

# KS3/4 Geography Fieldwork at Birmingham Botanical Gardens

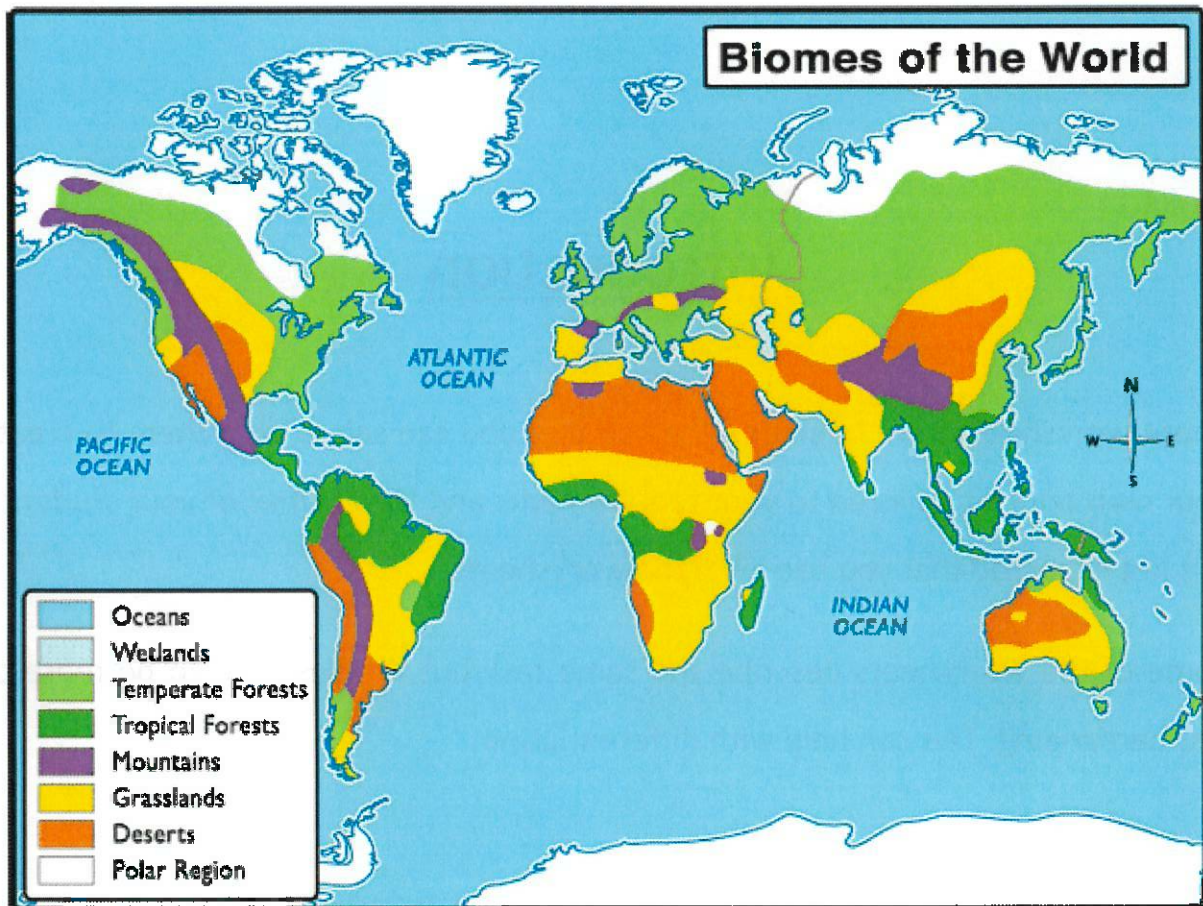
## Introduction

These worksheets have been designed so that you can select from them to create your own booklet, tailored to your requirements and the abilities of your students. It is not expected that you use all of the worksheets.

Some of the worksheets describe the same task but are designed to be more or less demanding. This can help with differentiation.

Name: \_\_\_\_\_

Class: \_\_\_\_\_



Geography Fieldwork at  
Birmingham Botanical Gardens

## Tropical Glasshouse

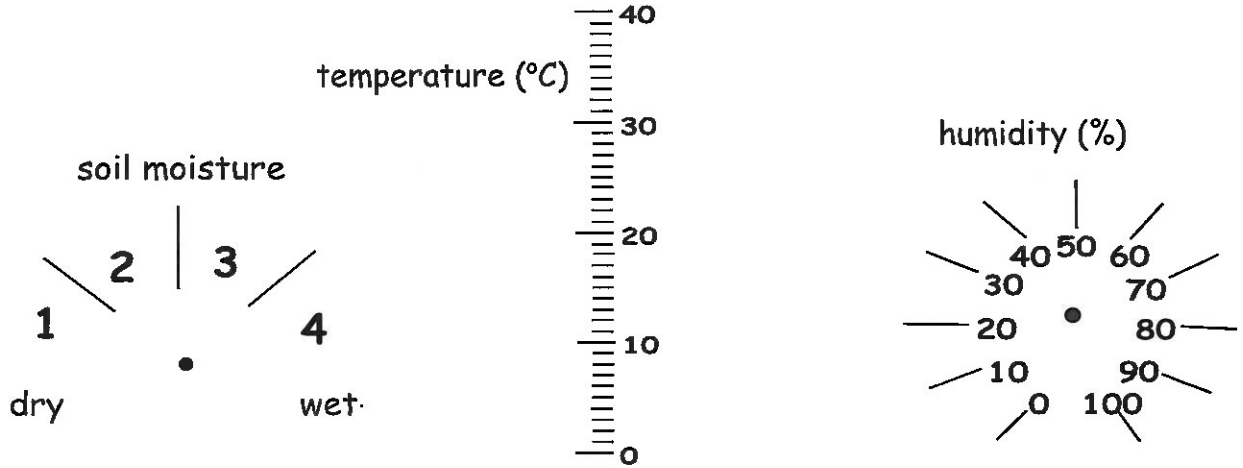
- Rainforests do not have seasons like ours. The weather stays the same, and the trees keep their leaves (evergreen).
- Rainforests cover 6-8% of the world's land surface and contain a huge variety of plant and animal life – they are very biodiverse. It is estimated that more than half of all the organisms on Earth live in rainforests!
- A 'typical' 5km<sup>2</sup> of rainforest contains up to 1,500 species of flowering plants. The whole of the UK has only 1,443 different plant species!

As you explore the Tropical House, note what you can smell, feel and see. Why is it kept like this? What can you infer about rainforest climate?

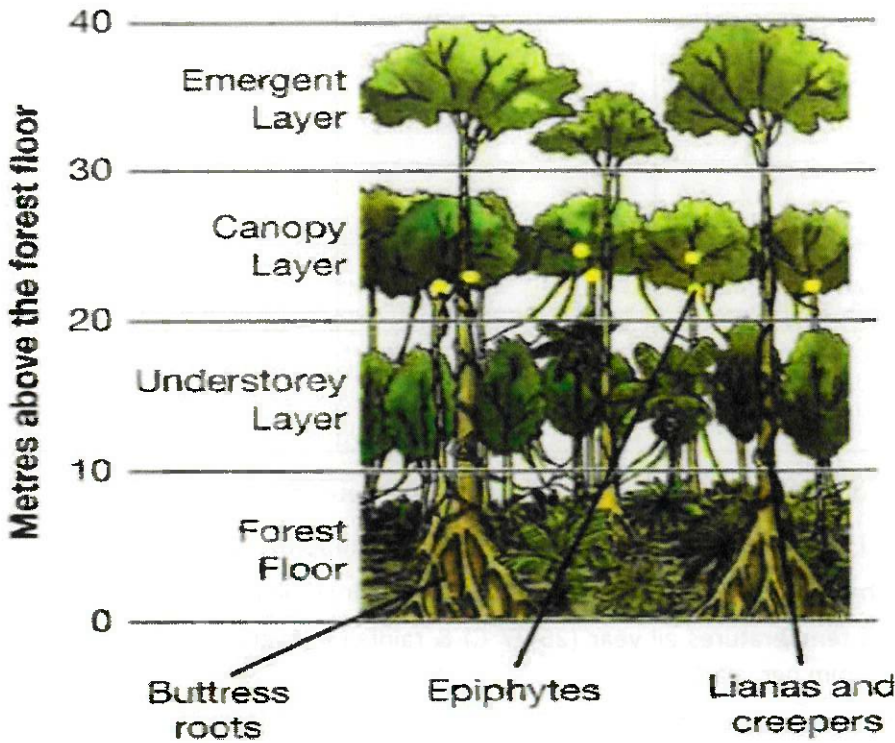
	Smell	Feel	See
What do your senses perceive?			
Why is it like this?			
What can be inferred about the rainforest from this?			
Based on what you feel, what would be the correct answer to this GCSE question?	<p>Which <b>one</b> of these statements describes the climate of tropical rainforests?</p> <p><b>A</b> Mild temperatures (10-18°C) &amp; rainfall all year (approx. 1000 mm)</p> <p><b>B</b> High temperatures all year (over 30°C) &amp; very dry (250 mm per year)</p> <p><b>C</b> High temperatures all year (25-27°C) &amp; rainfall in every month (up to 2000 mm per year)</p> <p><b>D</b> Wide temperature range (15-30°C) &amp; seasonal rainfall (approx. 750 mm)</p> <p style="text-align: right;"><b>[1 mark]</b></p>		

# Tropical Glasshouse

Find the measuring instruments (by the middle window) and record the climate measurements:



Structure of the Tropical Rainforest – match each description to the correct rainforest layer:



The darkness means shade-loving plants with large leaves live here, along with large mammals.

Mature, evergreen, hardwood trees reach the sunlight. Birds and monkeys live here.

This dense layer is home to many animals such as birds and snakes, because there is so much food available.

Young trees grow here, as well as plants with large leaves to capture sunlight. Vast numbers of insects live here.

# Tropical Glasshouse

## Adaptations

Plants have special features to help them cope with the conditions found in the various parts of the rainforest. Find examples of plants in the Tropical House that have the following features (there is a space for your own examples too):

<b>Removing water</b>	EXAMPLE
Drip tip to shed water	

<b>Staying upright</b>	EXAMPLE
Buttress roots	

<b>Living in low light</b>	EXAMPLE
Large leaves	
Different colours on leaves	

<b>Climbing</b>	EXAMPLE
Twining around branches	
Tendrils to hold onto branches	

<b>Living on trees (epiphytes)</b>	EXAMPLE
Water tanks to collect rain	
Aerial roots growing to ground for water	

	EXAMPLE

# Tropical Glasshouse

## Adaptations

The plants in the Tropical House are very different to those growing in a British garden or park. How and why are they adapted to their environment (there is a space for your own examples too):

Adaptation	Plant Example	Describe the Adaptation	Explain the Reason for the Adaptation (how it helps the plant survive)	Sketch of the Adaptation
Drip tips	e.g. Peepul Tree			
Climbing plants	e.g. Pepper			
Epiphytes	e.g. Flamingo Flower			
Buttress roots	e.g. Kapok Tree			

## Tropical Glasshouse

### Biodiversity

Biodiversity is the variety of different types of life (plants and animals) in a specific habitat. Tropical rainforests are the most biodiverse places on Earth. Rainforest plants meet either the environmental needs of their habitat, or the economic or social needs of humans.

Need	Plant Example	Description of Plant Use	Explain the potential impact if the plant were to become extinct
Social (e.g. decorative, medical)	e.g. Croton, Moreton Bay Chestnut		
Economic	e.g. Cocoa		
Environmental	e.g. Cassava		





## Subtropical Glasshouse

Take care – some of the plants in the Subtropical House are carnivorous! This means that they consume animals. Find, name and draw one of them. Add a scale and labels, and explain how and why this plant catches and digests its victims.

Name of carnivorous plant:

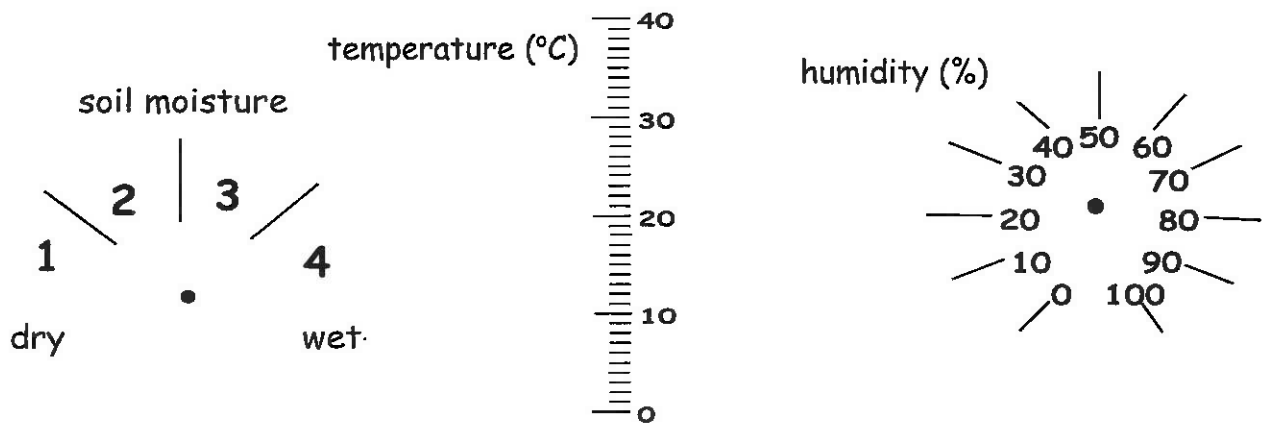
How does this plant catch its 'food'? \_\_\_\_\_

Why is this plant carnivorous? \_\_\_\_\_

## Mediterranean Glasshouse

- The conditions in this house are not kept the same throughout the year because a Mediterranean climate has hot, dry summers and warm, wet winters.
- This may be ideal for summer holidays but it is very difficult for plants which have to cope with a summer drought.
- Though named after the Mediterranean Sea, Mediterranean climate is not only found in Europe. It is also found in California, South Africa, Chile and Southwestern Australia.

Find the measuring instruments (near the Olive Tree) and record the climate measurements:



Write at least three adjectives to describe the Mediterranean House:

We eat many fruits that grow in Mediterranean climates. Which can you find in our glasshouse?

## Arid Glasshouse

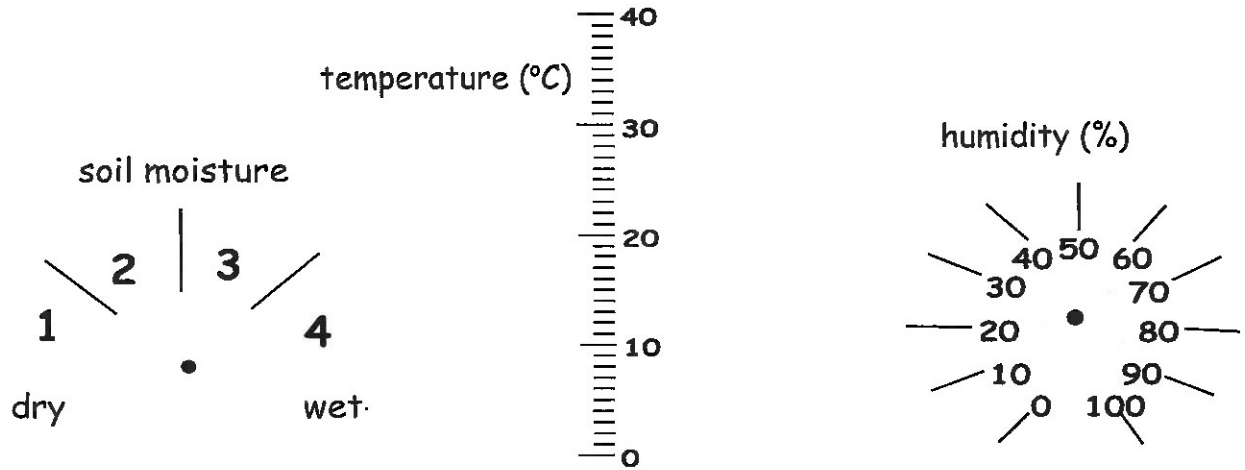
- Deserts have nothing to do with temperature – it is all about precipitation (arid means dry). Less than 250mm of precipitation a year is needed for an area to be a desert.
- ‘Cold’ deserts exist. Antarctica is actually the world’s largest desert as there is so little precipitation.
- Hot desert climates have very bright sunlight, limited shade, strong winds, high daytime and low night-time temperatures.
- Hot deserts cover nearly 20% of the Earth’s surface but contain few life forms (there is low biodiversity) due to the harsh climate.

As you explore the Arid House, note what you can smell, feel and see. Why is it kept like this? What can you infer about desert climate?

	Smell	Feel	See
What do your senses perceive?			
Why is it like this?			
What can be inferred about the desert from this?			
Based on what you feel, what would be the correct answer to this GCSE question?	<p>Which <b>one</b> of these statements describes the climate of hot deserts?</p> <p><b>A</b> Mild temperatures (10-18°C) &amp; rainfall all year (approx. 1000 mm)</p> <p><b>B</b> High temperatures all year (over 30°C) &amp; very dry (250 mm per year)</p> <p><b>C</b> High temperatures all year (25-27°C) &amp; rainfall in every month (up to 2000 mm per year)</p> <p><b>D</b> Wide temperature range (15-30°C) &amp; seasonal rainfall (approx. 750 mm)</p> <p style="text-align: right;"><b>[1 mark]</b></p>		

## Arid Glasshouse

Find the measuring instruments (by the aviary door) and record the climate measurements:



### Adaptations

Plants have special features to help them cope with the conditions found in deserts. Find examples of plants in the Arid House that have the following features:

Water saving	EXAMPLE
Thick cuticle (skin) and waxy coating	
Ridges	
No stem	
No leaves	

Protection from animals	EXAMPLE
Bitter sap	
Spikes, spines, thorns or prickles	

Protection from the sun	EXAMPLE
Hairy	
Growing upright	

## Arid Glasshouse

### Adaptations

The plants in the Arid House are very different to those growing in a British garden or park. How and why are they adapted to their environment (there is a space for your own examples too):

Adaptation	Plant Example	Describe the Adaptation	Explain the Reason for the Adaptation (how it helps the plant survive)	Sketch of the Adaptation
Thick spikes	e.g. Golden Barrel Cactus			
No leaves (or very small leaves)	e.g. Prickly Pear			
Ridges	e.g. African Milk Barrel			
Hairy	e.g. Cotton Ball Cactus			

## Arid Glasshouse

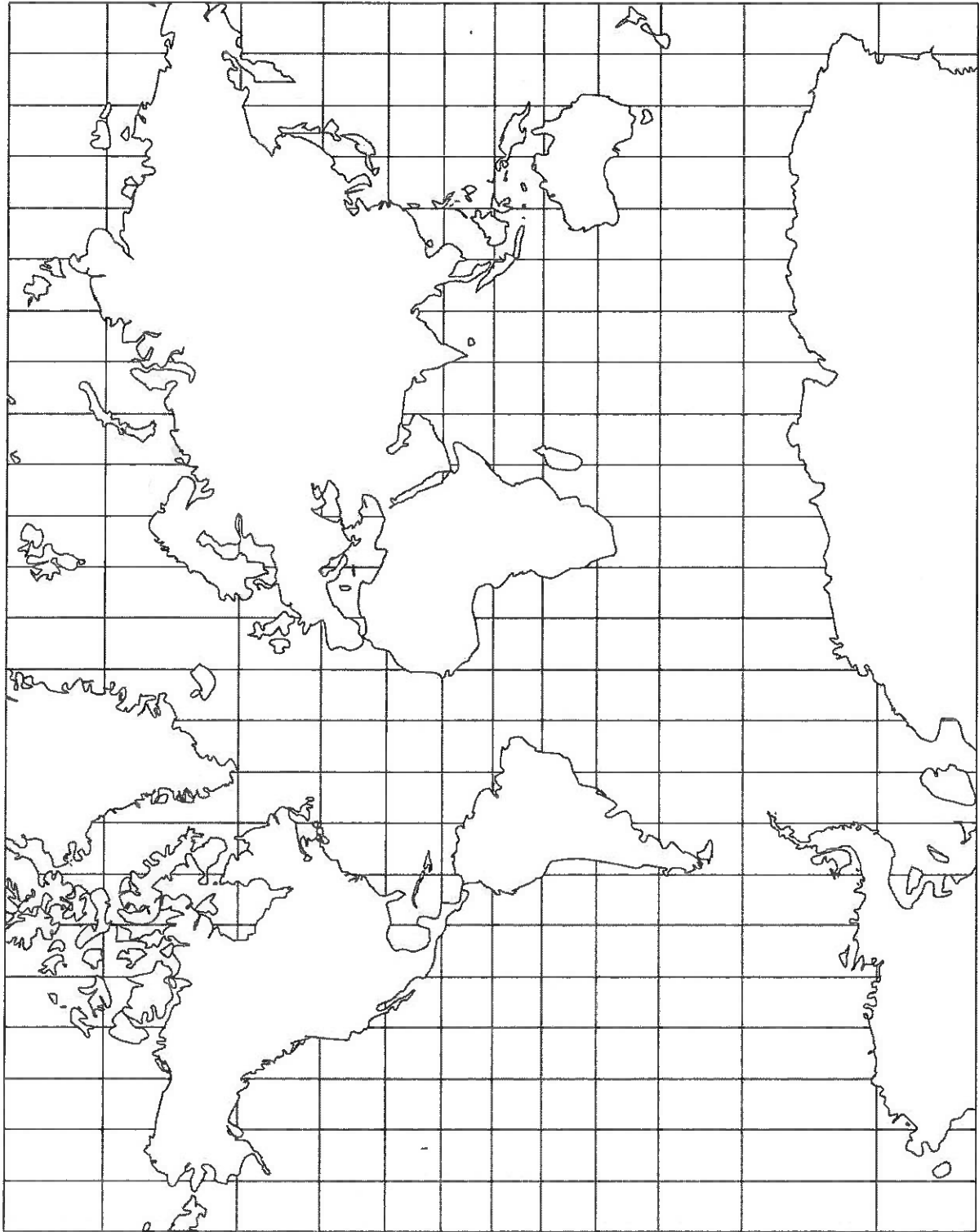
### Biodiversity

Biodiversity is the variety of different types of life (plants and animals) in a specific habitat. Deserts are some of the least biodiverse places on Earth. Desert plants meet either the environmental needs of their habitat, or the economic or social needs of humans.

Need	Plant Example	Description of Plant Use	Explain the potential impact if the plant were to become extinct
Social (e.g. decorative, medical)	e.g. Bottle Brush, Aloe Vera		
Economic	e.g. Cochineal Opuntia		
Environmental	e.g. Sotol		

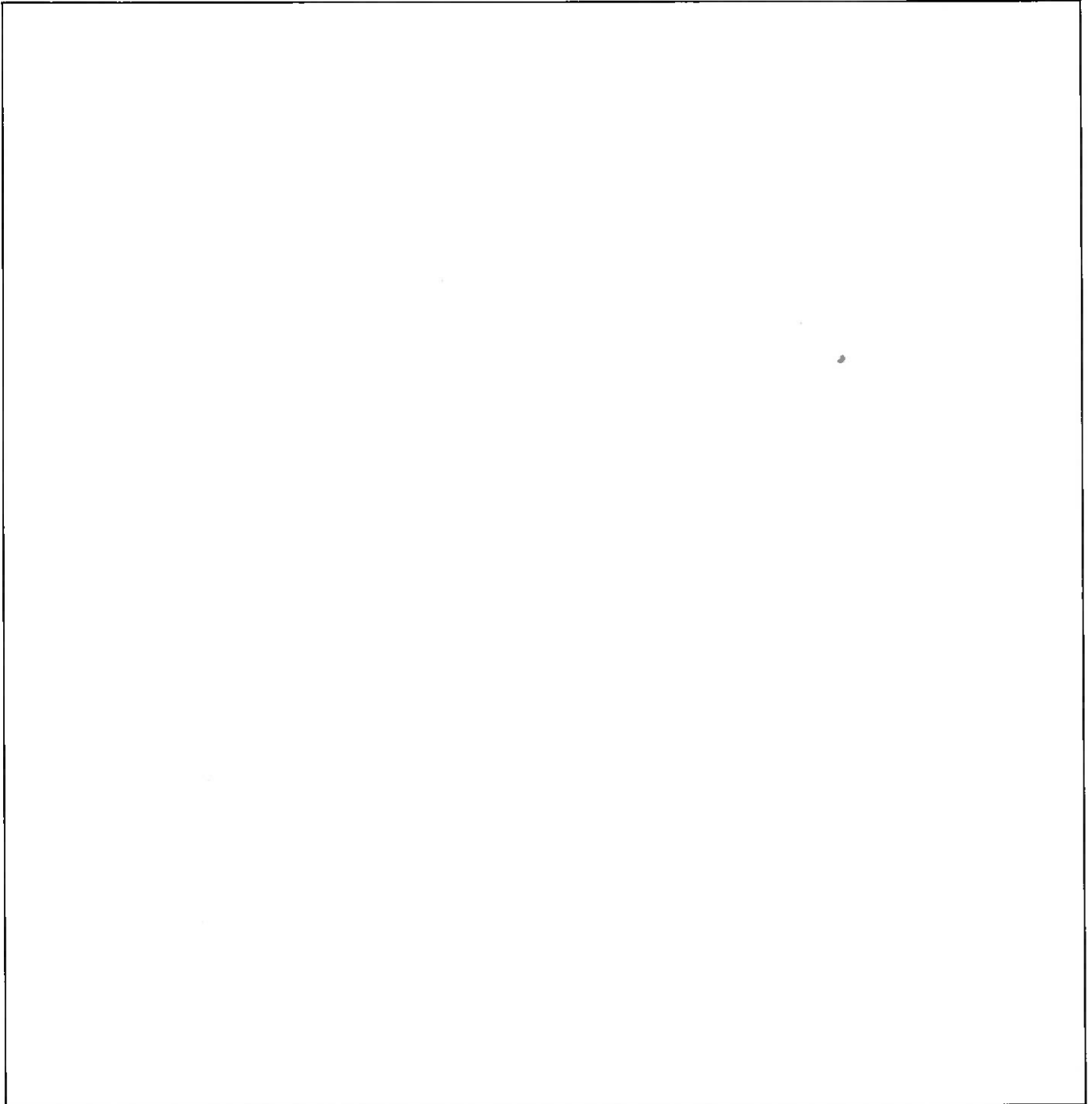
## World Geography

Mark on the world map where you would find our Glasshouse regions (Tropical, Subtropical, Mediterranean & Arid (desert)). Use the information in this booklet, including the biomes diagram on the front cover, and the large information board in each glasshouse to help you.



## Field Sketch

Use the box below to sketch a section of the Gardens. You may choose to sit on the top of the Main Lawn bank. Think about scale (e.g. a tree will look smaller if it is further away) and use shading to show light and dark areas. Your drawing does not need to be fully accurate; it just needs to show the basic outline/features. Label two physical (natural) parts of your sketch and two human parts.





## Photograph and Map Skills

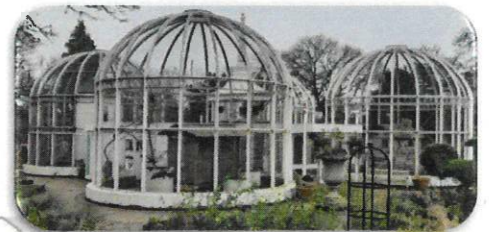
Find the places in the four photographs and locate them on the map. Can you also locate and mark on; each of the four Glasshouses, the Teulon Cottage and the Alan King Alpine Garden.



Bandstand



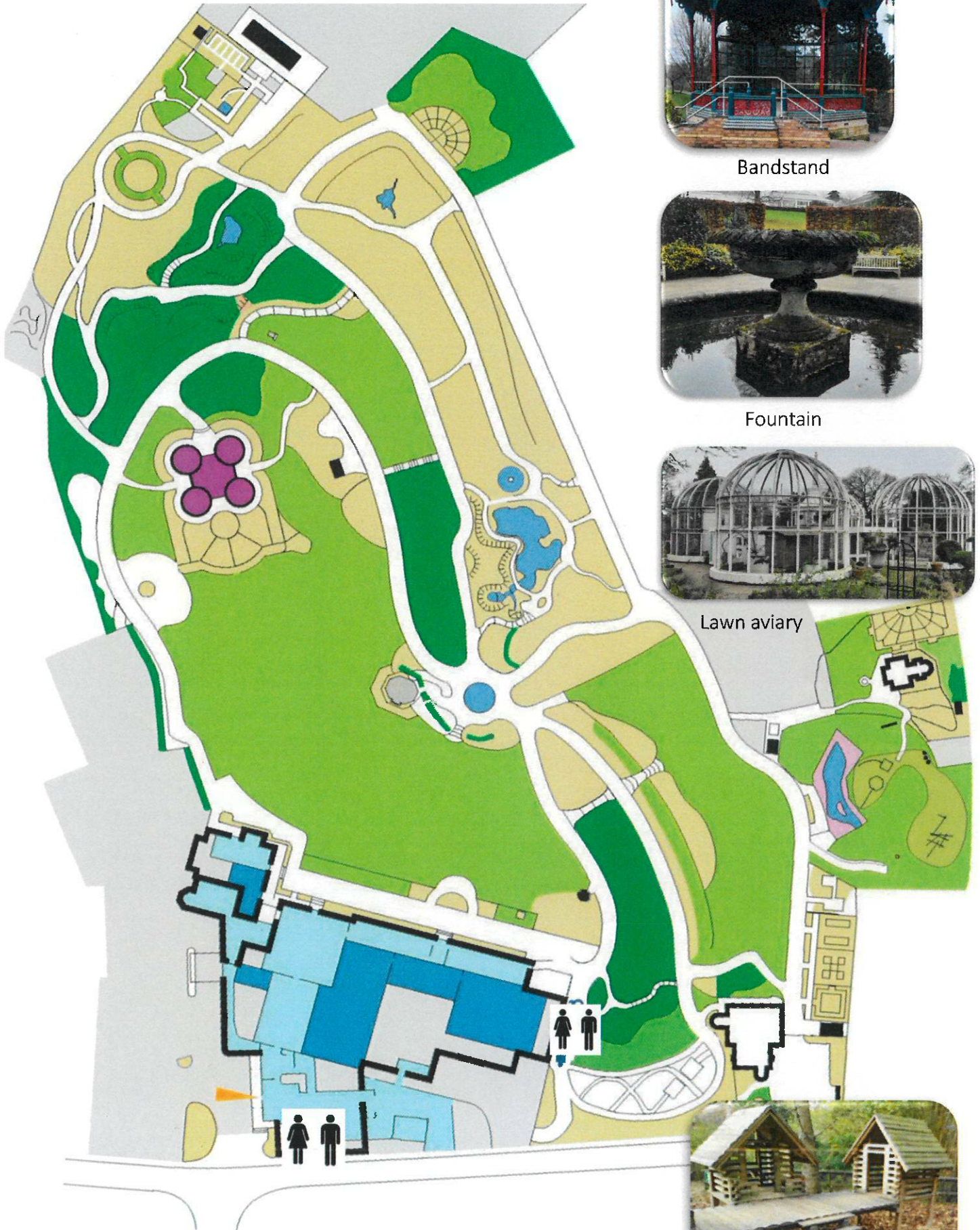
Fountain



Lawn aviary



Playground





## Glossary

<b>Adaptation</b>	Any feature of a plant or animal which helps it to survive its environment.
<b>Biodiversity</b>	The variety of plant and animal life in a particular habitat, a high level of which is usually considered to be important and desirable.
<b>Biome</b>	A large, naturally occurring community of plants and animals that occupy a major habitat.
<b>Buttress Root</b>	A tree root that grows from the trunk above ground, to provide support. Buttress roots are usually found in tropical rainforests.
<b>Canopy</b>	The 'roof' made from the branches and leaves of trees.
<b>Climate</b>	A way of describing the typical weather conditions of a place.
<b>Environment</b>	All the conditions which affect the place where a plant or animal lives, e.g. light, water, other living things.
<b>Epiphyte</b>	A plant which grow on other living things. However, unlike parasites, they do not harm their hosts by taking food or water from them.
<b>Fieldwork</b>	Practical work conducted by a researcher in the natural environment, rather than in a laboratory or office.
<b>Habitat</b>	The place where a certain plant or animal may live. Usually a description of the kind of environment there.
<b>Herb</b>	A plant which does not have a woody stem for support, so it is usually not very large.
<b>Humidity</b>	The amount of moisture (water vapour) in the air.

## Glossary continued

<b>Hygrometer</b>	The equipment used to measure humidity.
<b>Precipitation</b>	Rain, snow, sleet or hail that falls to the ground.
<b>Succulent</b>	A plant which stores in the leaves or stem to help it live in desert (arid) climates.
<b>Tendrils</b>	A thread-like growth from a climbing plant, often growing in a spiral, that stretches out and grows round any suitable support.
<b>Weather</b>	The conditions such as temperature, rainfall and humidity in a place at that time.