Pathfinder Honour:

Trainer's Notes

Orchids

Instructions to Trainers / Instructors of this Honour

Thankyou for being involved with this Honour. These notes have been developed to assist in teaching / instructing this honour. We recognise that there is much more information available and we are grateful that you should share your expertise.

Please remember that Honours are designed to develop our Pathfinders in many ways; their interests, their knowledge and their relationship with their Saviour and Creator. Your enthusiasm and creativity will have a huge impact on those doing the honour.

To complete an Honour, the following (where applicable) must be completed satisfactorily:

- Physical and Practical Requirements.
- Honour Workbook.
- Honour Assessment Sheet. *(On SPD Honour Website but Leader's level access is required)*

Additional Reference Material

http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Nature/Orchids
(A useful site, but be aware that material on any Wikibooks website is beyond the control of the SPD)

Acknowledgements

Please see the text of these notes.

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REQUIREMENT 1: What are the main characteristics of an orchid?

Because of the size and complexity of the orchid family, the objective of this requirement is to provide only a broad understanding of the main characteristics of orchids. We use the following headings to 'walk you through it':

1. The Orchid Family and where it is placed in the Plant kingdom
2. Examples of the Orchid Family (Orchidaceae)
3. What Makes an Orchid an Orchid?

1. The Orchid Family and where it is placed in the Plant kingdom

It is important to first understand that there are at least 22 000 orchid species. That is four times the number of mammals in the world and far more than any other type of plant. Also several hundred new ones are found every year.

Here is a short family tree for plants. You do not have to know all of this. It is provided to assist in understanding just where orchids are placed in the plant kingdom. According to Dressler

Kingdom - Plantacea (plants)
|
Order – Asparagales (non-woody, seed bearing plants)
|
Family - Orchidaceae (this is the orchid family)
|
Subfamilies – 5 of these
|
Tribes (There are 22 tribes and 70 subtribes. Some of interest to us are Vandeae, Cymbidieae and Vanilloideae)
|
Genera – Such as Vanda, Cymbidium and Dendrobium
|
Species - Eg Cooktown orchid

Note. Each plant has its own species name. Eg. The Cooktown orchid is in the genera Dendrobium and its name is bigibbum. Therefore, its full name is Dendrobium *bigibbum*.

When writing scientific species names, only the genera name starts with a capital (*bigibbum* does not have a capital).

2. Examples of the Orchid Family (Orchidaceae)

The following examples provide an illustration or the beauty and diversity of the orchid family. There are approximately 880 Genera

Genus: Cattleya

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Genus: Dendrobium

These are usually long cane orchids, with many flowers.

This one is the Cooktown orchid, which is Queensland's floral emblem

Genus Cymbidium

These have long stems with many flowers.

Genera: Phaleaonopsis

This is sometimes called the Moth Orchid

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Genus Paphiopedilum
Slipper orchid

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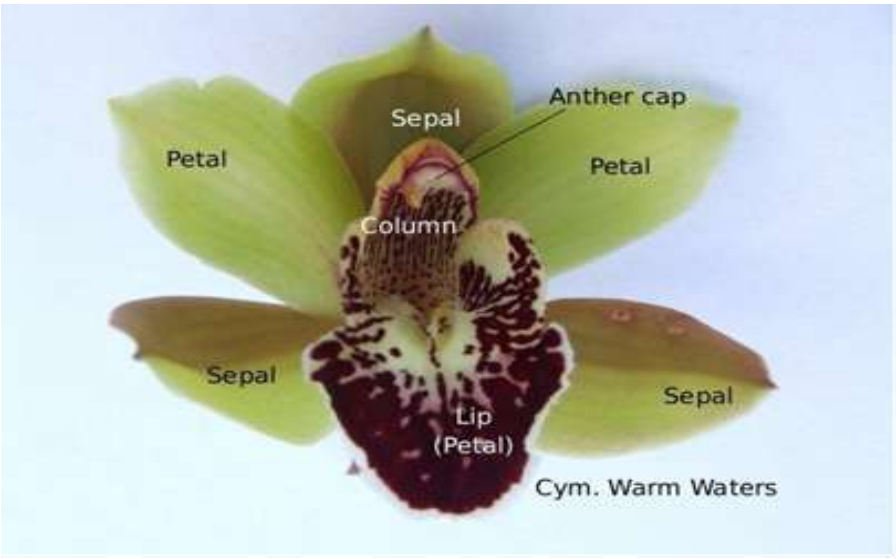
Now with all these 22 000 native species, plus all the hundreds of thousands of man-made crosses between species and genera, what makes an orchid an orchid?

3. What Makes an Orchid an Orchid?

Because of the huge variations in size and shape, it is difficult to tell an orchid at a glance.

Here are some things that most orchid share.

1. Leaves are usually single, from a bulb, or spaced evenly along a stem. They are often tough, thick and leathery and may last several years
2. They also have three petals and three sepals. One of these forms a labellum or lip, which acts as a landing pad for the pollinator. God invented helipads at creation. They are also bright colours to attract the insect. Many orchids want to attract only one insect species so they use colour or perfume to attract just that insect.



In Haiti the Bumble Bee orchid has a labellum that looks like a male bumble bee. This attracts real male bumble bees that try to attack it and pick up the pollen and carry it to another Bumble Bee orchid.

Other orchids have slippery pouches into which the insect fall. The only way out is by climbing a hairy ladder which takes the insect past the pollen.

God's creations are truly amazing.

3. The real thing that makes an orchid is the pollen. The grains of pollen are stuck together with glue to make a blob. This blob sticks to the pollinator's head. It then dries out a bit, which makes it stand up and be easily placed on the next flower the insect visits.

   The Australian hammer orchid has a hinge that is released by a visiting insect's weight. This then releases a spring, which whacks the poor insects head against the pollen. The pollen blob sticks and the dazed insect flies off. There must be something about the hammer orchid it really likes, because it will then visit more hammers in a row, each time releasing a blob of pollen and collecting a new one.

To sum up

1. An orchid is a flowering plant.
2. It has 3 sepals and 3 petals.
3. The bottom sepal makes a labellum (lip)
4. It has a solid blob of pollen.
5. Its leaves are usually single, tough, leathery and last a long time

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But the answer to 'What is the main characteristic of an orchid?'

is . . . . . .

Its unique method of pollination

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REQUIREMENT 2: What are the two main types of orchid and what is the main characteristic of each. Name and show an example of each, either as a live plant or a picture, drawing, or photograph.

Orchids are mainly either epiphytic or terrestrial.

Epiphytic
Epiphytic means that they live on other living plants. In the case of orchids this is usually high up in trees. They do not derive nutrition from the tree, so are not parasitic. They use the tree only for support

Cattleyas, Cymbidiums, Phalaenopsis, Dendrabiums and Vandas are epiphytes.

Terrestrial
Terrestrial means that they grow on the ground. Many orchids are of this type.
Eg, Paphiopedilums

Requirement 3. Write a paragraph about the distribution of orchids. Mention climatic zones, altitude and latitude in your answer.

These are just notes. Do your own paragraph.

1. They are found in just about every habitat except deserts and glaciers.
2. Most are found in the tropics.
3. They are also found above the Arctic Circle and as far south as Macquarie Island near Antarctica.
4. They can live from sea level to high mountains.
5. They live in areas where it rains every day and, in Australian, areas where it may not rain for months.

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Requirement 4. Name four main genera of cultivated orchids. Photograph or draw one example of each. Hint. Use your pictures from Requirement 5.

Five common genera in cultivation are displayed in the Trainer's Notes for Requirement 1. They are Cattleya, Dendrobium, Cymbidium, Phalaenopsis and Paphiopedilum.

Another common one is Vanda, which is displayed below.

Vanda

REQUIREMENT 5. Visit an orchid grower, orchid show, nursery or botanical garden where orchids are grown and observe orchids from four different genera in flower. You may need to visit several times during the year. If possible, interview the grower. Give a brief report on your visit. The report must include drawings or photographs of the flowers and answers to the following questions.

a. How were the orchids being grown - in pots, in the ground, on trees, or some other way?

b. Where were the orchids - in a shade house, a glass house, in the open or somewhere else?

c. What genera were being grown?

d. When and how were they watered?

Remember to display Christian courtesy and good manners on these visits.

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REQUIREMENT 6. Answer the following questions on the use of orchids:

a. What is the main use of orchids?
Orchids are grown mainly for their beautiful flowers. Many people grow them as a hobby. Commercially, orchid flowers are a huge industry throughout the world.

b. What orchid grown commercially for use in food?
Only one orchid is grown for food. It is the vanilla orchid. The seed-pod is harvested, dried and used as flavouring.

c. What orchid is Singapore's national flower, is grown there commercially and is daily sent around the world as a cut flower?
The orchid is called *Vanda* Miss Joaquim

I am indebted to Wikipedia for the following quote

In Singapore on April 15 1981, the Minister of Culture, S Dhanabalan announced that, as part of an overall effort to foster national pride and identity, *Vanda* Miss Joaquim was chosen from amongst 40 other flowers (including some 30 orchids) as Singapore's national flower. The ability of *Vanda* Miss Joaquim's to bloom throughout the year was considered to reflect Singapore's continuous quest for progress and excellence in all aspects of life and its natural resilience which is reflected in the determination of the Singaporean people to stand fast through difficult times.

If you are in Singapore you may buy this flower as a brooch. It will have been dipped in gold or silver.

Requirement 7. What is the law in your country regarding collecting native orchids?

The laws vary from state to state and country to country. Generally, plants may not be collected in National Parks or State Forests. Please check with the responsible government authority. For example, some Australian websites are as follows:

http://www.environment.gov.au/biodiversity/threatened/publications/action/cryptogams/6.html

http://www.rbgsyd.nsw.gov.au/plant_info/identifying_plants/processing_plant_specimens/Collecting_plant_specimens

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SOME FASCINATING FACTS ABOUT ORCHIDS

* One large orchid was known to produce 3 million seed in one pod. Orchid seeds are very, very small.

* Western Australia has two orchids that live completely underground. They even have their flowers underground. It is thought, that they might be pollinated by a burrowing beetle.

* Some orchids drug their insect so that it falls in and picks up pollen on the way out. The insects seem to like the drug, because they visit several orchids in a row.

* There is an Australian orchid, called the hammer orchid, which has a hinge. When an insect lands, it releases a spring, which flings the insect into the column, where the pollen is. The pollen sticks to the insects head and it flies to the next hammer orchid, where it is flung into the column and attaches the pollen and picks up a new lot. Strangely, the insects don't seem to mind this treatment as they will visit every hammer orchid in an area.

* Orchids are able to control their perfume to attract the insect they want at the time when that particular insect is flying.