



Pathfinder Honour: Trainer's Notes

Moths & Butterflies



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

Your local or state museum is a good place to start as they have collections of butterflies and moths.

[Complete field Guide to Butterflies of Australia](#) Braby, M.F, (2 volumes) [CSIRO Publishing](#), Melbourne, 2004.

[Australian Butterflies in Colour](#) Burns, Alexander, & Rotherham, E.R., 112 pp, Reed, Sydney, 1977.

http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Nature/Moths_%26_Butterflies#References

Note: A useful site, but be aware that material on any Wikibooks website is beyond the control of the SPD

Moths and Butterflies Honour Trainer's Notes – New Zealand

Acknowledgements

See above. Also Moths and Butterflies Honour Notes ex D Rankine North New Zealand Conf.

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Introduction:

There are between 150 000 and 200 000 species of moths and butterflies in the world. They live wherever there is vegetation.

They belong to the family Lepidoptera, which means “scale wing”. See Requirement 4 for an explanation about this.

Requirement 1. What is the distinction between moths and butterflies?



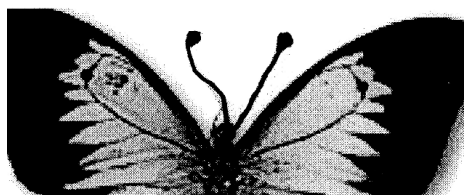
Colour: Most moths, in order to disguise themselves, are drably coloured. Butterflies are brightly coloured because they fly about the flowers.

Hours of flight: Moths fly at night and are attracted to the light. Butterflies fly in the sunlight.

Antennae: Butterflies have antennae with knobs on them. Moths’ antennae are quite varied but never knobbed



This is a moth showing its antennae. Note the feathery shape.



This is a butterfly showing antennae. Note the knobs on the ends.

Resting Wings: Moths rest with their wings down. Butterflies rest with their wings up.

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Body: Butterflies have a slender body. Moths have fat hairy bodies.

Eggs: Moths have flatter rounder eggs. Butterfly eggs are club shaped.

However in each of the above differences there is at least one exception to the rule. Eg. There is a night flying butterfly in Australia.

While these are good tests of what is a butterfly and what is a moth there is only one certain difference:

Wings: Moths have little hooks which link their fore wing and hind wing together. Butterflies never have these. However without special instruments it is too difficult to see them because they are too tiny.

Requirement 2. Define the following terms: antennae, cocoon, pupa, larva, and chrysalis.

Antennae is the name given to jointed horns or feelers found attached to the heads of insects. In butterflies, the extreme end of their antennae is club-shaped, while in moths the antennae are often feathered.

Cocoon is the silken sheath spun by the larvae of many insects in passing into the pupa or resting stage.

Pupa is an insect enclosed in a case while passing from a caterpillar to the winged stage.

Larva is an insect in its first stage after issuing from the egg or in the caterpillar stage.

Chrysalis is the case that surrounds the pupa. Butterflies have a chrysalis (plural is chrysalid)

Requirement 3: Draw or photograph and label the pictures of 3 cocoons or chrysalises



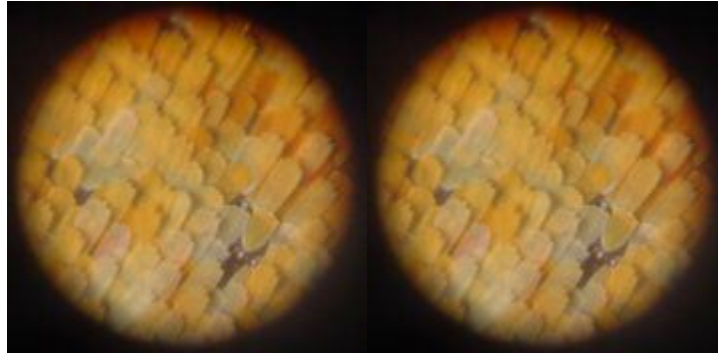
This is the same chrysalis at various stages of development starting on the left. It is of the Monarch butterfly, *Danaus plexippus*.

The internet site http://www.kidzone.ws/animals/monarch_butterfly.htm will give you more information.

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Requirement 4. What causes coloured powder to come off on your hands when you handle the wings of a butterfly? Examine the powder of a moth with a magnifying lens and describe your findings

Study of the wings of butterflies through the microscope leads one to discover an amazing spectacle – the overlapping of the brightly coloured scales of the insect’s wings like many shingles in a house. These delightful colours of the butterfly are made up entirely of these overlapping “shingles” and they will come off readily on your fingers if you should touch the wings carelessly. One must never do that if he wants the butterfly to retain its beauty. For when the scales come off the colour is gone. There is no physical pain to the butterfly, but the specimen is ruined. Actually the scales are arranged so loosely over the wings that they rub off easily.



<http://en.wikipedia.org/wiki/Image:Microphoto-butterflywing.jpg>

Requirement 5. Name a harmful house moth and tell during what stage of its life it does its damage.

I am indebted to D Rankin NNZ for the text for this section.

The clothes moth likes to eat woollen clothing. When it is in the larva or caterpillar stage it does this damage, for it is in this stage that it does its feeding.

Requirement 6. What common butterfly arrived naturally in Australia in 1870 and has since spread to New Zealand. What plant is its main source of food?

The wanderer Butterfly (*Danaus plexippus*) was originally from north America. It was first seen in Sydney in 1971. It feeds on milkweeds.

For further information see

[Wildlife of Sydney Factfile: Monarch Butterfly, Wanderer Butterfly](http://www.faunanet.gov.au/wos/factfile.cfm?Fact_ID=191)
http://www.faunanet.gov.au/wos/factfile.cfm?Fact_ID=191

Requirement 7. Do one of the following:

- a. **Make a collection of 10 moths and butterflies, with not more than two specimens of any one variety. Specimens should be anesthetized by using carbon tetrachloride or other chemical in a collecting jar. Take care in mounting and labelling.**
- b. **Identify in the field, then draw or photograph 10 species of moths and butterflies.**

In either project, correctly label with name, date observed, location, time of day, and plant type on which it was feeding or the material on which it was perched.

For help with this section please see the Appendices at the end of these Notes.

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Requirement 8. Describe the life history of a moth or butterfly. What lesson can be learned in connection with the resurrection of the righteous dead?

I am indebted to D Rankin NNZ for the text for this section.



The adult butterflies and moths lay eggs on particular kinds of plants.

Here the eggs hatch into wormlike creatures, which we call larvae or caterpillars. These feed on the leaves and stems of the plants on which the eggs are placed, many of them doing great damage. During this period of rapid growth the insect moults four or five times. When the skin becomes too small the caterpillar ceases feeding, attaches itself firmly to some spot and its skin splits along the middle and the caterpillar crawls out, leaving behind a perfect cast.

The third stage is the pupa. This is a dormant stage in which the insect does nothing but rest inside a shell or chrysalis. Many moths spin a cocoon. As the pupa rests inside the shell for several weeks or longer a great transformation has taken place - it is changed from a caterpillar to a butterfly. The chrysalis splits down the side to permit the butterfly to step out.

The life history can be likened to the birth of a lovely baby who grows up living according to its beliefs and then goes to sleep (death) and wakes again to be transformed into a beautiful creature.

Requirement 9. Read and memorise Matthew 6:19.

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ADDENDIX 1. Helpful Hints in Identifying Butterflies

Here are some helpful questions to aid in identifying a butterfly.

1. Where did you collect or see the butterfly? Most butterfly books give the places where each butterfly has been found
2. What are the major colours on the wings?
3. What is the shape of the antennae?
4. What is the shape of the hind wing?
5. Do the wings have eyespots? Where are they positioned and what are they like?
6. What is the silhouette of the butterfly?
7. What time of year did you see it?

By answering these questions as you try to identify your butterfly, you will have the best chance of getting it right.

Appendix 2. References for Australian Butterflies

There are numerous moths and butterflies in Australia so rather than my trying to describe a few I would refer you to the reference books listed on the cover page.

I am indebted to the Australian Museum for the following Fact sheets. Below are connections to the Australian Museum Internet Site which has these Fact sheets.

- [Australian mallee moths](#)
- [Australian Painted Lady Butterfly](#)
- [Bogong Moth](#)
- [Caper White Butterfly](#)
- [Common Crow or Oleander Butterfly](#)
- [Cup moths](#)
- [Hawk moths](#)
- [Lichen moths](#)
- [Monarch or Wanderer Butterfly](#)
- [White-stemmed Gum Moth](#)

Appendix 3. References for New Zealand Butterflies

Please refer to Moths and Butterflies Honour Trainers Notes – New Zealand