

# STUDENT ACTIVITY

## Megaherbs – Classification



### ACTIVITY OVERVIEW

In this activity, students use megaherb image cards to group species of megaherbs according to their physical structures (leaf shape, leaf size, flower structure, flower colour).

The purpose is to encourage students to look more closely at plant structures and to introduce them to methods of classification.

**By the end of this activity, students should be able to:**

- explain what general classification is and why it is important
- experience devising and revising their own classification system
- better understand why scientists do not always agree and why species may be reclassified as new information comes to light.

### Introduction/background notes

Scientists use classification to identify organisms and to show how organisms are related to each other. Organisms are grouped by their characteristics. Botanists rely on the morphological (form and structure) characteristics to classify plants.

DNA analysis is now allowing scientists to look for similarity at the molecular level. New information either confirms what botanists already knew or helps them to revise their classification of plants.

New Zealand's Sub-Antarctic Islands support a diverse and unique flora. Of particular interest are the megaherbs. These are plants

with large leaves and colourful floral displays – completely different from their mainland counterparts. There are theories as to why these plants have evolved in this way – some suggest that having large leaves is an adaptive response to the climatic conditions found on the islands – cool, cloudy, and humid. The flowers with their bright colours are adapted to utilize the weak sunlight and short summer season, as well as attracting the pollinators.

This activity encourages students to take a closer look at the physical structures of megaherbs and to devise their own system for classifying them.

## WHAT YOU NEED:

- Copies of the image cards – enough for one set per group
- Paper or a digital device for recording the selection criteria
- Background information on New Zealand’s Sub-Antarctic islands (<http://www.doc.govt.nz/nature/habitats/offshore-islands/new-zealands-subantarctic-islands/>)

## WHAT TO DO

1. Begin by discussing where New Zealand’s Sub-Antarctic islands are and why they are unique – particularly the megaherb flora.
2. Then discuss or brainstorm what classification is, and why grouping organisms is important.
3. Structure the activity according to the needs of your students. Older, more capable students may be able to start the activity right away. For those students needing more direction, discuss the different structures of the plants (e.g. leaf shape, leaf size, flower structure, flower colour) and how they differ among them.
4. Working in small groups, students use the image cards to group the megaherbs according to a structural characteristic. There is no right or wrong way to do this but the group must agree on the choices they make and be able to justify these criteria to their class.
5. When the students have finished classifying the megaherbs, they need to name each group and record their selection criteria.
6. If time permits, each group can report back to the class, justifying their groups and selection criteria.

## DISCUSSION QUESTIONS

- After viewing the classification systems other groups have used, would your group make any changes to the way you grouped your megaherbs?
- There is plenty of information available about the different megaherb species and their characteristics. Why did your teacher ask you to group and classify megaherbs? What is the value of an exercise such as this?
- How do advances in microscopy and DNA analysis change the nature of classification?

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## EXTENSION IDEA

Introduce your students to the Latin names for the genus and species for the megaherbs. Ask your students to work out or research what the names mean in English. Can they see the relationship between the name and the megaherb characteristics and/or their locality?

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## ANISOTOME ANTIPODA



## ANISOTOME LATIFOLIA





## BULBINELLA ROSSII



## PLEUROPHYLLUM CRINIFERUM



## PLEUROPHYLLUM HOOKERI



## PLEUROPHYLLUM SPECIOSUM





# STILBOCARPA POLARIS



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Science Learning Hub - <http://sciencelearn.org.nz/Contexts/Ferns/Teaching-and-Learning-Approaches/DIY-fern-classification>