

Project Title: Bio Eye

Entrant Name: St. Anne's National School, Seafield, Bunmahon, Co. Waterford

Entry Category: Biodiversity, Junior (under 12)

Contacts:

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This report has been jointly compiled by Denise O'Meara and Andrew Harrington (MISE Project Officers with Waterford Institute of Technology and Waterford County Council), with input from Anne Coffey and Paddy Doyle (Seafield NS).

For additional information of the MISE Project, please visit www.miseproject.ie and find up to date news on Facebook <http://www.facebook.com/pages/Mammals-in-a-Sustainable-Environment-MISE/111209228962403>.

Background

Mammals in a Sustainable Environment (MISE) is a project funded by the European Regional Development Fund under the Ireland-Wales Programme 2007-2013 (INTERREG IVA), and sets out to foster community involvement in Wales and Ireland in mammal conservation. One of the aims of the project is to organize public events such as field surveys, workshops and education, where training in field skills including mammal surveying will be provided. This is supported by the Molecular Ecology Research Group at WIT by providing an identification service using forensic DNA technology to identify mammal scat and hair samples. One of the education strands of the project includes visits to primary schools. To date 18 primary schools in County Waterford have participated in work with the project. St. Anne's National School at Seafield (Bunmahon, Co. Waterford), have been greatly involved and have participated in a number of events and showed great enthusiasm towards their local environment, hence their participation in the Eco-UNESCO Young Environmentalist Award 2012 (Fig. 1).

Fig. 1: 6th class pupils from St. Anne's NS, Seafield, Bunmahon, Co. Waterford. MISE Project officer, Andrew Harrington is on the right and 6th class teacher Paddy Doyle is on the left of the photo.



1. Research and development of project idea

Description

As part of the Green Flags Biodiversity Initiative it was decided to pursue research in the area of local mammals within the proximity of the school. Many mammals are elusive in nature and with the aid of the Mammals in Sustainable Environment (MISE) project; the school was given the opportunity to conduct non-invasive mammal surveys of local otter and small mammal populations.

The issue in the school was that many of the children were unaware of the mammals living locally in their environment and this project created awareness of Irish mammals.

Lack of knowledge or awareness of local biodiversity can lead to future conservation issues for the species such as the destruction of important habitat, pollution or ill planning of local developments. The aim of this project was to make the children aware of the wonders within their environment and to create a sense of ownership that the local environment is theirs, and this in turn would lead to a sense of community and responsibility of their local environment. The project also aimed to create a sense of ownership that would lead to long-term sustainability of local mammal populations.

Evidence of information source

To help get the children thinking about mammals in their local environment, we gave a PowerPoint presentation that introduced them to Irish mammals. The talk began by asking the pupils what mammals they were familiar with in their local area. We were answered with replies of hedgehogs, badgers, foxes, mice, deer, rabbits and hares to name but a few. This was followed by a short presentation of non-invasive mammal survey methods currently used in WIT as part of the MISE project (Fig. 2). The students were very keen on the hair-tube methods and shrieked at the thought of us picking up mammal poo for DNA analysis. A number of short video clips which had been taken by a remote camera during field work were also displayed as evidence of remote survey work. This was followed by a question/story telling session where the students were very keen to tell us about their experiences with different mammals and what they had seen in their local area.

Fig.2: Andrew from the MISE Project talking to the class at Seafield NS.



2. Planning

A number of projects were subsequently planned at the school to survey for local mammals

- Small mammals
- Otters
- Bats
- Birds
- Habitat map

Aims and objectives

To introduce the pupils to various methods of non-invasive surveying of mammals and to use DNA testing facilities available at WIT to obtain genetic evidence of different small mammals. This would introduce the children to ecological surveying and introduce the topics of DNA evidence while using practical examples that the pupils could relate to. The MISE team provided the school with bat box and bird table designs that could be built by the school to improve the school habitat for wildlife. Finally, the school organised a walk to the nearby river to look for signs of otters and asked 6th class pupils to draw habitat maps of the school grounds and neighbouring grounds to gain an insight into the surrounding and differing habitats in the area.

Task list:

- Pupil wildlife awareness talk- 14/09/2011
- 6th class small mammal project- 15/09/2011
- Bat box and bird table construction- 20/10/2011
- School otter walk and habitat map drawing- 22/11/2011

3. Action**Small mammal surveys**

We spoke to the pupils about the survey we planned to conduct on the school grounds. This involved the use of small mammal bait pots or a jam pot baited with peanut butter (Fig. 3). The pupils shared the responsibility of baiting the pots and choosing the locations to place them. The pupils were asked to think of themselves as a small mammal and asked to look around the school grounds and point to what they considered to be suitable areas with adequate cover to hide a small mammal. Jam pots were distributed on the school grounds in areas of cover such as hedgerows, bushes and walls. The pots were baited with peanut butter and left overnight. The pots were placed at least 30m apart, left overnight and were then collected the following day and examined for faeces (Fig. 3). The pots were shown to the pupils and it was explained that the faeces would be analysed in WIT using DNA methods to determine the small mammal species (Fig. 4). Some of the pots had been moved by foxes.

Fig. 3: An example of a bait pot which had been collected after having been left out in the grounds of a school overnight. Small mammal faeces are visible at the bottom of the pot.



Fig.4: Pupils placing their small mammal bait pots in the field



Otter survey

This event included a short talk about the biology of otters and where they had previously been recorded on the River Mahon, a river that flows adjacent to the school property. Pictures of otters and mink were shown to the pupils and pictures of different spraints (otter poo) and mink scats were shown for comparison. We also described the places where otters were likely to spraint, including bridges, rocks and visual features that they use to mark their territories. The pupils then put on their wellington boots and coats and walked to the field across the road from the school where we looked for signs of otters and mink along the river bank and near a drain in the field (Fig. 5). The school obtained permission from the landowner to take the pupils into the field.

Fig. 5: Pupils surveying for otters in the field across from the school.



Bat boxes

The MISE project helped the school to find designs for bat boxes to encourage bats to roost on the school property. We used a design from the Bat Conservation Trust in the UK (Fig. 6): http://www.bats.org.uk/publications_download.php/235/Howtomakeabatbox.pdf. We also supplied designs for bird tables. Local carpenters subsequently volunteered to build boxes and tables for the school with the 6th class pupils (Fig.7). They also erected the finished bat boxes with the pupils in the school yard (Fig. 8). We explained to the pupils that it may take a number of years for the bats to find and use the boxes, but we will help them to monitor them. A photo of the finished bird table can be seen in Fig. 9.

Fig. 6: The design used to make the bat boxes for Seafield NS (Bat box design by the Bat Conservation Trust, UK).

Bat Conservation Trust

How to make a bat box

Providing bat habitats in your back garden



Bat boxes are artificial roosts, usually made of wood or woodcrete (a mixture of wood chips and concrete). They are designed to provide bats with alternative resting places to replace natural ones in tree holes, and also to encourage bats into areas where there are few such natural sites. Bat boxes have a useful place in bat conservation, but it should be remembered that bats take to boxes less readily than birds.

What makes a good bat box?

Recent research has shown that good insulation and avoidance of draughts are more important for attracting bats to boxes than is the material from which they are made. Bats do not like draughts, and prefer well-insulated boxes where temperature and humidity remain constant. Well-sealed joints are therefore important, as is the avoidance of large, loose-fitting front panels. The warmest area in a box, and the area that bats use most, is at the top – therefore a well-insulated top is important. Removable lids should be avoided, again to reduce draughts, but also to prevent disturbance or unintentional injury to bats when the box is opened. A special licence is required to disturb or handle bats in the UK, and any disturbance without a licence is illegal. For more information on bats and the law call the Bat Helpline (0845 1300 228).

All timber used in bat boxes should be rough-sawn to allow bats to cling and climb, and must also be untreated, since bats are very sensitive to the chemicals used for timber treatment. A 'bat ladder' or other landing area is essential, as is an entry slit wide enough to admit bats but narrow enough to keep out predators.

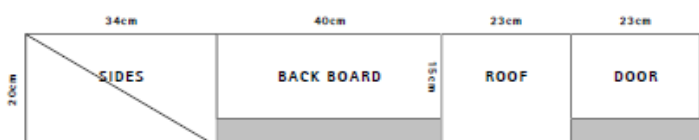
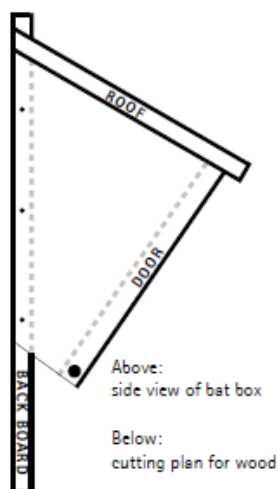
Making a bat box

Bat boxes take many shapes and sizes; here we give the details for a simple wooden wedge-shaped design that has been known to work well.

The cutting plan above is self-explanatory, except that the acute angled ends of the triangular sides are cut off to give the entrance slot of the required width, after allowing for the thickness of the door (ie cut off higher for a wider opening). The top edge of the back board and the rear edge of the roof must be bevelled to fit. The roof and back board are next to each other on the cutting plan so that, with a tilting circular saw or jigsaw, the bevels can be cut in one go. The cutting angle is approximately 62°.

The front-opening door is pivoted at the bottom on two clout nails. A hole is drilled high up through one side of the box and into the side of the door. This takes a loose-fitting clout nail which holds the door firmly closed against the door stops. These are cut from 10-12mm strip and are fitted at the top and sides of the door-opening to act as a door frame and aid weather-proofing. The side door stops are cut off about 3cm short of the bottom to allow freedom of movement of the door. A small screw is fitted as a knob for opening the door.

The only other point is to ensure that the door is a loose fit to allow for the wood swelling – the door stops take care of the gaps. We recommend gluing as well as nailing to ensure that there is the minimum of heat leakage – we suggest Extramite, which is an odourless wood glue.



With thanks to the Gwent Bat Group for this bat box design

Where should I put my bat box?

Boxes are most likely to be used if they are located in places where bats are known to feed. Woodland, parkland and river banks are good places, as are gardens close to ponds, rivers or parks. Sites should be sheltered from strong winds and exposed to sunlight for as much of the day as possible to increase their internal temperature. They should also be close to a hedge or tree line, as some species of bat use these to navigate and are reluctant to cross open spaces to get to and from roosts. Boxes should be positioned so that the bats' approach to them is clear of impediments such as tree branches, and should be as high as possible not only to maximise their exposure to sunlight but also to ensure security from cats or human vandals.

Fig.7: Local carpenters working with the 6th class pupils to make bat boxes.



Fig. 8: The finished bat boxes on the school tower.



Fig. 9 The finished bird table created by local carpenters, now standing on the school grounds.



Habitat Maps

On the same day as the otter walk, the 6th class pupils were each given a blank map of their school. We described how to recognise different habitats in the area around the school grounds, e.g. lawn, hedgerow, wildflower beds, and how these are important for wildlife (Fig. 10). Each pupil then drew a habitat map for the school. This work is a requirement for the Biodiversity Green Flag initiative. Examples are included in the appendix 1 of this report.

Fig. 10: 6th class pupils from Seafield NS drawing up their school habitat map with MISE Project Officer, Andrew Harrington and Paddy Doyle, 6th class teacher.



4. Awareness Raising

- Leaflets from the MISE project were distributed within the school and pupils took them home to discuss them with their parents.
- The pupils discussed the projects that they participated in, both in the class room and at home.

5. Personal development

Examples of the habitat maps the pupils drew, personal accounts of what the pupils did, student evaluation forms and teacher evaluation forms are all attached to this report in the appendix. The pupils learned how to cooperate in surveys and how to work together. They also got an insight into science which will prove beneficial for their future academic careers. The most important development from this project, is that the pupils have learned that the environment is their responsibility and we envision that following this experience, their interest in mammals, environment and conservation will continue to blossom as they learn more about their local biodiversity. Finally, this project has brought together, people from many different groups in the community including the MISE project, school children, teachers, parents and volunteers keen to use their skills for the benefit of the entire community. Not only, have the children developed during this project, but we believe that everyone involved has grown a wider appreciation for team work, learning and the environment.

Conclusion

We believe that Seafield NS have achieved a great deal from this project and are a great example to other schools in the Co. Waterford area to participate in similar initiatives. We believe that their effort, enthusiasm and willingness to learn about their environment, makes them excellent candidates for this years Eco-Unesco Young Environmentalist's Award.

Acknowledgements

Mammals in a Sustainable Environment (MISE) is a project funded by the European Regional Development Fund under the Ireland-Wales Programme 2007-2013 (INTERREG IVA). Dr. Catherine O'Reilly and Dr. Peter Turner are joint leaders of the MISE Project at WIT. We are grateful to Seafield NS for their willingness to participate in this new project and for their continued support and encouragement. We also wish to thank the local carpenters for their participation in the school and to the local landowner for allowing access to the field.

Appendix

1. An example of the habitat map created by one of the 6th class pupils. This is a scanned copy and the originals can be seen at the school.



2. An example of the student evaluation form.

STUDENT EVALUATION SHEET

Name	Hannah Walsh
Name and address of school or youth group as stated on registration form	Seafield N.S., Bonmahon, Co. Waterford.
Email	SeafieldNS@eircom.net
Contact no.	051-292313
Title of project	Bio-cye

Information contained in this sheet will not be considered in the judging process
Please complete and return to ECO-UNESCO by project submission deadline. Please be objective when answering questions.

About your project:
What environmental issue did you choose?

We picked Biodiversity mostly about small mammals, otter and bats.

Why did you choose this issue?

We chose this issue because it was our theme this year for our 5th green flag. And it is very enjoyable.

Why is this issue important to you?

This issue is really important to us because we're heading for our 5th green flag and we all love animals so we do our best to protect them every day.

About you:
What did you learn by going this project?

While doing this project, I learnt how to creep up slowly and carefully, to make sure I didn't ruin anything or a habitat, and how to build a bat box.

What skills did you develop?

Well, I developed skills in having to know where and when to look out for otters or other animals. And also to know where would be a great place to place our bat boxes.

Section 3

3. A second example of the student evaluation form

.....ECO-UNESCO Young Environmentalist Awards Manual

STUDENT EVALUATION SHEET

Name Oria Lennon

Name and address of school or youth group as stated on registration form
Seafield Bunnahon Co. Waterford

E-mail SeafieldNS@eircom.net

Contact no. 051 292213

Title of project Bio-eye

Information contained in this sheet will not be considered in the judging process
Please complete and return to ECO-UNESCO by project submission deadline. Please be objective when answering questions:

About your project:
What environmental issue did you choose?
We choose biodiversity because it's helping our environment and living animals in it

Why did you choose this issue?
We choose this issue to help our environment and to get our 5th Green Flag.

Why is this issue important to you?
It's helping animals people and their habitats and our environment

About you:
What did you learn by going this project?
We learnt how to help living animals and to protect their environment and habitat.

What skills did you develop?
Not standing on the place where the otters were. And not to be disgusted of the poo and all.

Section 3

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4. An example of a pupil report of the events.

Otter Walk and Bat Boxes

Thursday November 24th

On November 24th Andrew and Denise came down to Seafield N.S. in Bunimham. We got into our wellies and went into the field across from the school. Andrew spotted a bridge and a (stony) stream. We looked under the bridge for a trace of Sparint. We walked on, on the banks. Then we came to the river.

Beside the river there were two cement pipes. Andrew and Denise did a quick check for Sparint (otter poo). Sadly there was no Sparint. We moved on and there was a tree going down into the river. Andrew called out "No/one step on it." Kerry and I told Andrew that there "was" prints there. He examined them and told us that it was otter prints. We were delighted that we found something.

Bat Boxes


On other day we got to make Bat Boxes. They were really hard to make, we nearly had to start all over again! It was hard to find out where to put them but we got advice, and put them high out of the way.

Bait Boxes

The first day Andrew and Denise came we did Bait Boxes. We put peanut butter and sticks in the Bait Boxes and left them over night. The next day there were droppings in every pot!

5. Teacher evaluation form by principle, Ann Coffey and 6th class teacher, Paddy Doyle.

Section 3



Young Environmentalist Awards Manual

ECO UNESCO.....

Learner assessment – personal development

19. Confidence	1	2	3	4	5
20. Self - esteem	1	2	3	4	5
21. Interpersonal skills	1	2	3	4	5
22. Teamwork	1	2	3	4	5
23. Social awareness	1	2	3	4	5
24. Social responsibility	1	2	3	4	5
25. Environmental awareness	1	2	3	4	5
26. Environmental responsibility	1	2	3	4	5

Please outline how your team developed personally over the life of the project:

Pupils enjoyed the different themes and awareness grew of their impact on wildlife and in particular small mammals. They now understand the importance of environmental conservation.

Making wider links

Please give examples of personal environmental actions/ behaviour of your team members on issues outside their project area.

Always Recycle
know steps to Energy conservation
know importance of saving water
Stop pollution to conserve habitats.

Please identify, if applicable, where the project contacted and affected those in the wider class/ school/ youth group/ community, and at what level of interest – social or environmental awareness raising, personal action etc?

Pupils used surveys to convey their ideas and concepts to parents and families at home.

If you have any further comments:

TEACHER/YOUTH LEADER EVALUATION SHEET

Name Paula Doyle / Ann Coffey
 Name and address of school or youth group as stated on registration form
Seafield N.S.
Bonmahon, Co. Waterford.
 Email Seafieldns@eircom.net
 Contact no. 051 292213
 Title of project Bio-eye
 Name of teams members:
Whole School involvement

Information contained in this sheet will not be considered in the judging process
 Please complete and return to ECOUNESCO by project submission deadline. Please be objective
 when answering questions.
 Please circle and rate your team on a scale of 1-5 where 1 = poor 5 = excellent

Aims of the project:

Get the pupils more aware of the issue
 of Biodiversity paying particular attention
 to small mammals, other and bats

Objectives of the project:

Highlight the importance of habitat conservation
 in the school grounds and surrounding
 areas

Where the aims and objectives of the project failed, please give details:

Through use of our habitat mapping and
 questioning of pupils all of our aims and
 objectives were reached

Please outline how useful undertaking the project was, how easy or difficult you found it, where did
 difficulties arise, where would you require further support.

Once we chose which mammals we were
 researching and with the help of the M.I.S.E.
 project everything fell into place and pupils
 took it on from there.
 The support from W.I.T. M.I.S.E. project was
 essential.

Learner assessment - project ownership

- | | | | | | |
|--|---|---|---|---|---|
| 1. Level of learner direction of project | 1 | 2 | 3 | 4 | 5 |
| 2. Level of assistance required | 1 | 2 | 3 | 4 | 5 |
| 3. Level of learner initiative shown | 1 | 2 | 3 | 4 | 5 |
| 4. Level of learner initiative shown | 1 | 2 | 3 | 4 | 5 |

Please outline your role in the development of the project:

Formulated the aims and objectives
 Set out the different written exercises
 Observed and supervised outdoor adventures

Learner assessment - knowledge development

- | | | | | | |
|--|---|---|---|---|---|
| 5. Level of research undertaken | 1 | 2 | 3 | 4 | 5 |
| 6. Ability to make research to use | 1 | 2 | 3 | 4 | 5 |
| 7. Ability to relate research to action | 1 | 2 | 3 | 4 | 5 |
| 8. Level of understanding of issue | 1 | 2 | 3 | 4 | 5 |
| 9. (ability to link cause and effect of the environmental issue) | 1 | 2 | 3 | 4 | 5 |

Please summarise your team's level of understanding (linking cause and effect) of the
 environmental issue

Pupils now aware of all issues relating to
 biodiversity. Able to locate different types
 of habitats within and around school
 grounds. They know their own efforts will help
 in some small way.

Learner assessment - skills development

- | | | | | | |
|---|---|---|---|---|---|
| 9. Decision making | 1 | 2 | 3 | 4 | 5 |
| 10. Planning | 1 | 2 | 3 | 4 | 5 |
| 11. Managing material | 1 | 2 | 3 | 4 | 5 |
| 12. Researching material | 1 | 2 | 3 | 4 | 5 |
| 13. Research skills | 1 | 2 | 3 | 4 | 5 |
| 14. Action research skills | 1 | 2 | 3 | 4 | 5 |
| 15. Communication skills | 1 | 2 | 3 | 4 | 5 |
| 16. Organisation skills | 1 | 2 | 3 | 4 | 5 |
| 17. Reflection skills / critical thinking | 1 | 2 | 3 | 4 | 5 |
| 18. Problem solving skills | 1 | 2 | 3 | 4 | 5 |

Please outline skills you feel your team developed over the course of the project:

Team Work
 Researching using internet
 Mapping
 Construction of wooden bat boxes
 Organisational Skills