

**Teachers Support Pack**

D U B L I N



# Leaving Cert Ecology



Dublin Zoo, Phoenix Park, Dublin 8

Tel: (01) 474 8932

Email: [education@dublinozoo.ie](mailto:education@dublinozoo.ie)

[www.dublinozoo.ie](http://www.dublinozoo.ie)

# What you must do before visiting the zoo



We take a maximum of 32 students for this module. Module duration: 3 hours

The module takes place in the Education Centre - located beside the Meerkat Restaurant

Your visit to Dublin Zoo includes:

- Information session with zoo facilitator. Ecology fieldtrip to a site in the Phoenix Park.
- You are free to tour the Zoo when the module is complete.

**Essential items:**

Students must bring weatherproof clothing for the ecology fieldwork.

**On Arrival**

- On arrival make your way to the Education Centre to meet your teacher at the specified time on your booking form
- The Education Centre is located beside the Meerkat Restaurant, which you will see up the hill on your right hand-side as you enter Dublin Zoo.
- It is important that you be at the Education Centre at the specified time as an Other class may be booked after yours. Please allow 15 minutes for queuing time etc. at the Zoo entrance, as we cannot guarantee being able to take late arrivals.

**Cost:**

Admission fee to be collected beforehand & paid in bulk by teacher/group leader. As you are responsible for the group we recommend a supervisory ratio of 1 adult to every 5 students, and with this in mind you can avail of 1 adult free with every 5 students.

**Transport:**

The 46A bus from O'Connell Street, Dublin City Centre goes to the North Circular Road entrance to the Phoenix Park, a 5-minute walk to the Zoo entrance. Dublin Zoo is within walking distance of Heuston station. Transport can also be arranged via CIE, Dublin Bus or Private coach operators.

# Background Information



## HISTORY OF DUBLIN ZOO:

Dublin Zoo opened in **1831**, making it the fourth oldest zoo in the world (only London, Paris and Vienna are older) on 5.5 acres and has grown over the years to the present 66-acre site. This includes additional land from the grounds of Áras an Uachtaráin, provided by President Mary McAleese. This section is known as the “**African Plains**” and was formally opened by An Taoiseach, Mr. Bertie Ahern, on 7<sup>th</sup> May 2001.

If you would like more information on the history of Dublin Zoo, please email [education@dublinczoo.ie](mailto:education@dublinczoo.ie) or phone 01 474 8932.

## ROLE OF DUBLIN ZOO:

Formally a Victorian showcase displaying exotic animals, we now focus on **conservation**, participation in international **breeding programmes**, **education** and **research**.

**Breeding programmes:** Zoos worldwide access breeding details recorded in a computerised system (“ISIS” - International Species Identification System). Dublin Zoo actively participates in many international breeding programmes. Animals involved in such breeding programmes include the Golden Lion Tamarin, Moluccan Cockatoo, Bornean Orang-utan, Western lowland Gorilla, Sumatran Tiger and Snow Leopard.

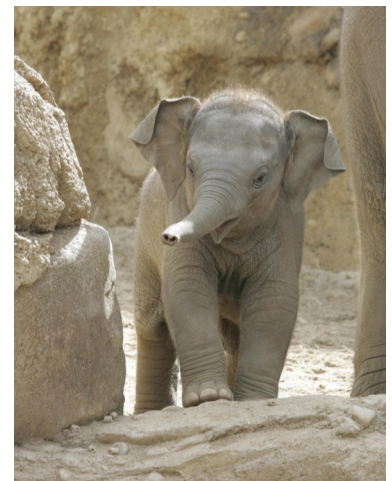
**Education:** The Education Department at Dublin Zoo aims to awaken people’s interest in their environment and to promote conservation awareness through exhibitions, student programmes, teacher courses, summer camps, outreach programmes, Learning & Discovery Centre, information sheets and education packs.

**Conservation:** An increasing human population threatens fragile resources (i.e. tropical rainforests). Common factors influencing plants and animals approaching extinction include deforestation, farming and human population growth. The ultimate goal of captive breeding of animals threatened with extinction is the preservation of animals that can be reintroduced into their habitat in the wild at a future date.

**Research:** We are constantly engaging our animals using a method called “behavioural enrichment” - This means that the keepers use objects and activities that engage an animal physically and/or mentally e.g., popcorn in straw or feeding tubes attached to an enclosure, puzzle feeders, scent marking, scatter feeding etc. Many such strategies are employed at the zoo for the welfare of our animals.

**Recreation:** Attracting up to 600 million people annually, zoos worldwide provide a pleasant day out for their visitors who can also see conservation in action. Dublin Zoo alone received over 900,000 visitors last year and is rated Ireland’s number 1 *fee paying* tourist attraction.

**Zuki the white Rhino,  
with her mum Ashanti**



Dublin Zoo has approximately 127 different species of animals with a total of around 600 specimens. Of these 127 species over 40 are managed in International and European breeding programmes. Many others are involved in regional programmes.

# Leaving Cert Ecology

## ECOLOGY MODULE:

INTRODUCTION - 30 MINS

HABITAT STUDY - 2 HOURS

RECAP - 30 MINS

In order to fully benefit from the Ecology Module students should have a grounding knowledge of the Ecology (Leaving Certificate) syllabus before they come to Dublin Zoo. It would be beneficial if teachers could go through the operational use of faunal collection equipment (in theory).

### **Please remind students of the following:**

They are not to stray from the habitat site

They are not to engage people in the park

### **That to litter in the Zoo or the Phoenix Park is a major offence**

They are to leave the habitat site the way they found it. They are to take good care of the equipment they are using and return it in the condition they received it.

To bring rain gear, and in particular suitable footwear.

***This cannot be stressed enough!*** The practical habitat study takes place in any weather conditions. Teachers and students who do not prepare for bad weather can truly hinder the practical habitat study.



# Practical Habitat Study

## PRACTICAL HABITAT STUDY—GRASSLAND: 2HOUR STUDY

### Objective:

The habitat study is an extensive study fulfilling all the requirements for the Ecology course. Students will map their own habitat, set pitfall traps, identify and describe 5 animal and 5 plant species, conduct a line transect and quadrat study (% frequency and % cover), record abiotic factors (light intensity, soil temperature and soil pH), and familiarise themselves with the use of faunal collection equipment.

The habitat site is located in the Phoenix Park, 5 minutes from the Education Centre. The students will be briefed on the procedure in the field. We have appropriate animal and plant identification keys for the students on site. Students can also avail of plant and animal fact sheets, which will help them with their report worksheets.

The report work pack should be photocopied for each student. The sheets should be held together with a staple or paper clip to ensure the students do not lose their sheets. It is advised to provide the students with clipboards for easier note-taking, and plastic sheets in case of wet weather.

### NB Teachers must accompany students throughout the course

### Procedure for habitat study

Students will be divided into groups of three or four for the duration of the habitat study

#### Time Guideline:

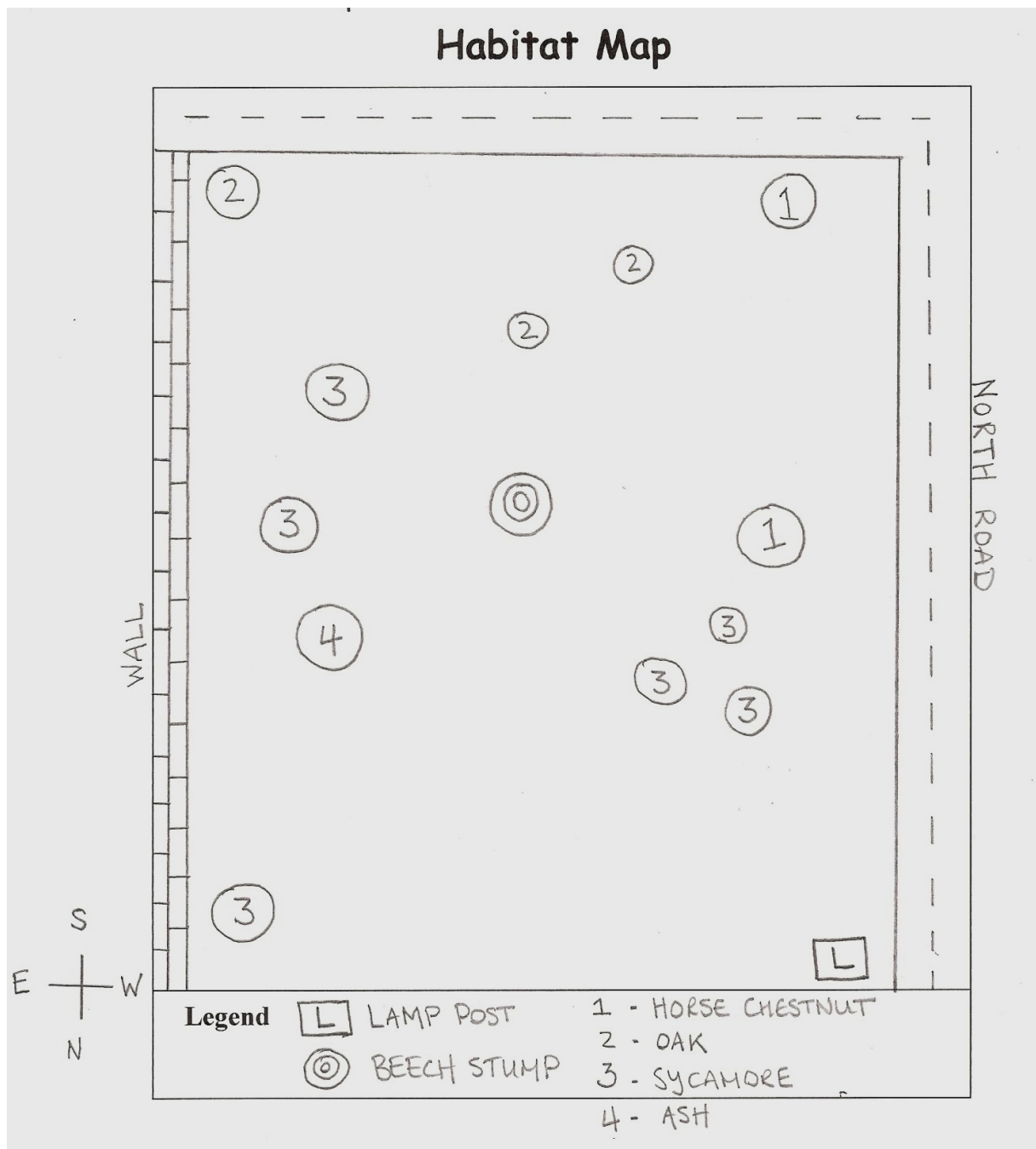
Orientation	15 min
Set Pitfall Traps	10 min
Quadrat study - % Cover	25 min
Quadrat study - % Frequency	15 min
Line Transect	20 min
Identify and Describe 5 Plants	15 min
Identify and Describe 5 Insects	20 min



# Sample Answer

## Site Description:

The site is located off the North Road in Phoenix Park. One edge of the habitat is bordered by the north road which is a busy road - this acts as a physical barrier on one side of the habitat. The wall running the opposite side of the habitat provides another physical barrier as well as providing shade and shelter for plants and animals. The site contains numerous deciduous trees which provide habitat and food for local species.



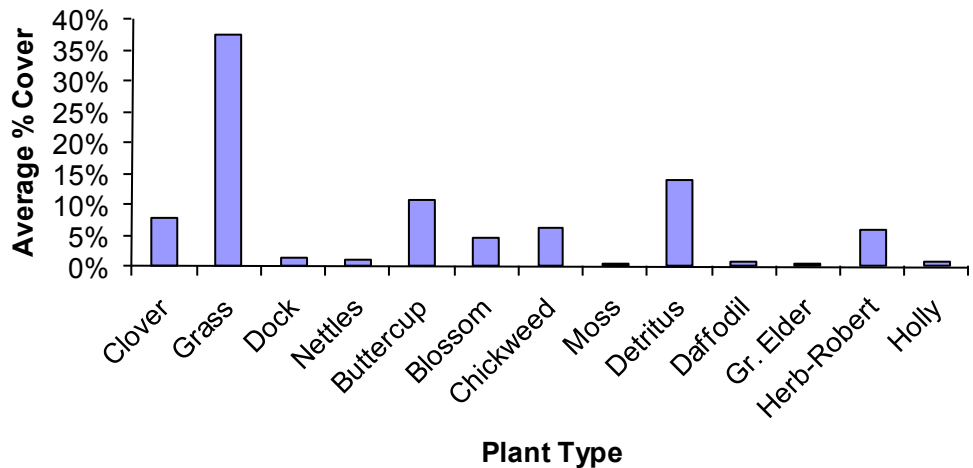


# Quadrat Study

PLANT	QUADRAT THROW - % Cover										Average % Cover	
	1	2	3	4	5	6	7	8	9	10		
Clover	12%		44%			24%						8%
Grass	72%	20%	52%	48%	80%	72%	32%					37.6%
Dock	16%											1.6%
Nettles		12%										1.2%
Buttercup		20%		16%	8%	4%	60%		32%			10.8%
Blossom		48%										4.8%
Chickweed			4%							60%		6.4%
Moss				4%								.4%
Detritus				8%				40%	52%	40%		14%
Daffodil							8%					.8%
Gr. Elder								20%				.2%
Herb-Robert					12%			40%	8%			6%
Holly									8%			.8%

## Graph of results

Quadrat Study - Average % Cover



### Comment on your results:

On average, grass (36%), made up the main plant cover. In an individual quadrat throw the % grass cover could be as high as 72%. On average the majority of the plant cover was made up of grass (36%), detritus (14%), buttercup (10.8%), clover (8%), chickweed (6.4%), and herb-Robert (6%). Dock, nettles, moss, daffodil, ground elder and holly were sparse in the habitat.





# Quadrat Study

PLANT	QUADRAT THROW – Absent/Present										Frequency
	1	2	3	4	5	6	7	8	9	10	
Grass	x	x	x	x	x				x	x	70%
Buttercup	x	x	x	x		x		x		x	70%
Dock	x							x			20%
Moss	x	x									20%
Clover			x								10%
Daffodil				x							10%
Detritus					x	x	x	x	x		50%
Ground El.					x						10%
Herb-Robert					x	x	x	x			40%
Holly						x					10%
Chickweed							x	x			20%
Ivy								x			10%

**% Frequency of Plants found in Habitat Study**



**Comment on your results:**

From the data we can see that grass and buttercup are most likely to be found in the habitat as they were found in 7/10 quadrat throws. Whereas you would be less likely to come across plants such as clover, daffodil, ground elder, holly, and ivy as they were found in only 1/10 quadrat throws.



# Line Transect

	Line Transect									
PLANT	1	2	3	4	5	6	7	8	9	10
Dock	×									
Detritus		×								
Grass			×		×	×	×		×	×
Buttercup				×	×			×		
Clover							×	×		×

	Abiotic Factors									
	1	2	3	4	5	6	7	8	9	10
Light Intensity	2000	1500	2100	2800	3000	3000+	3000+	3000+	3000+	3000+
Soil Temperature	14°C	14°C	14°C	14°C	14°C	14°C	14°C	14°C	14°C	14°C
Air Temperature	19°C	19°C	19°C	19°C	19°C	19°C	19°C	19°C	19°C	19°C
Soil pH	8	8	8	8	8	8	8	8	8	8

## Describe your results

At the start of the line transect there were very few plant species. This was as expected as the light intensity was quite poor. However as the line progressed from the woodland light intensity increased, as did the plant cover. There was a move from Dock and Detritus in the shady parts to grass, buttercup, and clover in the more open exposed areas.

These results demonstrate the fact that in shady areas there will be a more patchy distribution of 'shade loving' plants whereas in open areas there is an abundance of 'light loving' plants such as grass, buttercup, and clover.