National Museum of Ireland – Natural History

Teachers Resource Pack – Post Primary

museum
National Museum of Ireland
Ard-Mhúsaem na hÉireann

National Museum of Ireland — Natural History

Teachers Resource Pack — Post-Primary

Table Of Contents

Introduction

"May the building…open for the coming generations be worthy temples of science, art and learning, at whose shrine they may be taught"

Lord Carlisle, the Lord Lieutenant of Ireland, laying the foundation stone of the Natural History Museum on 7th March 1856.

The Origin of The Natural History Museum of Ireland

Beginning with the purchase of the Leskean collection of minerals by the Royal Dublin Society (RDS) in the 1780s, the purpose of the Natural History collection has always been "to aid the advancement of knowledge in Ireland".

Today the Museum forms a part of the National Museum of Ireland, and the Education and Outreach Department aims to act as an advocate for audiences by developing and providing learning programmes, resources and opportunities at the Museum for all visitors.

History of the building

The Natural History building was built in 1856 to house the RDS's growing collections, which had expanded continually since the late 18th Century. The building is a 'cabinet-style' museum designed to showcase a wide-ranging and comprehensive zoological collection, and has changed little in over a century.

Often described as a 'museum of a museum', it provides a glimpse of the natural world that has delighted generations of visitors since the doors opened in 1857.

The building was originally built as an extension to Leinster House and in 1909 a new entrance facing Merrion Street was constructed- today this is the Museum's main entrance.

The museum today holds a display of approx. 10,000 animals and fossils. The ground floor is dedicated to Irish animals, featuring Giant Irish Deer skeletons and a variety of mammals, birds and fish. On first floor visitors can view animals from around the world, as well as large mammals such as the giraffe, elephant, moose and two whales suspended from the ceiling.

General Museum Information

How to Get there

On Foot – Approximately it is a ten minute walk from Grafton Street or St Stephen's Green and a 15 minute walk from O'Connell Street or Dublin Docklands.

Bus – Routes serving Merrion Square, Merrion Row and St. Stephen's Green. As timetables and routes are subject to change, please see www.dublinbus.ie for up-to-date information.

LUAS – The Museum is a ten minute walk from St Stephen's Green Green Line Luas stop. The nearest Red Line Luas Stop is Abbey Street a 15 walk.

DART/Train – The Museum is a five minute walk from Pearse station on Westland Row.

Coach Parking – There is on-street parking and coach parking available on Merrion Square.

Opening Hours

Tues – Sat –10am–5pm

Sun – 2pm–5pm

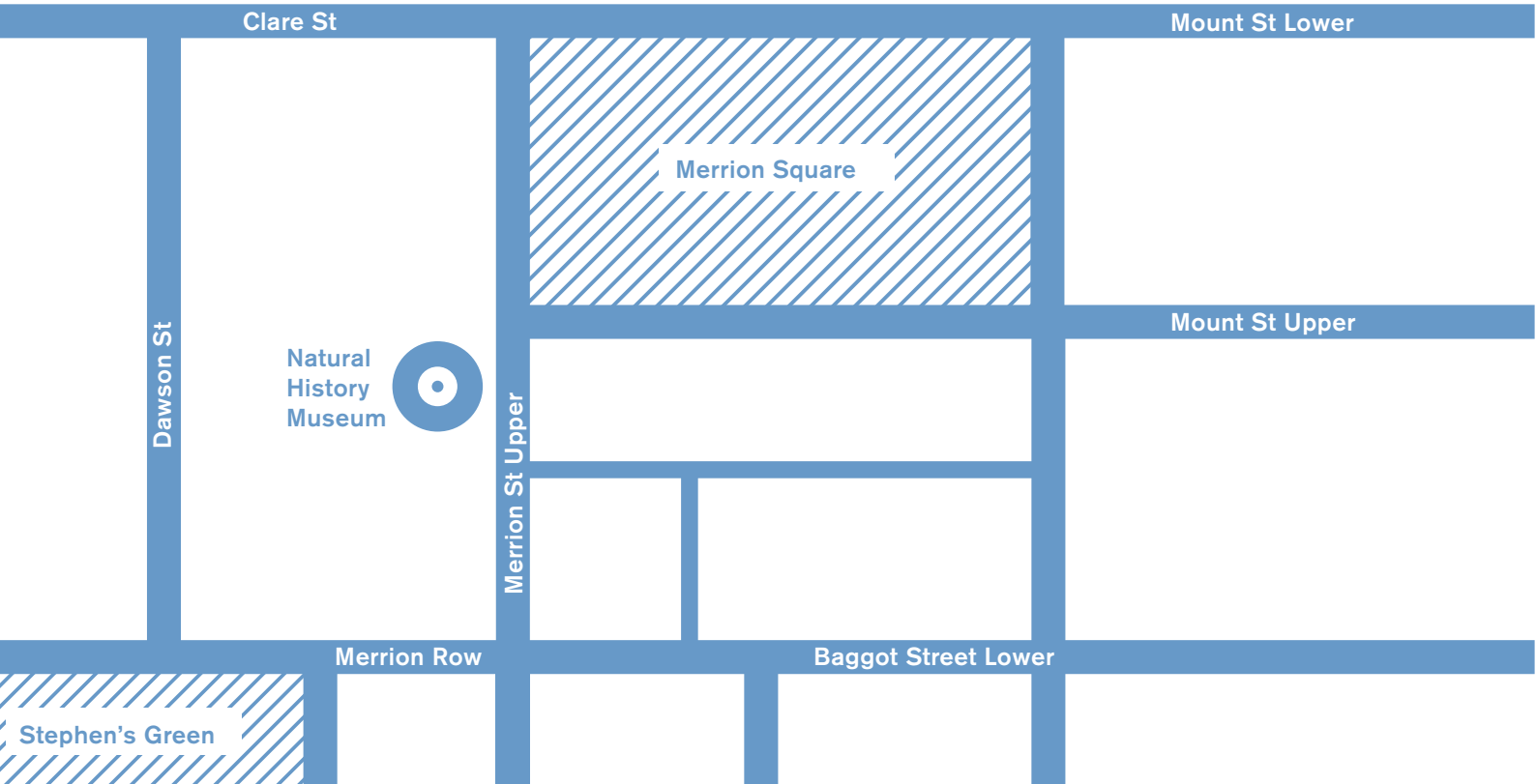
Mon – Closed

Facilities & Accessibility

The ground floor exhibitions and one restroom are wheelchair accessible. There is regrettably no wheelchair accessibility to the first floor exhibitions.

There is no Museum Café or lunch room facility at this site. Merrion Square Park and Stephen's Green and the Grafton Street area, which are all within walking distance all provide a variety of options for picnicking and lunch.

For Further Information on Facilities:
info@museum.ie
+353 (0) 1 6777444



Organising your Groups Visit

How many students can you bring?

We recommend a supervision ratio of one adult/group leader/teacher to every 15 students. If you are bringing a large group to the Museum (over 40 students), it is necessary to split the group up into smaller groups and stagger your entry by 15 minutes. As we are a small building, our entry limit is 60 students per hour.

Primary carers are responsible for the safety of children in their care while visiting the National Museum of Ireland. and group leaders must remain in sight of their charges at all times. For further information consult our Child Protection Policy, available on our website: www.museum.ie

How long can your visit last?

The recommended visit duration is 45 minutes.

How do I book a visit?

All groups intending to visit the Museum must book through the Bookings Office. To Contact the Booking Office email bookings@museum.ie or phone +353 (0) 1 6486453

Is the Natural History Museum wheelchair accessible?

The ground floor of the museum is fully wheelchair accessible, with a wheelchair toilet to the right of the reception desk

Resources for your Visit

Resources for your class at the National Museum and online

The Natural History museum has two dedicated education areas:

Discovery Zone

This hands-on area has two mobile units, Life on Land and The Life Aquatic. Groups can look at and learn about the different species that live in each environment and handle our badger and pilot whale skull.

In Life on Land various different themes are explored; life in the earth such as that of creepy crawlies like the tarantula, life in the air which explores how birds beaks fit their lifestyle and mammals that live on land such as a wolf. In The Life Aquatic objects are grouped in themes such as freshwater insects.

Animals in the carts include...
Badger
Pilot Whale Skull
Dolphin Skull
Common Freshwater Insects
Small Mammal Skulls
Common Seal Skull
Tarantula
Common Terrestrial Insects
Golden Eagle Skull
Spoonbill Skull
Raven Skull
Dolphin's Pentadactyl Limb

Reading Area

This area was developed to provide an opportunity for visitors to sit and read more about the many animals which are on display and about other topics related to Natural History.

The selection of books is aimed at providing insights into the varied and exciting work of Natural History. This space also provides seating so that the Victorian displays and buildings as well as the exhibits can be reflected upon.

In the reading area you will find books on...
Zoology
Conservation
Geology
Earth Sciences
Irish Biodiversity
Reference Books

Activity Sheets

The Education and Outreach Department has created biodiversity activity sheets, which is suitable for Junior Certificate and TY students called Everything Counts. A downloadable version is available in colour or black and white on the Explore & Learn pages of the museum's website www.museum.ie

Below are a number of curriculum-linked suggested itineraries and projects ideas for your classes' visit, which will enable you to lead a tour of the Museum on your own for your class. The information and suggestions were designed to provide information and to assist in planning themes and topics to explore during the visit to the Museum and which will build on what the pupils have learned and are exploring in the classroom. We would advise once you have chosen an itinerary to make a visit to the exhibitions in advance of bringing a group in.

Curriculum Links

Whatever you decide the museum's collection can provide you with multiple ways of linking into the Post Primary curriculum. These links are outlined below:

	Science
Junior Cert:	The Skeletal System; Ecology; Genetics
Leaving Cert:	The Skeletal System; Ecology; Genetics; Evolution
	Geography
Junior Cert:	A sense of place and space; Maps, globes and graphical skills; Geographical investigation skills.
Leaving Cert:	Natural environments; Environmental awareness and care
	History
Junior Cert:	Time and chronology; Change and continuity.
	CSPE
Junior Cert:	Myself; Myself and the wider world
	Art
Junior Cert:	Life Drawing
Leaving Cert:	Life Drawing
	Action Projects
Transition Year:	Enviornmental

Please note the itineraries of the suggested tours below are not offered by the Education and Outreach Department. For information on programmes with Museum educators go to the Schools Programme on the Museum website.

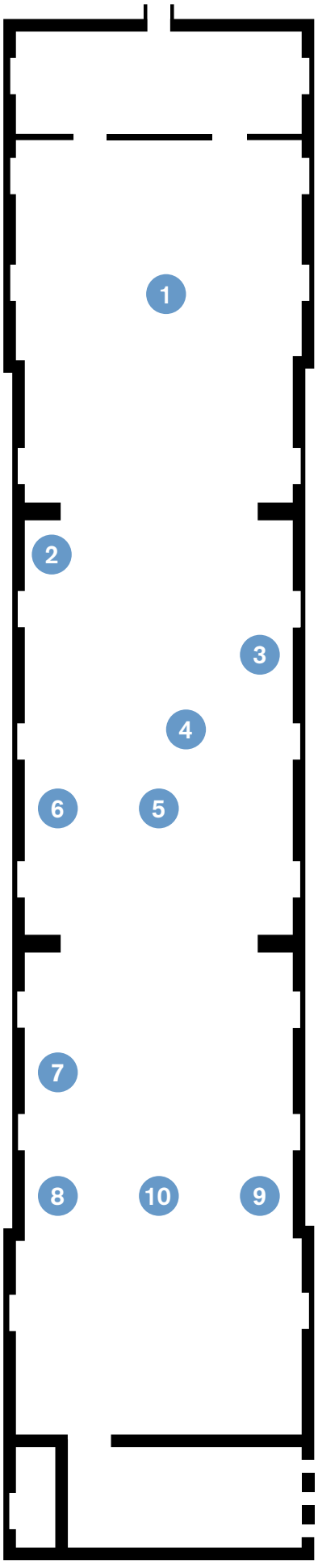
Suggested Itineraries

Resources for your class at the National Museum and online

Irish Coastal Walk Tour (Ground Floor)

Ground Floor

1 – Grey Seal
2 – Sun Fish
3 – Thresher Shark
4 – Basking Shark
5 – Herring Gull
6 – Mackerel & Cod
7 – Starfish
8 – Jellyfish
9 – Limpet
10 – Life Aquatic Discovery Cart



Curriculum Links

Junior & Leaving Certificate

The displays listed on this route can be used as catalysts for discussions and linked to the Biology and Geography curricula through the topics of Ecosystems (rock pool and larger coastal and oceanic ecosystem), Food Chains, Food Webs, Pyramid of Numbers, Animal Interdependence, Environments and Ecosystems as well as Animal Adaptations to Environment (and Evolution).

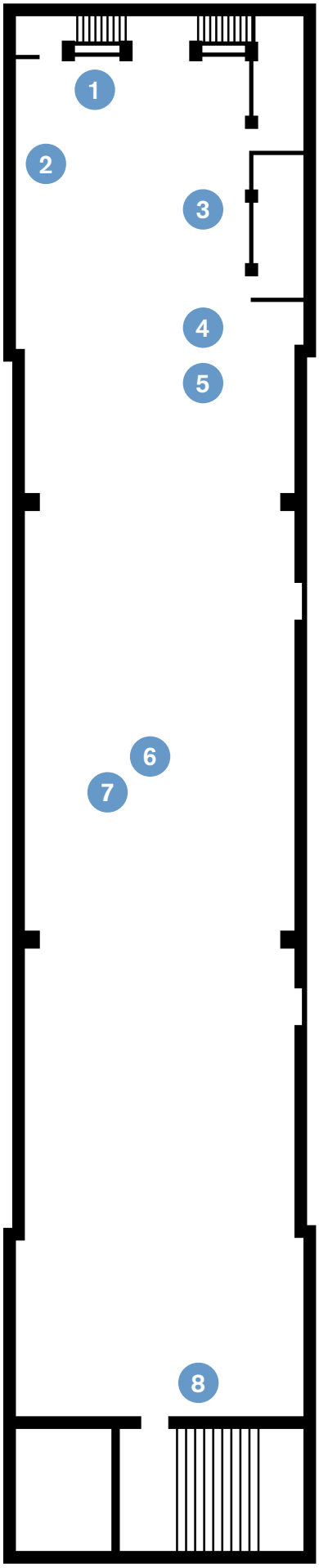
It could also be used as an introduction to ecology and conservation biology (both animal and natural resources) by exploring the plight of Cod, the conflict of interest over natural resource exploitation and Cod population numbers versus human demand for food.

Stewardship and sustainability could also be looked at with regard to fishing and overfishing.

Human Influenced Extinction and Endangerment Tour (First Floor)

Ground Floor

1 – Gorilla
2 – Oil Slick Diorama
3 – Tiger
4 – Grey Wolf
5 – Polar Bear
6 – American Bison
7 – Giraffe
8 – Giant Panda



Curriculum Links

Junior, Leaving and Transition Year Action Project

The displays listed on this route can be used as catalysts for discussions and linked to the CSPE, Biology and Geography curricula through different environmental and stewardship issues including:

Ecology
Extinction & Endangerment
Resource Exploitation
Climate Change
Energy
Conservation Biology
Interdependence
Cultureand Tradition

Irish Biodiversity Tour (Ground Floor)

Ground Floor

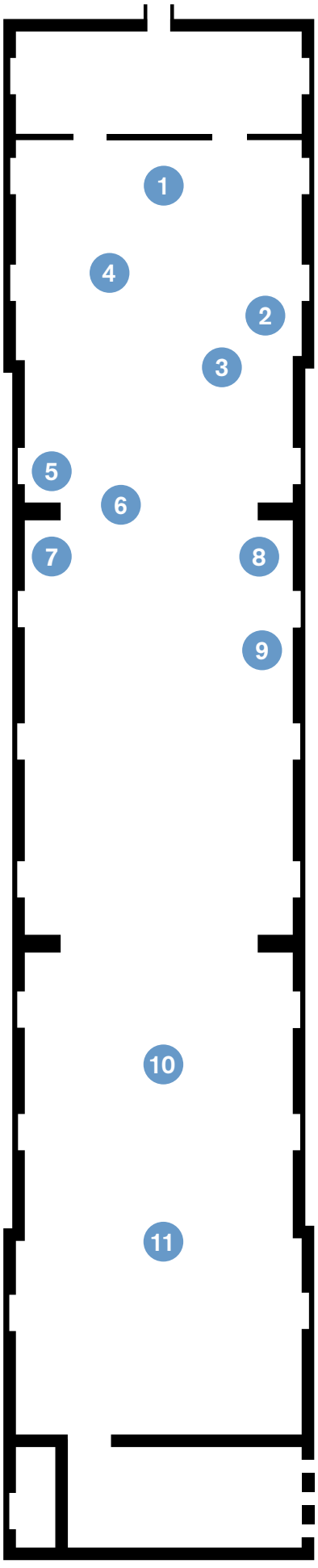
1 – Giant Irish Deer
2 – Golden Eagle
3 – Hares
4 – Fox Family
5 – Heron
6 – Otter Family
7 – Sun Fish
8 – Bats, Black and Brown Rat
9 – Thresher Shark

Life on Land Cart

10 – Badger, Grey Wolf

Life Aquatic Cart

11 – Pilot Whale, Dolphin and Seal Skull



Curriculum Links

Junior, Leaving and Transition Year Action Project

The displays listed on this route can be used as catalysts for discussions and linked to the CSPE and Biology curricula thought the topics of ecology, environmental awareness and stewardship.

It could also be used as an introduction to habitat and ecosystems through teacher led discussion on Ireland's climate, environment and the habitats that it provides.

The Evolution Tour (First Floor)

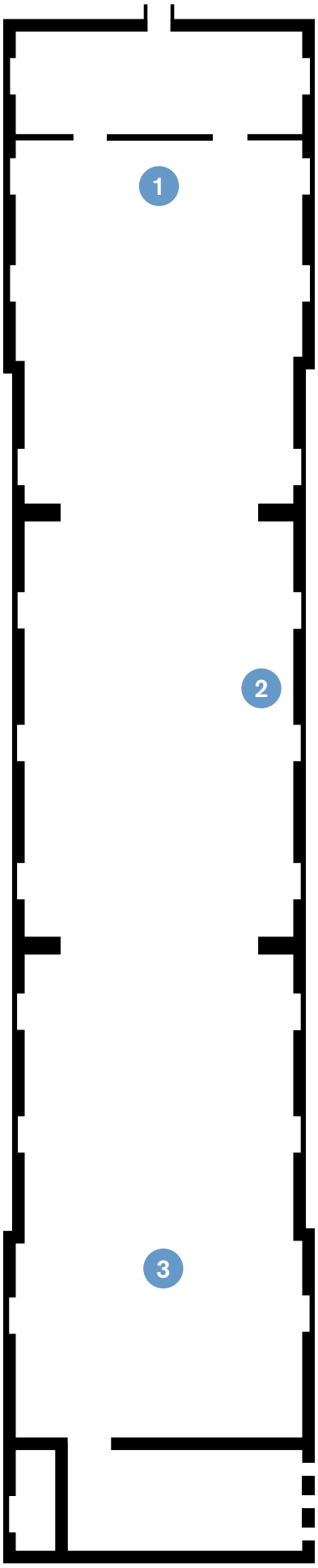
Ground Floor

1 – Giant Irish Deer

2 – Thresher Shark

Life Aquatic Cart

3 – Dolphin Pentadactyl Limb



Curriculum Links

Leaving Certificate

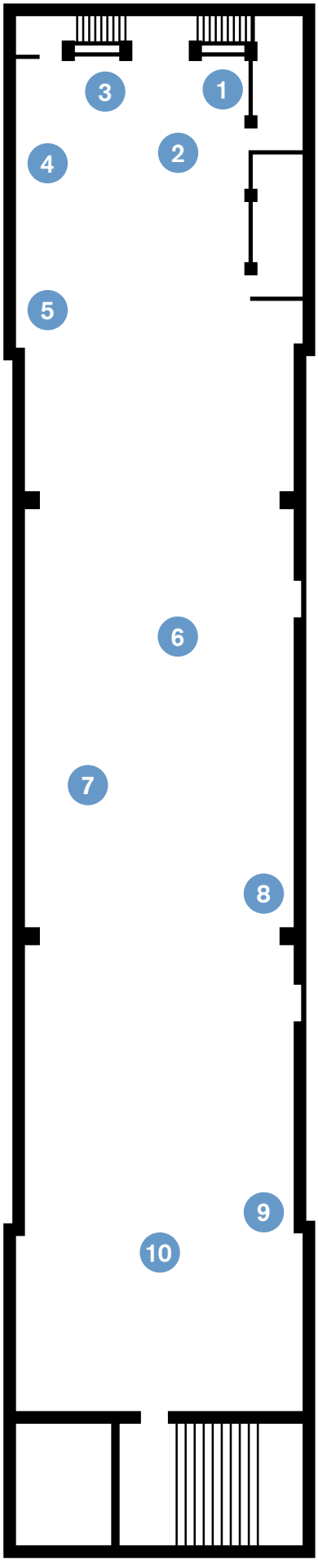
The displays listed on this route can be used as catalysts for discussions and aim to provide visual support to lessons on the Genetics Leaving Certificate curriculum on inherited traits and evolution.

Following this itinerary could be a great way to help cement the ideas and theories otherwise only studied in a text book due to lack of specimens for a practical lab or school based lesson. This could be particularly helpful for visual learners.

The Evolution Tour Continued... (First Floor)

First Floor

1 – Ape Skeletons
2 – Monkeys
3 – Apes
4 – Hominid Skulls
5 – Lemurs
6 – Deer
7 – Giraffe
8 – Horse Comparative Anatomy
9 – Montoremes
10 – Marsupials



Curriculum Links

Junior, Leaving and Transition Year Action Project

The displays listed on this route can be used as catalysts for discussions and linked to the CSPE, Biology and Geography curricula through different environmental and stewardship issues including:

Ecology
Extinction & Endangerment
Resource Exploitation
Climate Change
Energy
Conservation Biology
Interdependence
Cultureand Tradition

Follow up in the Classroom

The activities below can be amended by the teacher to the standard and level of the pupils in question

A classroom lesson or an independent pupil research project on the Golden Eagle re-introduction scheme in Glenveagh, Co. Donegal. The project should focus on the pros and cons of the re-introduction of such a large predator to the Irish ecosystem. The following website will be very useful: www.goldeneagle.ie

A classroom lesson or an independent pupil research project on The Irish Basking Shark Project. Pupils should focus on why the project was set up, what they do and what they aim to achieve. The following website will be very helpful: www.baskingshark.ie

A classroom lesson on animal adaptation to various environments. Followed by pupils designing their own animal. Pupils must explain the rationale behind each feature of their animal. Pupils could design an animal for the following environments: Hot Desert, Tundra, Tropical Rainforest, African Savannah, Tropical Swamp and Ocean.

Classroom discussion or independent pupil research project on why Kangaroos are only found in Australia. Issues such as climate, habitat, food and ancient continental drift should be addressed.

"There is a large population of suburban foxes in Dublin, with as many as 5 families per square kilometer." Pupils could independently investigate why foxes are so adaptable to the urban environment. Pupils should focus on diet and habitat.

Write an essay entitled, "Why do Giraffes have such long necks?" Pupils should focus on natural selection and habitat based adaptations.

Pupils as a class create a wall display for the classroom depicting the animals found on each of the continents. The wall display should take the form of a large collage where animals are drawn, painted or stuck onto each of the continents on a large wall sized map.

My Natural History Museum

The following is a suggested activity aimed to focus your visit to the museum.

Before you visit the Museum

Explain to your class they are to choose specimens for an exhibition of their own when on their visit to the museum- six in total. All specimens chosen must link into a theme- predators v's prey, endangerment, adaptation, extinction, evolution etc. and they must explain the reasons for their choices. Themes can be given, selected by students or based on an existing class project. The aim is that their chosen specimens will tell a story, with an original title and short brief describing the exhibition.

It might be useful for each student to complete a "wish list" of 10 to 15 animals for their exhibition, and then choose the ones that are on display in the museum.

Please photocopy copies of My Natural History Museum worksheets in this pack for the class as they will not be available at the museum when you arrive.

At the Museum

The students must carefully choose specimens for their exhibition and note any information given about the animals in their cases. They might also like to sketch and describe them and/or take a digital photo of each choice. Ensure they record all the information they will need to use back in school.

After Your Visit

Once the exhibitions are drafted, students can research their animals, and decide what order they'd like to put them in. The class can then:

Share the different exhibitions they have made with one and other

Make a presentation explaining their different choices

Create a display or set up an exhibition in the classroom

Once completed older classes could design an advertisement for the exhibition to encourage the other classes to visit it or write an article about the exhibition.

Learning Outcomes

To understand current issues and themes in wildlife and natural history.

To look closely at exhibits in the museum galleries and choose appropriate specimens for an exhibition with a given or selected theme.

Be able to explain reasons for the choice and make selections for the exhibition according to a given or selected theme.

Curriculum Links

Junior Cert Science
Junior & Leaving Certificate Geography
Leaving Cert Biology
Transition Year CSPE Action Projects

My Natural History Museum

Design your own Natural History Museum! Choose a title, describe your museum, and then choose six animals to go into your exhibition cases.

TITLE

DESCRIPTION

Animal 1.

Reason for Choice

Animal 2.

Reason for Choice

Animal 3.

Reason for Choice

Animal 4.

Reason for Choice

Animal 5.

Reason for Choice

Animal 6.

Reason for Choice

Skeleton Key

The following is a suggested activity aimed to focus your visit to the museum.

Before you visit the Museum

Explain to your class they will use the skeletal material on display at the Natural History Museum to identify the major bones and types of joints in the skeleton.

Please photocopy copies of the Skeleton Key worksheets in this pack for the class as they will not be available at the museum when you arrive.

At the Museum

The students must find the animals listed on the worksheet and complete the exercises during their visit to the museum. The locations of the animals are given on the floorplan belowall are on the first floor of the museum (which is regrettably not wheelchair accessible).

After Your Visit

The worksheets can be collected and discussed in class.

Learning Outcomes

To investigate human and animals' skeletons, looking at the major bones in the body and different types of joints in the skeleton.

To compare and contrast the major bones in different species.

To investigate for evidence of evolution-skeletal adaptation, pentadactyl limb.

Curriculum Links

Junior Cert Science

1B1 Skeletal System – The role of the skeleton in support, movement and protection function of bone.

Leaving Cert Biology

2.5.8 Evolution

3.5.3 Responses in the Human – Musculoskeletal system; appendicular skeleton; classification, location and function of joints.

Skeleton Key (First Floor)

Animals

1 – Rhino

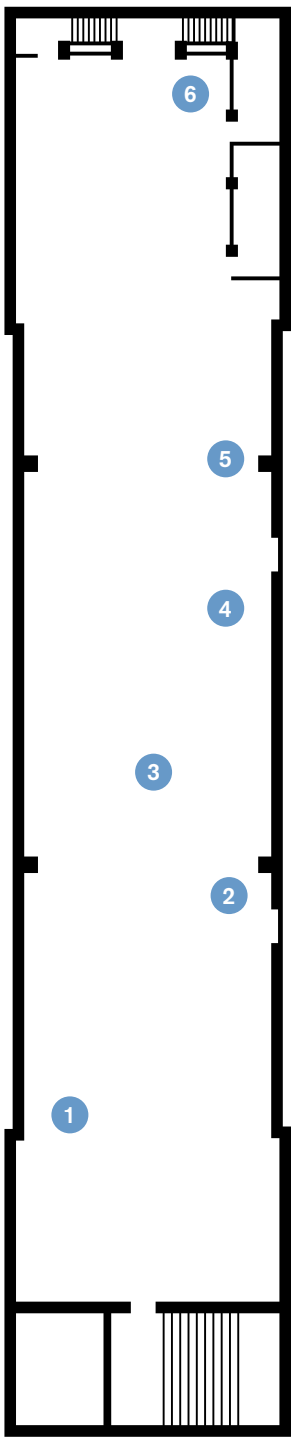
2 – Human and Horse

3 – Whales (suspended from ceiling)

4 – Giraffe

5 – Elephant

6 – Primates

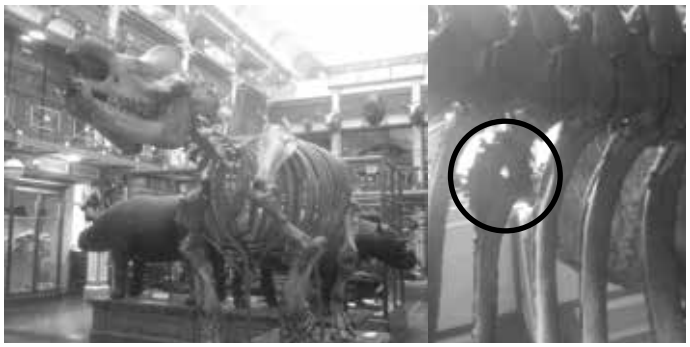


SKELETON KEY A

Skeletons tell us a lot about the animal they belong to – if they are a mammal or reptile, what food they eat, if they run or swim, even what habitat they live in. We are going to look at 6 different displays of mammalian skeleton on the first floor of the museum, and using our knowledge of the skeletal system try to read the information from the skeletons.

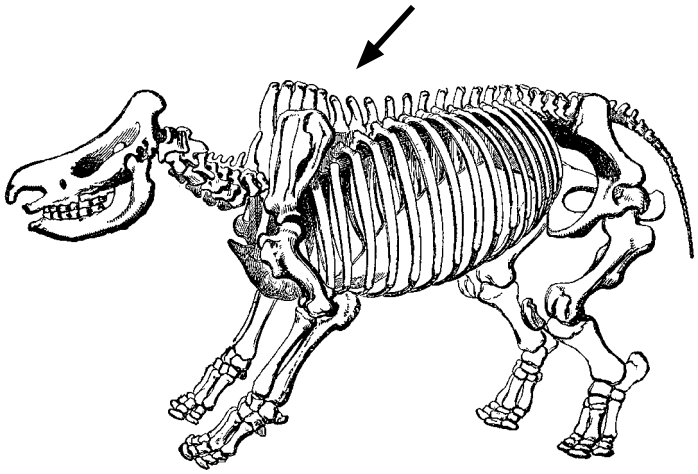
A. Indian Rhino Skeleton

Bone growth & repair



The Museums Indian rhino skeleton has a bullet hole in its 8th left rib, just behind the scapula (shoulder blade).

The animal was shot from above by someone on elephant back, which was a common method of hunting in the 1800's and early 1900's. The growth around the bullet hole tells us that the animal survived the shot, and lived for at least 8 weeks after it was shot.



What two vital organs might the bullet have hit?

What part of the bone is involved with bone growth?

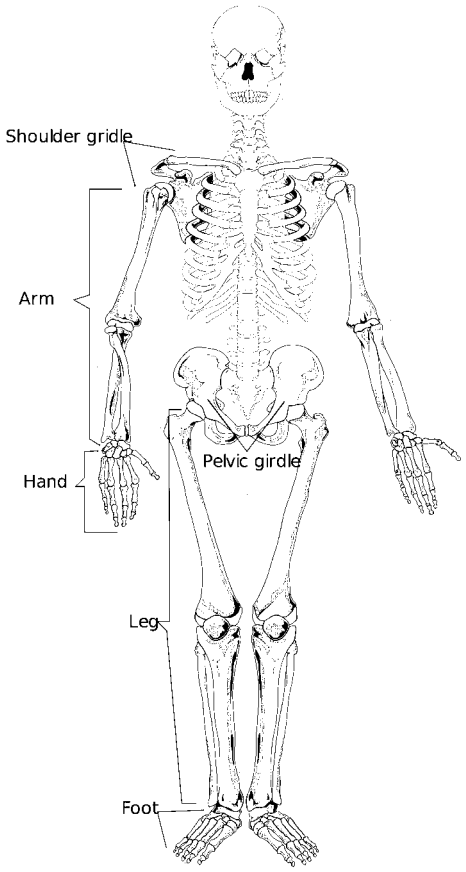
SKELETON KEY B

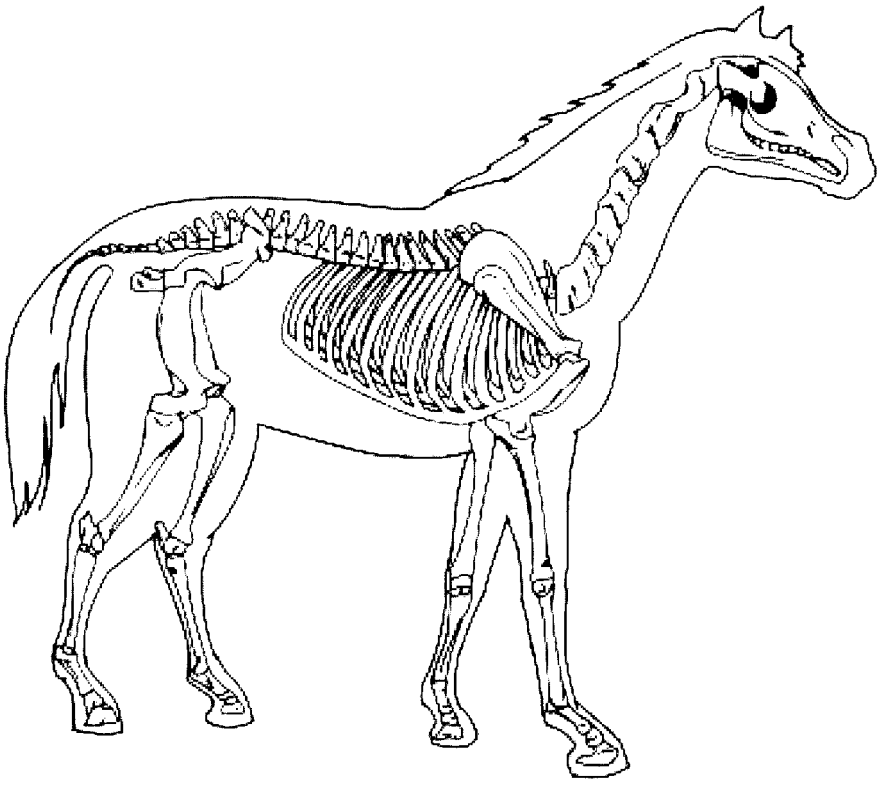
B. Horse & Human Skeleton

Comparative Anatomy, the Appendicular Skeleton

The display you're looking at is the comparative anatomy of the human and the horse – the major bones are all listed, including those belong to the appendicular skeleton (bones associated with the limbs).

On the right diagram the appendicular skeleton is shaded in for the human. Shade in the horse's appendicular skeleton on the diagram below.

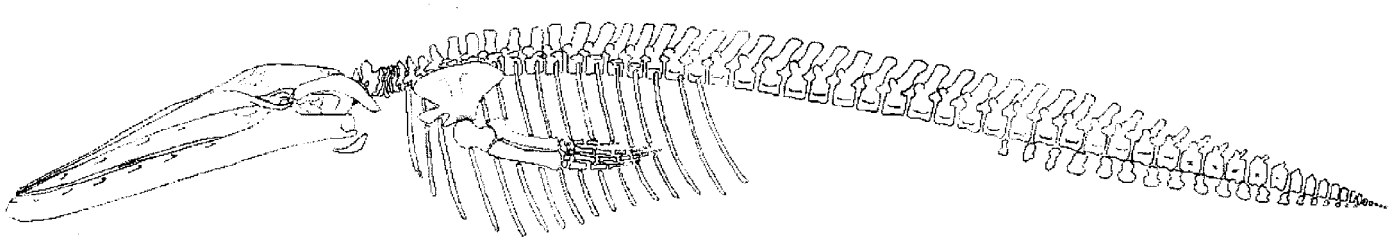




SKELETON KEY C

C. Fin Whale Skeleton

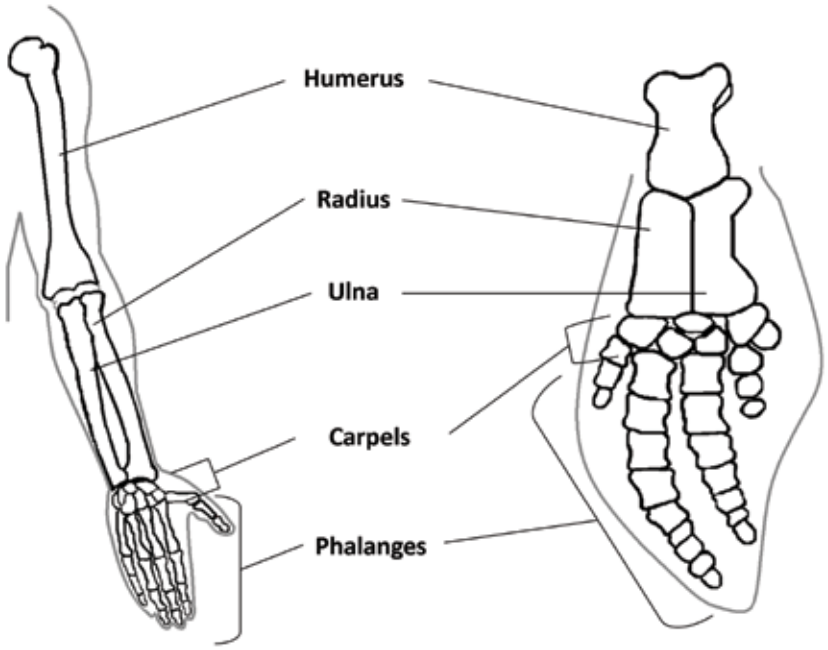
The Pentadactyl Limb



The pentadactyl limb is found in most vertebrates and is evidence of evolution from a common ancestor.

List the bones of the whales pentadactyl limb.

How was the whale's limb adapted for movement in its habitat?



SKELETON KEY D

D. Giraffe

The Axial Skeleton

The giraffe is the tallest land animal and is known for its distinctive long neck, which is an adaptation to its habitat.

The neck vertebrae are the most distinctive part of the giraffe's axial skeleton. what are the other parts of the axial skeleton?

_____

How many neck bones does a giraffe have? (Note it is the same amount as most other mammal groups, including humans)

_____

_____

_____

_____

_____

A giraffe has the same number of bones in its neck as most mammals, yet its neck is much longer than any other mammal.

How does the giraffe's long neck help it adapt to its habitat?

_____

_____

_____

_____

_____

SKELETON KEY E

E. Elephant

Joints in the Skeleton

The three main types of joints in the skeleton are the fused joints, the hinge joints and the ball and socket joints.

Give an example of a fused joint.

_____

Draw it in this box...

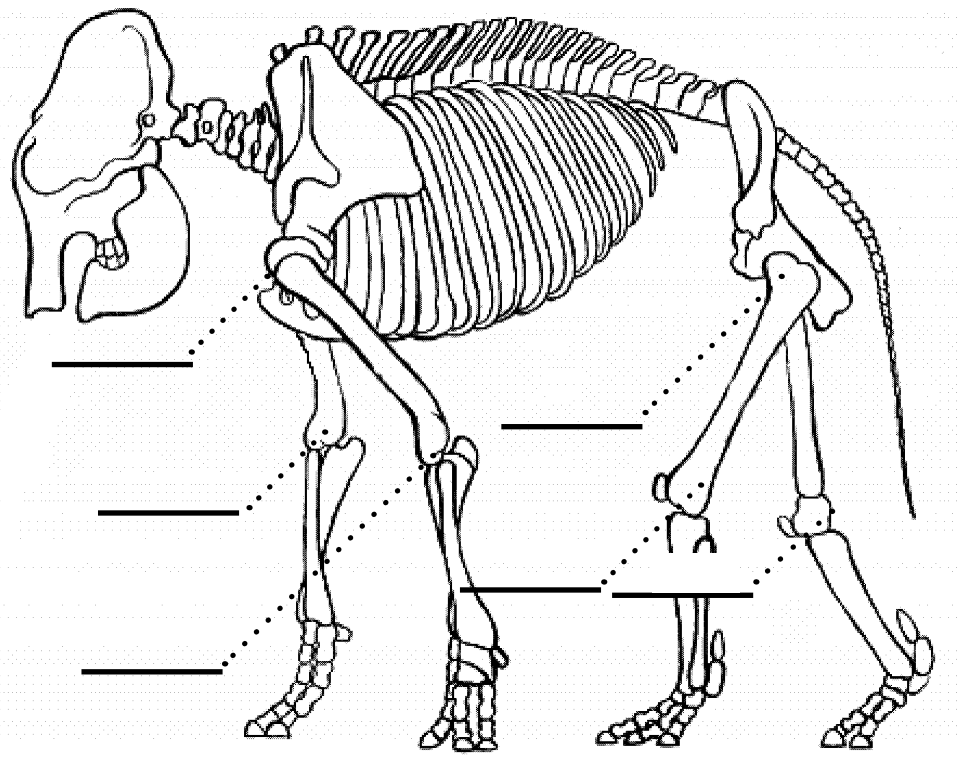
Six joints are maked on the elephant diagram below. Identify each type of joint using one of the following letters:

F – Fused Joint

H – Hinged Joint

B – Ball & Socket Joint

(Note that not all joints may be represented here)



SKELETON KEY F

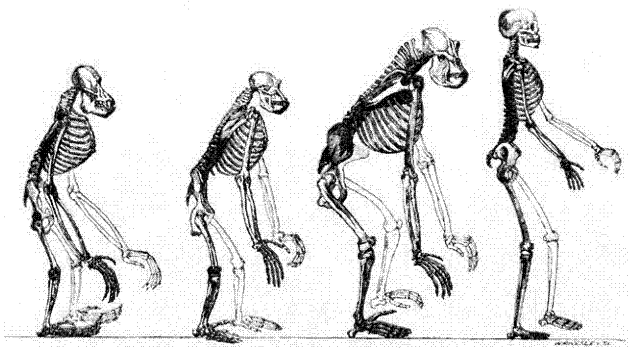
F. Primates

Comparative Anatomy, Evolution and Adaptation

Have a look at the five skeletons on display – Human, Orang-utan, Chimpanzee and two Gorillas (female and male).

The Orang-utan and Chimpanzee have adapted to live in tree tops, as a method of avoiding predation.

What skeletal adaptions to tree climbing can you see in the Orang-utan and Chimpanzee skeletons (Note: look at arm and foot length)



Label the following bones on the diagram of the human on the right:

Humerus

Tibia

Skull

Pelvis

Collarbone

Radius

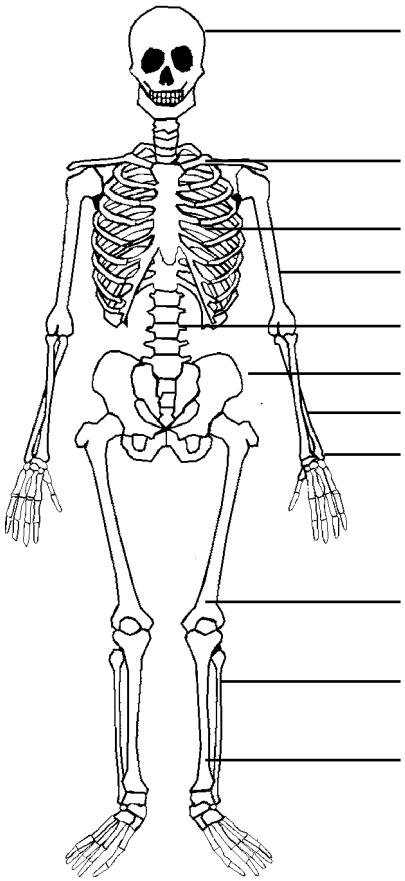
Vertebrae

Ulna

Femur

Rib Cage

Fibula



Useful Websites and Resources

ECO UNESCO Irelands Enviornmental Education & Youth Organisation (affiliated to the World Federation of UNESCO clubs, centres and associations (WFUCA))	www.ecounesco.ie www.ecounesco.ie/resources.aspx	
Geoschol – Geology for Schools in Ireland Joint initiative between Trinity College Dublin and the National Museum of Ireland- Natural History	www.geoschol.com	
The Geological Survey of Ireland Education pages.	www.gsi.ie/education/	
Enviornment Protection Agency Resources for primary schools	www.epa.ie/researchandeducation/education/primary/	
Notice Nature From the Department of the Environment, Heritage and Local Government	www.noticenature.ie	
UN International Year of Biodiversity	www.cbt.int/2010/about/	
The IUCN Red List of Threatened Species Searchable Database	www.iucnredlist.org	
The Golden Eagle Reintroduction Project	www.goldeneagle.ie	
ARKive Multimedia guide to the worlds endangered species.	www.arkive.org	
The Irish Basking Shark Project	www.baskingshark.ie	
UN International Year of Astronomy (2009)	www.astronomy2009.org/resources/	