difficulty of achieving the proper technical implementation within the time constraints of the competition; the team preferred to give itself the time to make the right choices rather than installing an observatory that would not be fully functional. Nevertheless, **the promontory already provides a good viewing point**. Finally, the delay between the development and the expected results partially limited the activities: the seeding did not take hold as much as desired (adverse weather conditions: heavy rain then long drought), resulting in scattered vegetation and soil still quite compacted and little colonised by the fauna. Nevertheless, pioneer vegetation is developing and a species that is uncommon and previously unknown on the site, bitter candytuft, *Iberis amara*, has been identified on the educational space.

The school events seem to have been much appreciated, as much by the students as by the teachers and the accompanying parents. **The teachers wanted to continue the activities for the years to come**, which will be all the more interesting as the school regrouping will allow the children to monitor the evolution of the environments, the pupils of Balloy (CE1-CE2) [7 to 9 years old] pursuing their education at the school of Bazoches until CM2 [10 to 11 years old]. In addition, the teachers of the secondary school of Bray-sur-Seine have also showed their interest for the project and also wish to benefit from such activities. In addition, it was found that, despite its geographical proximity to the two villages, the quarry remained an area that was unknown and little visited by most residents. The fact that the site hosts so much biodiversity was also a source of astonishment.

The time span over which the competition is running (December-September) has made the event planning even more complex: it has been difficult to fit into a busy programme of activities already organised by the teachers at the moment of the validation of participation in the competition (November). In addition, an outing with the Balloy school had to be cancelled due to the heat wave and could not be rescheduled for lack of time, while some of the topics desired by the Bazoches school (fauna of the soil) could not be approached in detail also due to the

warmth and recent character of the environments developed under the project (compact soil and not yet colonised by the fauna).

The biodiversity workshops organised for employees have been the source of **many valuable mutual exchanges** for both parties. In fact, they have revealed a strong interest in biodiversity issues from the members of the quarry and screening team, which had not necessarily been discussed so far. They have also helped to encourage employees to formalise the feedback they regularly make on the site or on their personal time, by filling in the observations book made available to them, or even attending participatory observatories. On the site, their observations complement those carried out by naturalists, on areas that are usually little explored (plant and weighing areas, social areas etc.) The workshops also helped to strengthen the link between the different stakeholders of the site (site team, naturalists, land manager environment) and to exchange on topics that are not often discussed.

Overall the planning of the various workshops, events and demonstrations would have benefited from more advance planning given the busy schedules of the various stakeholders: activities already planned for classes, salaried team in limited number and thus overloaded, many local events in May-June and September limiting the possibilities of participation of the elected representatives and the general public. The restricted timing of the competition complicated this even further. However, almost all the planned events have been realized in the time allotted by the contest, those that have not been done are planned later, which is a strong sign of the dynamic launched that will continue in time.

The various stakeholders who have benefited from the project have shown a strong interest in the topics and for the continuation of the partnership and actions in the future. Thus, **the educational space will be perpetuated over time and can be reused during future school or general public events**. The educational materials created as part of the project can be reused in this context, or even when the project is transposed to other sites. The Balloy and Bazoches schools' programme for the year 2018-2019 already foresees the continuation of the project with the construction of birdhouses, the making of panels for the educational space and especially the monitoring over time of the evolution of the environments created.
Reflections on the possibility of involving employees in the implementation of protocols (simplification of existing protocols, installation or replacement of equipment etc.) have also been initiated, although it remains difficult to free up time in parallel with their missions (actions that are not time-consuming will therefore take preference). Naturalistic observations have already been made and, in order to maintain motivation, short workshops on the "environment quarter-hour" format could be introduced at regular intervals.

The project has brought significant gains for biodiversity by first optimising an area currently neglected and developing it for the species of fauna and flora (creation of the pond, planting trees and shrubs of local species, perpetuation of the pioneer area over time, installation of bat shelters). The various events have also increased participants' awareness of the biodiversity around them, raised interest in its preservation and improved knowledge through the transmission of observations and involvement in the participatory sciences.

For the company, the project has made it possible to increase employees' ownership of local biodiversity by allowing them to discover their workplace from another angle, notably by diversifying their skills thanks to the booklet made available to them as an aid to identifying some common species. The presentation of the results obtained on the site under the ROSELIERE programme also means that they can see that the efforts made with respect to biodiversity on the exploitation conditions and the rehabilitation methods are bearing fruit.
In addition, the project and the educational space that it has developed lead to a re-appropriation of the site and its rehabilitated spaces by students and residents for whom the quarry has remained an unknown space. The actions carried out by the company on the site to optimise the reception of biodiversity are also highlighted by this means. Finally, since the ROSELIERE association is run by companies participating in the ROSELIERE programme, our participation has made it possible to promote the contest and the biodiversity approach of the group Heidelberg Cement to colleagues or other companies.

For the association, participation in the competition and the implementation of this project has not only been an opportunity to develop new skills through the development of various educational tools and activities, but also an opportunity to deal with a theme that it had been wanting to treat for a long time: the deployment of actions intended for the employees of the partner companies, particularly in the format of the participative sciences. The realisation of school events and with the general public and elected representatives also makes it possible to make the association and its programme known and to highlight the results obtained.

Conclusion

The participation in the Quarry Life Award competition has been an opportunity for the association to launch a new dynamic on topics that it had not been able to discuss in detail until then. The workshops and events organised have been rich in exchanges and sharing of skills with the participants and have increased the insertion of the quarry, but also of the association, into its territory.

Basing itself on what already exists (ROSELIERE programme, rehabilitated environments, personal sensitivities for local biodiversity), the project has improved knowledge of the fauna and flora and the local territory, while generating interest for the preservation of species and environments. It also makes it possible to assess a space on the quarry in such a way that the local population re-appropriates it and that it can be used in the long term to maintain links between the quarry and residents.

Project tags (select all appropriate):

This will be use to classify your project in the project archive (that is also available online)

Project focus:

- ☐Beyond quarry borders
- ☐Biodiversity management
- ☐Cooperation programmes
- xConnecting with local communities
- xEducation and Raising awareness
- ☐Invasive species
- ☐Landscape management
- ☐Pollination
- ☐Rehabilitation & habitat research
- ☐Scientific research
- ☐Soil management
- ☐Species research
- ☐Student class project
- ☐Urban ecology
- ☐Water management

Flora:

- xTrees & shrubs
- ☐Ferns
- xFlowering plants
- ☐Fungi
- ☐Mosses and liverworts

Fauna:

- xAmphibians
- xBirds
- xInsects
- ☐Fish
- xMammals
- xReptiles
- xOther invertebrates
- ☐Other insects
- ☐Other species

Habitat:

- ☐Artificial / cultivated land
- ☐Cave
- ☐Coastal
- xGrassland
- ☐Human settlement
- xOpen areas of rocky grounds
- ☐Recreational areas
- xSandy and rocky habitat
- xScrees
- xShrub & groves
- ☐Soil
- ☐Wander biotopes
- xWater bodies (flowing, standing)
- xWetland
- xWoodland

Stakeholders:

- xAuthorities
- xLocal community
- xNGOs
- xSchools
- ☐Universities

ANNEXES

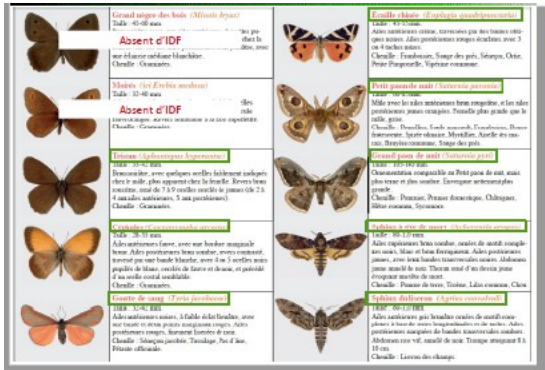
Sketch of the educational space / Schéma du parcours pédagogique

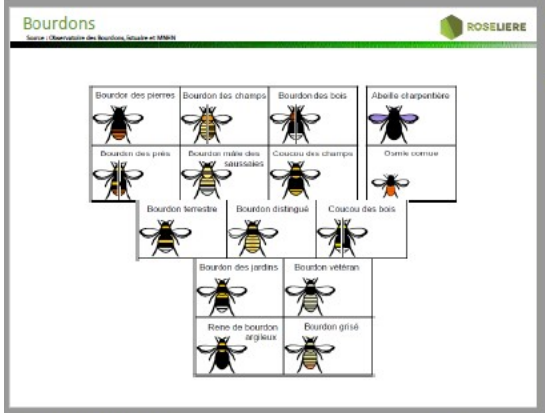
Development of the educational space / Aménagement du parcours pédagogique

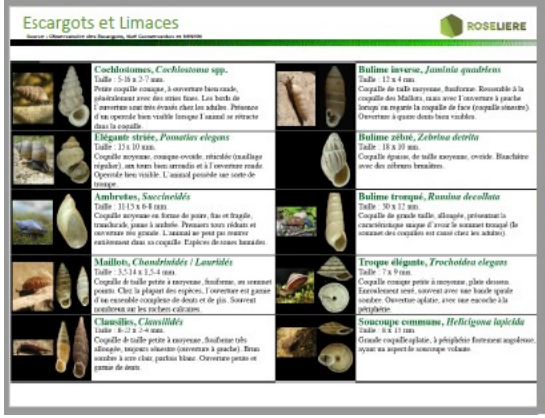
School projects / Projets scolaires

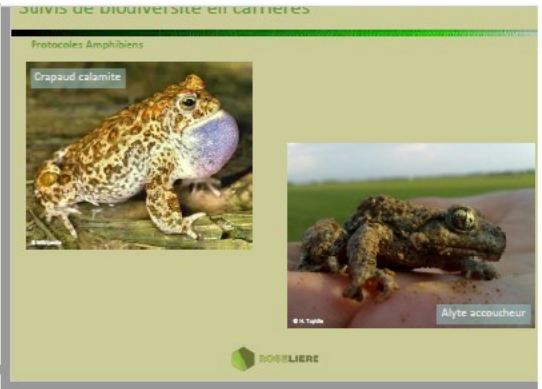
Workshops with employees / Ateliers avec les salariés

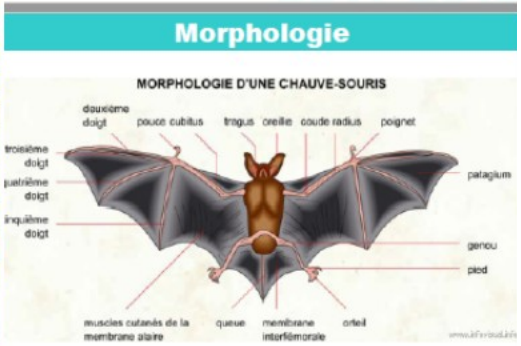
Teaching aids / Supports pédagogiques











Synthetic sheets about protocols / Fiches synthétiques sur les protocoles

OISEAUX NICHEURS DIURNES

MATÉRIEL NÉCESSAIRE
Jumelles, longue vue

COMMENT ?
1. Recensement pendant **20 min.** de tous les oiseaux vus et/ou entendus (noter séparément les 5 premières min.)
2. Recensement **exhaustif**

OÙ ?
1. Points **Ecoute**
2. Ensemble du **site**

QUAND ?
1. 1er passage entre le **25 mars et le 30 avril** et 2ème passage entre le **8 mai et le 20 juin**
2. Un passage entre le **25 mars et le 20 juin**

POUR PLUS DE DÉTAILS :

HTTP://PROGRAMME-ROSELIERE.FR/NODE/23

ROSELIERE

CHIROPTÈRES

MATÉRIEL NÉCESSAIRE
Enregistreur numérique et détecteur d'ultrasons (Tranquility Transect ou D240x par exemple)

COMMENT ?
Enregistrement nocturne des ultrasons pendant **6 min.**

OÙ ?
Points **Ecoute**

QUAND ?
1er passage en **juin-juillet** et 2ème passage entre **mi-août et fin septembre**

POUR PLUS DE DÉTAILS :

HTTP://PROGRAMME-ROSELIERE.FR/NODE/23

ROSELIERE

Sheet presenting the indicators obtained on the Bazoches site since 2011 / Fiche présentant les indicateurs obtenus sur le site de Bazoches depuis 2011