


## BIODIVERSITY AND ITS CONSERVATION

**TIME** [2 Hr and 30 minutes]

### OVERVIEW

**Biodiversity refers to the wide variety of flora and fauna found in a region.** It operates at three level genetic, species and ecological diversity. According to the scientific estimate made by Robert May, there are about 7 million species of flora and fauna.

**India has only 2.4%** of world's land area and 8.1% global species diversity contributed by 45,000 plants and 90,000 different animal species. Although Sikkim comprises only 0.2% of the land area of India, it contains an astounding 26% of the nation's biodiversity (including 4,500 species of flowering plants, 550 species of birds and more than 600 species of butterflies)

 visualize the biodiversity the voyager stories and project have been added. It not only displays the ecstatic beauty of the region, species richness but will also develop a sense of their conservation.

### BIOLOGY/ BIODIVERSITY AND ITS CONSERVATION



#### Learning Objectives

Students will be able to-

1. Describe biological diversity (biodiversity), including species diversity (richness), genetic diversity, and ecosystem diversity.
2. Describe some major empirical generalizations related to biodiversity, including the species-area effect, the latitudinal gradient in species richness, the relationship between habitat diversity (heterogeneity) and species richness, and the diversity-stability relationship.
3. Understand that higher biodiversity, per se, is not necessarily better from a conservation perspective.
4. Describe the processes that generate and maintain biodiversity.
5. General knowledge of past mass extinctions and the current extinction crisis.
8. Explain some utilitarian and non-utilitarian reasons for conserving biodiversity

### AGE LEVEL Grade 6- 12 (10-16 years)



#### Inquiry

Learners will be shown a video from CBD for biodiversity conservation

<https://www.youtube.com/watch?v=2uRTHoLpoLE&feature=youtu.be>

Students will then be divided into groups and exposed to questions like-

What is biodiversity and how humans are impacting it?

What is the importance of biodiversity in our lives?

What can we do to reduce that?

Explain why places with high biodiversity are more stable than places with low biodiversity?

**Materials Needed**

1. Internet connection for learner
2. Google Earth access
3. Textbook NCERT Grade 12
4. Notebook and stationary items to make notes.

**Lesson Summary**

- Engage:
- Explore:
- Explain:
- Revise:
- Apply:



## Sustainable Development Goals



## Culminating Task/Assessment

- Students will be assessed through a quiz competition held for the class on biodiversity.
- Students will have to make presentations in team explaining the endemic flora and fauna of their native place.



## Textbook Chapter

This topic is covered in NCERT Grade 12 Unit- X Chapter 15 Biodiversity and its conservation. It also covers the chapter-1 The living world Biodiversity from Grade 11 Biology.

Concept of Biodiversity is also found in the NCERT Grade 10 Management of natural resources and NCERT Grade 9 Diversity of living organisms

## Engage (40minutes)

Learners will be explained the concept of Biodiversity, species loss its impact on environment.

### Task-1

Then a game will be introduced to students, which is like musical chair in which images of species will be pasted on the chairs. Students will have to play the same game of musical chair.

Rules of game are-

- The images of animals are set up on the chairs (one drawing per student).
- The music is turned on and the students walk around the drawings.
- The teacher sneaks in and takes one of the drawings(with chair) out—representing the loss of a species.
- When the music stops the students sit on the drawings.
- The student left standing is taken out of the game.
- The teacher shows the picture of the 'extinct species' and asks the students "what could have made this species go extinct?"
- Students have 30 seconds to consult with the student sitting next to them. The teacher asks two or three groups to report their conclusions.
- The students all stand again and the music is started again. Another drawing is removed.
- This procedure is continued for several rounds.
- After several rounds have students compare the remaining species to the food webs on the board. Ask if and how any of the remaining species would be affected by the loss of removed species.
- Repeat previous steps until only one student remains.
- Ask what would happen to the species if it were the only species remaining.

The game ends with a discussion about the species extinction, causes of biodiversity loss (e.g. habitat

destruction to construct new homes and businesses; habitat changes due to climate change) and a brainstorming session on what students can do to reduce and eliminate biodiversity loss.

#### Task-2

Students will be asked to fill the KWL Chart explaining what they know, what they want to know and what they have learnt.

#### Explore (80 minutes)

- Learners will be exposed to a Google Earth voyager story of depicting Biodiversity on land and under water  
<https://earth.google.com/web/@3.513734,97.43233,2537a,750613d,35y,0h,0t,0r/data=CjESLxIgN2M3MTFINWM1MzBmMTFIODg2ZjQ2ZDMYyZjZhNGVIMzEiC3ZveV9wb2ludF8x>  
See climate change impacts <https://earth.google.com/web/@-50.9873942,-73.19819512,161.83500521a,2644.16728645d,35y,-0.99999994h,0.94992643t,0r/data=CjESLxIgZDJkMzVhNTk2ZTQ3MTFIODg2ZjQ2ZDMYyZjZhNGVIMzEiC3ZveV9wb2ludF8x>  
Exploring Earth's ecosystem <https://earth.google.com/web/@44.54007092,-119.62852975,851.44753474a,3070.08330238d,35y,143.02759115h,75.27685274t,0r/data=Cj0SOxIgODc1NjY2Nzg4MWJmMTFINzk3MzI5ZGI4OGI2N2Y1NTYiF2VmZWVhX2hobWlfZWVvc3lzdGVtc182>  
The hot spot cocos island- <https://earth.google.com/web/@5.525395,-87.064033,296.29425282a,18833d,35y,0h,0t,0r/data=CjESLxIgNWNjMmZiODdmYmM3MTFIN2EzNzI2ZDE0YTg0MlQ2YjAiC3ZveV9wb2ludF8x>
- Women taking lead in conservation to encourage students to do the same through the Google Earth voyager story  
<https://earth.google.com/web/@6.09876815,10.32535719,2161a,29054d,35y,72h,61t,0r/data=CjESLxIgZjUwYTYxY2YyMlQ2YjAiC3ZveV9wb2ludF8x>
- Google Earth Project on Endemic Flora and Fauna of Sikkim  
<https://earth.google.com/earth/rpc/cc/drive?state=%7B%22ids%22%3A%5B%221Tb-P5QCRICikCyHUjGTikeCwQRIT-8Md%22%5D%2C%22action%22%3A%22open%22%2C%22userId%22%3A%22109500838136735827948%22%7D&usp=sharing>
- Task-3 This will enable the students to make exploration about the endemic flora and fauna of their native place and find any endangered species existing there. Learners will also note the conservation steps taken to protect them in the doc-  
[https://docs.google.com/document/d/1TK4IyzB-PmAGS-NW4JTS1Q\\_ad5wh6\\_AJ10OGdgPSLiw/edit](https://docs.google.com/document/d/1TK4IyzB-PmAGS-NW4JTS1Q_ad5wh6_AJ10OGdgPSLiw/edit)
- Here learners will experience and visually observe rich flora and fauna across the globe, impact on them by humans, and the effect on climate change.
- This will help students to develop love for the diversity existing in nature, a charm of seeing and of course to conserve them

#### Explain (50 minutes)

- Each team will present their data/ presentation of native flora and fauna
- They will share the images through PPT or doc file on screen and make others aware about their native plants and animals, their importance and measures taken to protect them, rubrics have been shared in the evaluate session.

#### Revise (30 minutes)

The whole class can be made to do an interactive quiz on the same lesson plan  
<https://quizizz.com/join/quiz/5e2a157e4763aa001bba2f84/start?studentShare=true>

**Apply (40 minutes)**

1. Students will comment on the causes of Biodiversity loss and the impact on humans.
2. They will make a red data book record to enlist the endangered species and the NGOs working for their conservation
3. They will also study the appreciation and awards given by Government for wildlife conservation like Amrita Devi Bishnoi awards.

## Evaluate: Exemplar Response and/or Rubric

- Google earth quiz on animals will be done in the class <https://earth.google.com/web/@3.103789,31.730203,-2921a,12870743d,35y,0h,0t,0r/data=CisSKRIgNGRjMDhkYzcwM2RhMTFlOWFjNGI1NzM5YjYxZGQ0NDEiBXF1ZS0x>
- Quiz with Multiple Choice Questions will be taken which will score the students progress on the topic.
- Students can begin the play of quiz by clicking at the following link-  
<https://quizizz.com/join/quiz/5beb3843292354001b3ceb1c/start?studentShare=true>
- Also the presentation by each team will be evaluated on the basis of following rubrics
 

1.	Content	5 marks
2.	Clarity of concepts	5 marks
3.	Presentation skills	5 marks
4.	Ability of answers questions by other teams	5 marks

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## Additional Resources

- <http://www.sikkimforest.gov.in/Reports%20and%20Publications/Biodiversity%20-%20All%20creatures%20great%20and%20small.pdf>
  - <https://www.nationalgeographic.org/encyclopedia/biodiversity/>
- You tube- [https://www.youtube.com/watch?v=GK\\_vRtHJZu4](https://www.youtube.com/watch?v=GK_vRtHJZu4)  
<https://www.youtube.com/watch?v=-idI1dkaxzM>  
<https://www.youtube.com/watch?v=UoQmo0YICHI>

Options for Differentiation	
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- Details of the biodiversity conservation NGOs and research labs will be provided for learners willing to work ahead in this context.

Credits

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