

# GEOSCIENCE FOR LEAVING CERTIFICATE TEACHERS

Continuing Professional Development Course 2024



## A STUDY OF MOUDS BOG

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**iCRAG**

RESEARCH IRELAND CENTRE  
FOR APPLIED GEOSCIENCES



**Geological Survey**

Suirbhéireacht Gheolaíochta  
Ireland | Éireann

*An Roinn Comhshaoil, Aeráide agus Cumarsáide*  
Department of the Environment, Climate and Communications



# Geoscience for Leaving Certificate Teachers CPD programme

## About the Geoscience for Leaving Certificate Teachers CPD programme

Geoscience is vital for our sustainable future, and geography is the key gateway to geoscience for most students. Additionally, the new Climate Action and Sustainable Development (CASD) subject provides a brilliant opportunity to engage students with the geosciences through a new lens. The Geoscience for Teachers CPD programme has been developed by iCRAG and Geological Survey Ireland to create an opportunity for teachers of geography and CASD, and geoscience professionals to come together to increase the awareness of geoscience within the Leaving Certificate curriculum.

During the CPD course, teachers and geoscience professionals from both research and industry are paired together to co-create curriculum facing resources that are freely available for use. Over the course of six evening sessions, teachers learn more about the cutting-edge geoscience being undertaken by their partnered geoscientists, before working together to develop a curriculum-facing resource using their interests, teaching expertise and the knowledge of the geoscientist. In 2024, the resources produced have included lesson plans and module plans and the accompanying teacher notes and slides/activities for each resource.

The resources link the most recent advances in geoscience to the curriculum in a way that is both understandable and relevant. The resources are freely available to be used for classes anywhere in the world. We hope that you and your students enjoy using them.

## This Resource

This resource has been developed by teacher Sandra Kennedy alongside Fergus McAuliffe, Rebecca Rivera and Amanda Perera from iCRAG. It is an in-depth case study of Mouds Bog, Newbridge, Kildare and is perfect for a teacher interested in bringing a little lab work into their lessons. Included in this resource pack is a full lesson plan and associated teacher notes, example worksheets and a PowerPoint of slides. It is suitable for TY students as well as Leaving Certificate students.

Sincerely,



Elspeth Sinclair, Fergus McAuliffe, Siobhán Power  
Programme Managers – Geoscience for Leaving Certificate Teachers

**Geological Survey Ireland**, a division of the Department of Environment, Climate and Communications, has been mapping Ireland since 1845. They continue to map the Irish land and marine territories, as well as mineral and groundwater resources. They have responsibility for actions in the current Climate Action Plan including monitoring coastal change, the Just Transition in the midland counties, and providing data for de-risking offshore renewable energy. Irish geoscience research, particularly as it contributes to the development of government policy, is an important part of their work and they fund and co-fund many research projects, including some of the iCrag research work. Their data and maps are freely available to all at [www.gsi.ie](http://www.gsi.ie).

**iCrag** is the Research Ireland Centre for Applied Geosciences hosted by University College Dublin. We are a team of researchers creating solutions for a sustainable society.

We develop innovative science and technologies to better understand the Earth's past, present, and future and how people are connected to it.

We drive research in areas that are critical to society and the economy, including:

- Sustainable discovery of energy resources and raw materials required for decarbonisation.
- Securing and protecting groundwater and marine resources.
- Protecting society from Earth's hazards such as flooding and landslides.

The iCrag Research Ireland Centre for Applied Geosciences hosted by UCD, comprises 150 researchers across ten universities and institutions. iCrag is funded by Research Ireland, Geological Survey Ireland and industry partners.

Further information is available at: [www.icrag-centre.org](http://www.icrag-centre.org)

*Disclaimer: Every effort has been made to ensure that the information in this book is accurate. Data, links, and maps are accurate as of January 2025. The publishers cannot accept responsibility for any consequences arising from the use of this resource. The publishers are in no way liable or responsible for any injury or loss to any person using this resource.*



# Lesson plan: A Study of Mouds Bog

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# Lesson plan:

## Links to Curriculum

- This 2/3 lesson plan (2 Hrs) is designed for the new LC Curriculum Action and Sustainable Development course.
- The lesson can also be rolled out to TY Geography.

## Learning Outcomes

*From the Leaving Certificate Curriculum Action and Sustainable Development Curriculum:*

### **Strand 1: LO 6 and 7 and 10**

6. Illustrate how biodiversity loss is occurring due to a number of main drivers
7. Demonstrate, using secondary data, the evidence for human-induced global warming
10. Investigate the impact of an environmental factor on a chosen local ecosystem, gather and use primary data to support conclusion

### **Strand 2: People, Power, Place LO 5 and 7**

5. Investigate the effectiveness of a climate or sustainability action in a school-based or local setting
7. Evaluate the implementation of a national policy decision in Ireland that has an impact on the environment, taking into account the influence of economic, political, cultural, and ethical factors on the policy decision

### **Strand 3: Global connections LO 8 and 9**

8. Discuss how different solutions can decarbonise economies, including
  - renewable energy
  - water efficiency
  - carbon sequestration
9. Explore the role of nature-based approaches in decarbonising economies

## Keywords

*Students will meet these words in the articles and videos*

Carbon Source, Carbon sink, Carbon Sequestration, Organic Material, Biomass, Degradation, Restoration, Sphagnum Moss

## Linkage and Integration

- Geography
- History
- Biology
- Ag Science
- Technology

# Teacher Notes

## *Learning Activities*

Lesson 1 is based around 4 activities.

1. Study of maps of local bogland. 1810 maps from [Maps of Irish Bogs – L Brown Collection](#) and recent maps from NPWS study.
2. Information slides on structure of bog
3. Study of surface flora. Items to be picked or photographed in advance by the teacher. Students to research from IPCC.ie or preprinted sheet (available on IPCC.ie). Access to IT needed.
4. Students investigate some samples of turf. (Colleague has plot for cutting turf. They will take samples from layers in their turf bank for students. Students will need access to magnifiers or microscopes and be able to make their own microscope slides or put small samples in a petri-dish.

Lesson 2 is a research and discussion class on whether bogs should be re-wet or not. Students will be expected to research articles for and against the argument. The prevailing attitude is that they should be rewet, but I feel it is important that students can recognise and acknowledge that there are always 2 sides to an argument and appreciate that problems can't be solved without engagement with all issues. Students can do this as an assessment activity or in class with access to IT.

## *Assessment*

Students will record on a worksheet the results of each task.

Sample worksheet below.

These lessons are designed to showcase some of the skills and topics that will be met while studying the new Climate Action and Sustainable Development Curriculum. Further lessons can be designed around the NPWS policy document for re-wetting bogs to study national and international policy on this topic. It also provides information on the challenges that need to be addressed. Practical lessons of an ecology study of the bog/ visit from local activist or visit to local redeveloped site such as Abbeyleix Bog Project/Lullymore Heritage Centre or Lough Boora can also be arranged. Students can then see the benefits to the community from redeveloped bogs.

# Sample Worksheets

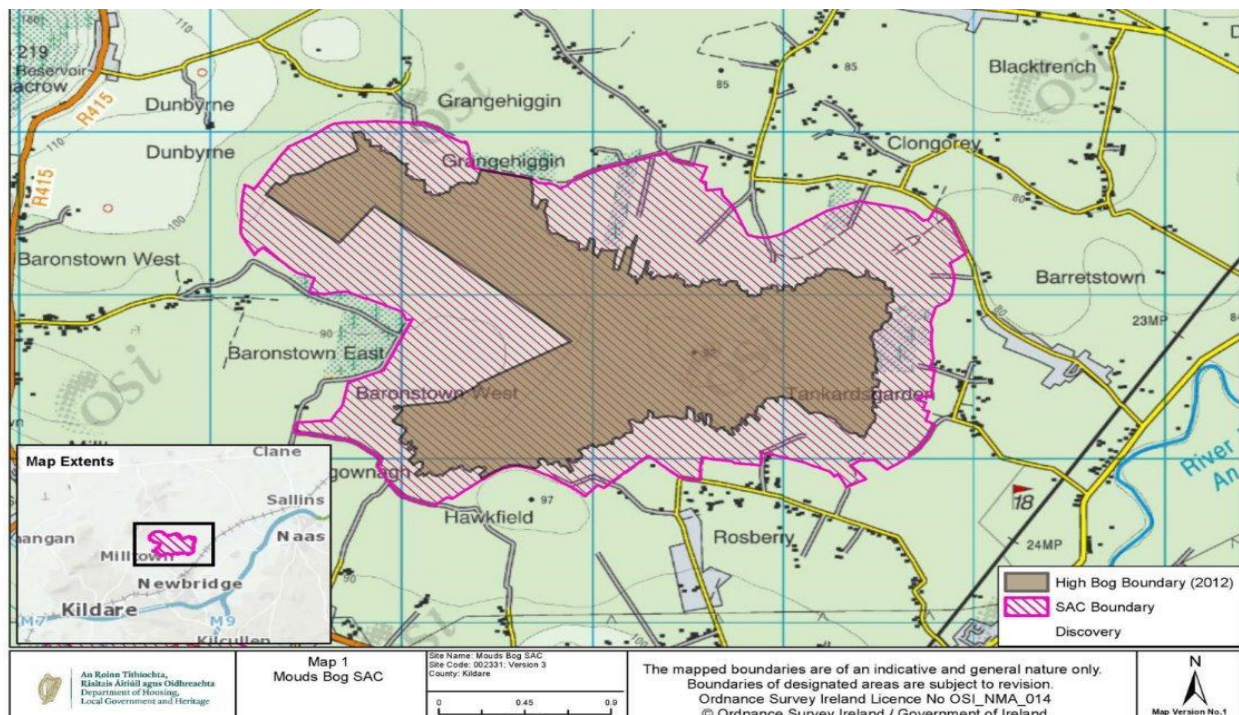
# TY Geography A Study of Moud's Bog Assessment worksheet

Activity 1: Study the Maps below. Record the following: 1: Do you recognise anywhere on the maps? 2. Using the River Liffey as your guide do you think the 2 maps cover the same size area of bog?

Map 1: 1810 Bog Commission Map



Map 2: 2020 NPWS Map (National Parks and Wildlife Service)



Record your observations here:

1.

2.

Activity 2: Record your observations about the living layer. 1. How many plants can you identify from the sample. Draw them. 2. Record your research on the importance of sphagnum moss in the fight against climate change.

Name.....

Name.....

Name.....

Research:

Activity 3: Record your observations on the sample of turf. 1. The length and age of the sample. 2. The texture of sample. 3. The moisture of the sample. 4. Draw what you see under the microscope.

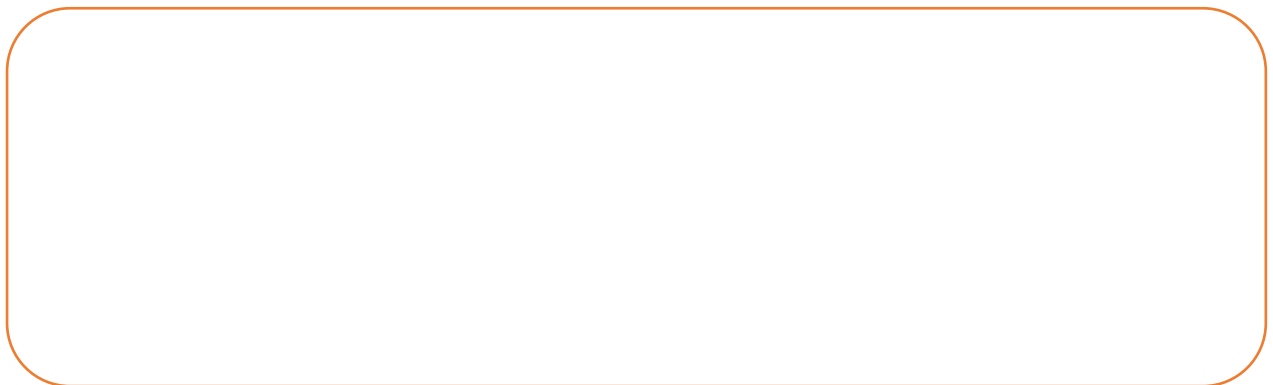
1. Length of Sample: \_\_\_\_\_ in mm

2. Age of Sample: \_\_\_\_\_

3. Texture: \_\_\_\_\_  
\_\_\_\_\_

4. Moisture: \_\_\_\_\_  
\_\_\_\_\_

5. Draw what you see under the microscope



6. Having watched the video/read the article what do you think you are seeing under the microscope and how can this help in the fight against climate change.





Activity 4: Research Activity. Should we rewet the bogs?

Article 1: For the argument that we should rewet the bogs

Title: \_\_\_\_\_

Source: \_\_\_\_\_

Why is this a reliable source?

\_\_\_\_\_

Summarise the argument made:

Article 2: For the argument that we should rewet the bogs

Title: \_\_\_\_\_

Source: \_\_\_\_\_

Why is this a reliable source?

\_\_\_\_\_

Summarise the argument made:

Article 1: Against the argument that we should rewet the bogs

Title: \_\_\_\_\_

Source: \_\_\_\_\_

Why is this a reliable source?

\_\_\_\_\_

Summarise the argument made:

Article 2: Against the argument that we should rewet the bogs

Title: \_\_\_\_\_

Source: \_\_\_\_\_

Why is this a reliable source?

\_\_\_\_\_

Summarise the argument made:

Based on what you've learned, give your own opinion and justify why.

