

Coastal Biodiversity of South Africa Pt. 3.

Summary: Using the internet, posters, video clips, pictures, and data gathered by others students will explore the biodiversity of the inter-tidal zone of South Africa.

Background Information: South Africa is well known as the location of one of the worlds 25 biodiversity “hotspots”. The level of biodiversity in South Africa’s “hotspot” is unprecedented and unequaled on the planet. South Africa’s coast also offers a unique situation for the study of biodiversity. The Indian, Atlantic, and Southern Oceans all converge along the coast of South Africa. From the Indian Ocean South Africa’s coastline gets bathed in warm water currents moving South and West along Africa’s East coast. The Southern Ocean and the South Atlantic Ocean bring nutrient rich cold upwelling to the Western and South Western coasts of South Africa. These two vastly different water sources provide the basis for a high level of biodiversity along the coastline of South Africa.

Materials:

- Internet
- Maps
- Posters
- Collected data

Set-Up:

Arrange an adequate amount of internet time for your students. It is important to preview and pre-select websites to streamline research time.

Maps can be hard copy or online depending upon access to computers. Larger hard copy maps are easier to reference many times.

Posters of South African marine life should be available online

The most important aspect of this lesson is obtaining the raw data from South Africa. The data are not time sensitive but the more recent the data are the more interesting it may be for the students. The people at Two Oceans Aquarium may be able to provide a contact list of teachers in South Africa who would be willing to help with this project.

Introduction: Data collected by students in South Africa during a field trip to the ocean to look at organisms in inter-tidal rock pools can be used to get a

Grade Level: 11-12

Goal: To understand that marine biodiversity along a coastline is extremely high.

Key Concepts: biodiversity, threats to biodiversity, scientific data collection, marine ecosystems.

Objectives: Upon completion of this lesson students will:

- 1) Appreciate the biodiversity of the inter-tidal zone.
- 2) Understand how humans can threaten biodiversity.

Teaching Location: Classroom

Lesson Time:

Subject Areas for Infusion: Science, Geography, Math, Environmental Education.

Standards:
Science: C 12.2, C 12.3, F 12.7
EE: A 12.1, A 12.3, B 12.3-12.8

feel for the organization of the inter-tidal zone. South African students collect different types of shells from a beach for a set period of time. At the end of this time the shells are grouped by type and then counted. Students are then told to infer from their data which types of shelled animals are the most common then asked to think about why. After discussing their findings the students try to find live examples of the shells they have found and compare what they inferred to what they see.

Procedure: Using the raw data provided, students are to organize the data into a table and then use a bar graph to compare shell types. From their data students are to conclude which are the most common shell types in the area collected, and which might be herbivores or predators. After coming to conclusions about shelled animal relationships, students will be shown video clips of rock pools in South Africa and video of the students collecting the data in South Africa.

Conclusion: Collecting data themselves would be a far greater experience but the costs of getting to the ocean from WI make sharing data a much better alternative.

Assessment: Students lab reports will be graded.

Adaptations: For students with special needs, lab write-up forms could be provided. Preformatted tables could be supplied to help with organization of the data.

References:

Bultman, Kenneth J., "Video clips of South Africa, GET 2006".

Vocabulary

Biodiversity: The total number of different species living within a given area.

Inter-tidal zone: The area along a coast between the highest high tide and the lowest low tide.

Indicator species: A species that is found so commonly or exclusively in one particular area that it is used as an indicator of that area.