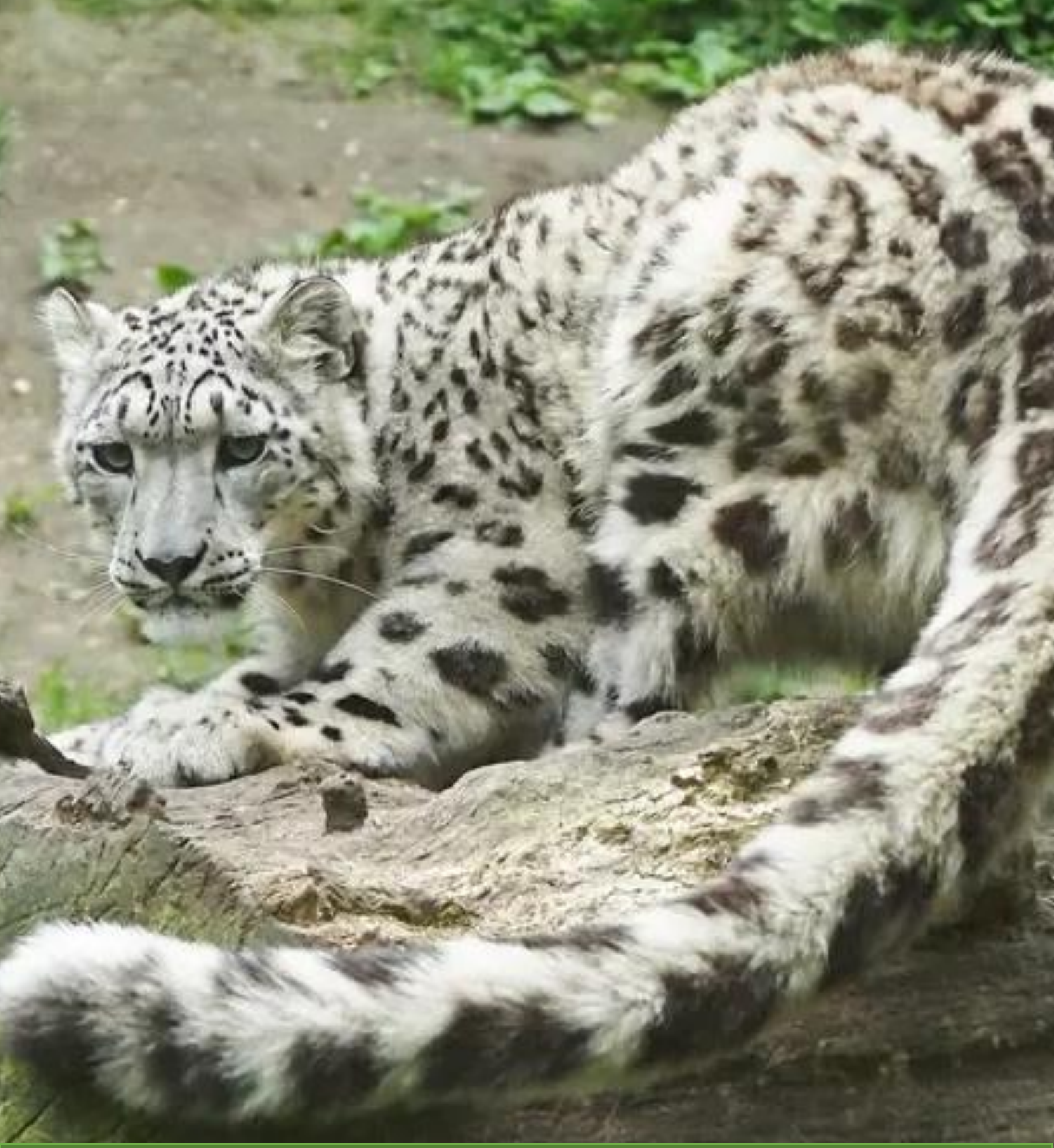

Marwell Wildlife

KS3/4 Adaptations

Welcome to Marwell and a closer look at just how animals have changed to become specialised and adapted to specific places and roles around the world. This project will allow you to gain some prior knowledge about a few of the animals in the collection, before you visit us and can look, first hand at the adaptations.

What does adaptation mean in?

Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause or taking advantage of opportunities that may arise.

Hot and Cold

When we look at animal species the easier way to split the mammals is whether they live in a hot or cold region. An animal that spends its time in the cold mountains of the Himalayas and surrounding regions will look very different to something that lives in the arid and dusty deserts of Northern Africa. But how and why?

Hot and Cold environments (polar and tundra) have a range of distinctive characteristics. These environmental factors are what help shape the living organisms that live and thrive there.

What are the main characteristics of a polar tundra environment?

- Permafrost
- Ice/frost-moulded or shaped landscapes
- extremely low temperatures *
- little precipitation
- poor nutrients
- short growing seasons

***** *Average January temperatures range from about −40 to 0 °C. Winter temperatures can drop below −50 °C across large parts of the Arctic. Average July temperatures range from about −10 to 10 °C with some land areas occasionally exceeding 30 °C in summer.*

What are the main characteristics of a desert environment?

- The climate is very hot. Summer daytime temperatures can exceed 40°C. At night temperatures can drop below 0°C*
- Less than 250 mm of rainfall a year
- Desert soils are thin, sandy, rocky, and generally grey in colour
- Any water that is drawn up to the surface evaporates leaving behind on the surface

***** *Two distinct seasons: summer - temperature ranges between 35-40°C, and winter - temperature ranges between 20-30°C.*

Structural – *A physical part or feature of an organism*

Examples:

- The white fur of a polar bear provides camouflage in the snow, so it has less chance of being detected by prey.
- Seals have thick layer of blubber to insulate them against the cold conditions they live in

Behavioural – *The way an organism behaves*

Examples:

- Cold-blooded reptiles bask in the sun to absorb heat
- Rabbits dig burrows in which to live and raise offspring

Functional – *Biological process within the organism*

Examples:

- Snakes produce venom to kill prey
- Mosquitos produce chemicals that stop the animal's blood clotting when they bite, so that they can feed more easily

How do plants and animals adapt to their environmental physical conditions?

Complete the table below with as much detail as possible. Consider the physical features you can see, use your knowledge of each your chosen species habitats to make informed comments if you are unable to find the answers

		Name/Species	Structural	Behavioural	Functional
Cold	Plants				
	Animals				
Hot	Plants				
	Animals				

Design an animal or creature for a specific set of conditions.

With your knowledge and understanding of how adaptations, you have been selected to lead an expedition to look at the flora and fauna of a little-known region. Once you get there you find a new species of animal.

Where in the world is your expedition heading? The climate will play a large role in your decision making.

Consider where your creature would live and consider home. Do they live on the ground? Up in the trees? Or perhaps your animal spends its time high up on mountain sides and has underground burrows to shelter in? Are they nest builders? Or perhaps create covered dwellings made from the vegetation around them?

Is this creature solitary or does in live in a herd or pack? If so, how large is the group and what reasons might this be for?

What will you animal eat? Will they be an **omnivore**, **herbivore,** or **carnivore**? Will they occupy an **apex predator** role or perhaps they will occupy a **primary** or **secondary consumers** role?

Based on your choices of where to live your animal will need a suitable outer covering. Will they be covered in a thick scaley hide? Have specialised feathers? Or perhaps it will have a type of fur to protect it.

Additionally, you may wish to have **specific colours** or **patterns** to aid your successfulness in hunting or avoiding predators.

By now you will have a creature that is beginning to take shape, now you will need to consider how they will move. Will your primary locomotion be walking on two legs (**bipedal**), using four legs (**quadrupedal**) or knuckle walking? Perhaps you will combine flight with another option?

Finally, you can add an individual and specific specialism that will aid your survival or improve your chances of success with a particular action.

When you have made your choices, produce a detailed field guide to your creation, linking to an overview of its wider species if applicable. Size and weight guides, tracking notes and everything you would need to track, find, and identify your creature in the wild. Images should also be included.

By the completion of this task, you will be able to not only understand the process adaptations play in surviving and becoming successful and dominate. You may also find that having looked in detail at the impact of the environment on a specific species, your understanding is now more detailed when looking at the species often discussed in your exam curriculum.