

POSSIBLE OUTLINE

Investigate how organisms survive
in an extreme environment

L2 Biology (Earth and Space Science)

AS 91190 v2:

Internal Assessment

4 Credits

Resource Title: Life in the Polar Regions or The Deep Ocean

1. Cover Sheet

- ◆ Include AS details and image
- ◆ Name and submission date.

2. Introduction (Give it a name)

- ◆ Definition of an extreme Environment
- ◆ Types of Extreme Environments
- ◆ General adaptations which help some organism's survival in these extreme conditions.
- ◆ Link into the next section (i.e. A Polar Region or Deep Ocean Zone) by a few sentences on what your investigation focus is.
- ◆ References APA or Superscript

3. A Polar Region (or Deep Ocean Zone)

- ◆ Describe your region or Zone in detail.
- ◆ Where is it?
- ◆ What Environmental Conditions or Abiotic features does your zone have?
- ◆ What makes your zone an extreme one?
- ◆ What general adaptations do organisms have which help them survive in this zone? You can talk about a number of different species. Animal and Plant.
- ◆ What biotic factors make life in your zone difficult e.g lack of food, possibility of disease, ability to find a mate, predators, competition for limited resources????
- ◆ Make sure you define Abiotic and Biotic factors.
- ◆ Ensure you have a link from this "general section" to the next.

4. Case Study

- ◆ Choose an organism which will be the focus of your report
- ◆ You could break this section into subsections.
- ◆ Lead into the section with general distribution etc of your species
- ◆ The Adaptations of your chosen animal or plant is the focus of the report.
- ◆ Subsections will differ – depending on the species you have chosen. I want you to decide on your subsections. I am limited with how much guidance I can give you. But many students have used headings like Defence Mechanisms/Adaptations or Finding Food, Reproduction.
- ◆ Other students have made subsections – Structural Adaptations, Physiological Adaptations, Behavioural Adaptations.
- ◆ There must be **links between the adaptation and the environmental condition.** Examples: Reindeer nose/Temperature, Polar Bear Milk/ High Fat/ Food scarce, Collapse of Whale ribs/Pressure of deep dives

- ◆ You must go into depth around two adaptations e.g. bioluminescent fish (what is this, how does it occur etc. Another example would be antifreeze in the blood of some fish and Antarctic organisms.
- ◆ Students have always found at least two of the adaptations they could write about in more depth.

5. Discussion or Summary

- Summarise your report by providing integrated links between the extreme environment and biological adaptations. This also requires justifying, using the processed information, how the biological adaptations or technological modifications allow the organism(s) to survive the conditions of the extreme environment.
- Note the marking schedule. Find out what the following requirements mean:
 - I. In-depth
 - II. Comprehensive
 - III. Justify
 - IV. Link
 - V. Integrated links
- ◆ See the Clarification Document below.
- ◆ If you require any resources on your chosen animal. Email me at maxineu@ch.steiner.school.nz

Thanks, and all the Best. I am sure you will all do well in this standard.

Maxine

Earth and Space Science clarification

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91190: Investigate how organisms survive in an extreme environment

This document has been updated in its entirety to address new issues that have arisen from moderation.

Clarification

To reach Achieved standard students must:

- select and process information to describe an extreme environment
- select and process information to describe adaptations that allow an organism to survive in an extreme environment.

The extreme environment can be any environment as long as the student can describe why it is an extreme environment. This description of why an environment is extreme is essential to achieving this standard.

Adaptations can be biological for an organism, or technological for humans. Students must identify and describe the critical adaptations that allow survival in an extreme environment. This description of the key adaptations is essential to achieving this standard.

Students are required to carry out research to collect secondary evidence. This evidence will then form the basis of their report. Students must ensure they have covered **why an environment is extreme and how an organism overcomes this extreme environment.**

Background information to the research may be supplied by the teacher, and can include primary and/or secondary information. The teacher can set the broad outline for a research topic or the students may develop their own.

NOTE: This is the current clarification (2020 NZQA Website).