



## Transition Year Geography Lesson

### **Biodiversity and Wetlands**

Wetlands are a vital component of the water cycle. The complex interaction of their elements - water, soil, plants and animals fulfil many important functions and provide vital ecological services. Wetlands are providers and users of water. Wetlands are providers of water for us and other animals and plants and provide a range of economic and environmental benefits.

Ireland is one of 160 Contracting Parties to the Convention on Wetlands which first convened in Ramsar, Iran in 1971, and is since called the Ramsar Convention. This intergovernmental treaty embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.

### **Key ideas**

1. The importance of protecting and maintaining Ireland's biodiversity.
2. The environmental and economic importance of Irelands rivers, lakes and other wetlands.
3. Understand the role of wetlands in flood relief, landscape, farming and the water cycle

### **ECOEYE CLIPS**

#### **Biodiversity in our Wetlands**

This clip looks at biodiversity in the context of wetlands. It becomes clear that the conservation of wetlands has a hugely positive role to play in water quality and cleansing, farming practices and flood relief. Wetlands such as bogs and fens are a unique resource and we see the benefits of wetlands for the economy and the work being done to protect them from the impacts of human activity like farming. **Watch the clips and complete the comprehension exercises.**





## Comprehension

Look at the video once. Look, listen, concentrate and enjoy. Play the clip again (read through the question sheet and make sure you understand the questions and terms used before you start). Stop, start and rewind as you need to answer the questions below.

1. What are the two main types of Wetlands mentioned in the video?

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2. Why are the wetlands important to bird life?

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3. Explain the term over-enrichment:

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4. What are the two main sources of nutrients?

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5. Why are these Fens so important and valuable?

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6. What were the findings of the Biochange study?

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7. What is a Turlough?

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8. Why is the pellet feed system more environmentally friendly than the round feeders?

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9. Cleaning is one function of the Wexford wetland. Explain:

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10. The four benefits wetlands provide are:

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- \_\_\_\_\_
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11. What are the consequences of the loss of wetlands on towns and the local area?

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12. Why are farmers draining their wetlands?

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13. Name three ways we encourage farmers to preserve the wetlands on their farms?

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## Extension activities

- Using what you have learned, **design a poster** on the benefits and importance of maintaining our wetlands.
- **Construct a powerpoint** presentation on the impact of flooding on urban areas in recent years e.g. Google images flooding Cork will give plenty of material.
- A local developer has applied to your County Council for planning permission to drain a local wetland to build a new housing estate. **Write a letter** to your local council objecting to the planning application and explain in detail why the wetlands should be preserved and protected. The quote below will help:

*'The economic value of a wetland is an estimate of the importance, or worth, of one or more of its services to society. Some of these services, or functions include protecting and improving water quality, supporting the fishing industry, storing floodwaters and providing opportunities for education and recreation..'*

- **Create a newspaper front page** (using Microsoft word or publisher) with the following heading:  
*Rivers, lakes and wetlands are vitally important to the Irish economy.*

Start by investigating press coverage about harvesting Peat from bogs (see EPA Wetlands press file).

The points below will help you understand the benefits of wetlands to the economy:

- Transport of goods and people
- Recreation e.g. tourism on the Shannon, angling, windsurfing
- Clean and safe drinking water
- Water for agriculture and industry e.g. Intel, brewing, food processing etc.
- Coastal waters – fishing, aquaculture, swimming, (seven beaches closed in Cork in 2012 – because of e-coli contamination).





- Flood protection – climate change (an acre of wetland can store 1-1.5 million gallons of floodwater). The Great Flood of 1993 in the upper Mississippi River Basin caused billions of dollars in property damage and resulted in 38 deaths. Historically, 20 million acres of wetlands in this area had been drained or filled, mostly for agricultural purposes. If the wetlands had been preserved rather than drained, much property damage and crop loss could have been avoided.
- Maintaining biodiversity – environmental education.
- If water is polluted, it is possible to clean up rivers and lakes to some degree. Rivers such as the Thames or Liffey are cleaner than they were in the past. However, restoration takes time and costs money. The main causes of water pollution in Ireland are agricultural and sewage.
- Peatlands are of major benefit in off-setting global warming. Although they do release methane, a greenhouse gas, they also act as carbon store, without which huge quantities of CO<sub>2</sub> would be released into the atmosphere. If peat is burned as a fuel this carbon is released.

**Use these links to find out more**

- [www.irishwetlands.ie](http://www.irishwetlands.ie)
- [www.epa.ie](http://www.epa.ie)
- [www.conservation.ie/Habitatcons](http://www.conservation.ie/Habitatcons)
- [www.npws.ie](http://www.npws.ie)
- <http://www.npws.ie/publications/leaflets/>
- [www.ipcc.ie](http://www.ipcc.ie)
- <http://www.heritagecouncil.ie/wildlife/publications/>
- <http://www.antisce.ie/naturaleenvironment/NaturesWayBooklets.aspx>
- <http://gis.epa.ie/Envision/w>
- <http://water.epa.gov/type/wetlands/index.cfm>
- <http://www.fisheriesireland.ie/>





## Map Work

- Using <http://gis.epa.ie/Envision/#> (the help function will tell you how to use the maps and look for data) examine a wetland (local if possible) further detailing
  - Water quality
  - Land use
  - Comparison with other neighbouring areas
  - Can you draw any conclusions about the wetlands in areas investigated e.g. farming activity, tourism activity.

Working in pairs:

- Log on to <https://maps.scoilnet.ie>
- Open the OSI 1:50,000 map and aerial photo
- Identify areas of the Burren showing distinctive features of Karst landscape e.g.
  - Swallow holes
  - Turloughs
  - Drainage patterns
- Write down reasons for distribution of settlement in these areas.
- Identify evidence of ancient settlement giving six figure grid references.
- Identify and explain transport patterns and how it is affected by Karst landscape
- Identify areas of existing or potential tourist development giving grid references. Give reasons for this.

## Investigate wetlands

Investigate Irish Ramsar Committee [www.irishwetlands.ie](http://www.irishwetlands.ie)

- Identify it's main aims for large and small wetlands
- Is it possible to match any wetlands listed with OS maps and investigate further?
- Research on the internet to look at the Ramsar Convention on wetlands. Using the Ramsar definition of wetlands, compile a photomontage of the range of wetland types found in Ireland. Do you know the location of any of these wetlands? Check your local County Council website for information, plans, planning applications that might impact on these wetlands.





## Group Work/Field Trips

This could link with an ecological field study as part of Science. Working in groups and reporting in groups or individually:

### *Introduction*

- Identify a wetland for investigation
- Devise a clear statement of the aims and objectives of the field study
- Identify the types of information needed i.e. primary sources, secondary sources, interviews, questionnaires, IT sources/reports

### *Planning and preparation*

- Select methods for collecting and gathering data
- Design recording sheets
- Identify the location for the investigation

### *Collecting Data*

- Using/recording of observations in the field
- Using questionnaires/surveys
- Using primary/secondary sources/maps/interviews
- Discussing problems encountered

### *Reporting*

- Organising information gathered
- Using illustrations, graph maps, tables
- Presentation of results







*Conclusions and evaluation of reports*

- Analysis of results
- Comparison of results with aims and objectives stated at the start
- Suggestions for improvement
- Conclusions – identify skills you have learned

*Presentation*

- Students collate individual fieldtrip report in A4 format
- Students in groups present findings on A3 sheets for display. Each group represent different aspects of the overall field trip.

For more on wetlands related field work see Unit 3, Clean Water, Transition Year Module at <http://www.epa.ie/researchandeducation/education/educ/resources/ty/cleanwater/>

**BE AWARE OF SAFETY ISSUES – STUDENTS SHOULD BE FULLY BRIEFED ON SAFE PRACTICE BEFORE UNDERTAKING FIELDWORK NEAR WATER!**

