

# A CHANGING CLIMATE

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## SUBJECT

**Cape Rockjumper, Bird of the Year 2021.**

## AIM

To learn about climate change in South Africa and how species such as the Cape Rockjumper may be affected by it.

## LESSON OBJECTIVES

- Understand the climatic changes taking place in South Africa.
- Learn about the effects a warming climate may have on species such as the Cape Rockjumper.
- Know some of the causes and solutions of climate change.

## RESOURCES REQUIRED

- Fact file 3 (climate change)
- Changing climate infographic
- Question Sheet 1 (1 per student) (Appendix A in this lesson plan)
- Answer Sheet 1 (Appendix B in this lesson plan)
- Debate sheets (Appendix C in this lesson plan)

## INTRODUCTION

Climate change is caused by human activities that release large amounts of gasses, such as carbon dioxide and methane, into the Earth's atmosphere. This causes a change in weather patterns generally resulting in more extreme weather events and a global trend of increasing temperatures. In South Africa, temperatures are predicted to rise at double the global average and periods of drought and flooding are to be expected. The fynbos environment is South Africa's most endangered biome. As it relies on fire to ensure its highly biodiverse plant species, these changes in weather patterns would change fire patterns and further threaten the environment. As well as facing the threat of habitat changes/loss, some animal species that inhabit the Fynbos Biome have been highlighted for their direct vulnerability to cope with temperature increases. The Cape Rockjumper is an example of a species with specific vulnerabilities to a changing climate that must be understood in order to have the best chance of protecting them.

### KEY WORDS

<b>CLIMATE</b>	The weather conditions in an area in general/ over a long period.
<b>BIOME</b>	A large, naturally occurring community of plants and animals which occupy a distinct region, and are often defined by the specific climate and dominant vegetation.

**LESSON PLAN****(Approx. 60 minutes)**

<b>Activity</b>	<b>Description</b>	<b>Estimated Time (minutes)</b>
<b>1. Lesson Introduction</b>	Introduce what climate change means and how it is predicted to affect South Africa.	10
	Highlight the threat climate change poses on the fynbos environment and Cape Rockjumpers. For example: <ul style="list-style-type: none"><li>- Changing fire patterns.</li><li>- Habitat and biodiversity loss.</li><li>- Predation may increase.</li><li>- Birds are required to spend more time seeking shade to conserve water.</li></ul>	
<b>2. Worksheets</b>	Get students to read the climate change fact file and infographic, then answer the questions.	15
<b>3. Evaluation</b>	Read the answer sheet aloud and get them to peer mark each other - writing correct answers where necessary.	5
<b>4. Climate Debate</b>	Split the class into teams and allocate each group a stakeholder using the debate sheet. Allow time for each group to form their main debate points.	10
	Host the debate.	20

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**1. What are the main climate predications for South Africa? (2 points)**

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**2. Why is fire an important factor in the Fynbos environment? (1 point)**

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**3. Give two examples of why Cape Rockjumpers may be threatened by a changing climate. (2 points)**

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**4. Why might predation levels for Cape Rockjumpers increase with a warming climate? (2 points)**

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**5. Why is it important to understand how individual species might be affected by climate change? (3 points)**

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**6. What effect might more variable rainfall have on the environment in South Africa (2 points)**

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**7. Why is it useful to have climate predictions? (2 points)**

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**8. Give an example of something you can do in your own life to help reduce the impact of climate change. (1 point)**

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**9. Give an example of something you can do in your community to help reduce the impact of climate change. (1point)**

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**/16 points**

# A CHANGING CLIMATE

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- 1. What are the main climate predications for South Africa? (2 points)**
  - Increased temperature
  - More variation in rainfall patterns, with generally drier conditions.
- 2. Why is fire an important factor in the Fynbos environment? (1 point)**
  - The fynbos environment requires regular burning to maintain its high/unique plant diversity.
- 3. Give two examples of why Cape Rockjumpers may be threatened by a changing climate. (2 points)**
  - Predation may increase with warmer temperatures.
  - Water requirements may rise as water loss increases due to rising temperatures and increased drought periods.
  - Birds may have to spend more time seeking shade, thus allowing less time to forage.
  - Their environment may change/ habitat is threatened.
- 4. Why might predation levels for Cape Rockjumpers increase with a warming climate? (2 points)**
  - Snakes are the main predators of Cape Rockjumper eggs and chicks. They are ectotherms and therefore rely on external heat to regulate their temperature. In warmer conditions in the fynbos, they may become more active, and therefore have more opportunities to hunt.
- 5. Why is it important to understand how individual species might be affected by climate change? (3 points)**
  - Different species may **cope differently** with a changing climate.
  - Understanding the biology of specific species can allow you to **prioritise** which species may be more vulnerable to the predicted changes.
  - It allows you to have the information needed to **plan** targeted management strategies and correctly **allocate funds and effort**.
- 6. What effect might more variable rainfall have on the environment in South Africa (2 points)**
  - Increased flooding events.
  - Increased drought events.
- 7. Why is it useful to have climate predictions? (2 points)**
  - It allows you time to assess the effects changes may have on the environment and species.
  - Allows for early planning and prevention methods.
- 8. Give an example of something you can do in your own life to help reduce the impact of climate change. (1 point)**
  - Allow any reasonable response (e.g., reduce carbon emissions, change to low energy light bulbs, eat less meat).

**9. Give an example of something you can do in your community to help reduce the impact of climate change. (1point)**

- Allow any reasonable response (e.g., support policies to lower carbon emissions, share your knowledge with the community, lobby for government to focus efforts on climate issues).

# CLIMATE CHANGE POLICY DEBATE

## **Scenario:**

The local government (role played by the teacher) is about to create legislation to tackle climate change in South Africa. You were all called to the meeting to input your views on why the fynbos should be a priority and suggest ideas on how it might be protected from the impacts of climate change.

## **Teacher Instructions:**

- Split the class into equal groups and allocate the stakeholder groups.
- Ask each group to state their main conservation priority and suggest ways in which it might be achieved.
- Allow 10 minutes to plan and then host the meeting.
- Allow students to debate with each other the best methods for reducing climate change and what the focus should be to benefit the largest number of stakeholder groups and the environment.
- Try to formulate a page with a policy suggestion agreed upon by the group, highlight the compromise required in order to cater for different stakeholders.



## **CAPE ROCKJUMPER SCIENTISTS**

Priority Statement:

Policy Suggestions:

## **FYNBOS CONSERVATION ORGANISATION**

Priority Statement:

Policy Suggestions:

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## **LOCAL RESIDENTS**

Priority Statement:

Policy Suggestions:

## **LAND USERS (FARMERS AND DEVELOPERS)**

Priority Statement:

Policy Suggestions:

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## **CLIMATE CHANGE SCIENTISTS**

Priority Statement:

Policy Suggestions: