**ACTIVITY: Constructing food webs**

**Activity idea**

In this activity, students construct a food web using string and pictures. Their web will show the network of species in the ecosystem that is supported by honeydew produced by scale insects.

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

* describe relationships between particular organisms within the New Zealand bush ecosystem
* build their own food web to show the interdependence of organisms in an ecosystem.

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**Introduction/background**

Honeydew insects live in the bark of beech trees and produce small drops of a sweet liquid (honeydew). This liquid is food for a huge range of creatures including birds, insects and fungi.

In this activity, students are challenged to figure out all the different animals and fungi that feed on honeydew. For example, birds feed on both honeydew and beetles so students can connect pieces of string from the bird card to both the honeydew card and the beetle card. Encourage students to many as many links as possible!

**What you need**

* Access to the video clips [Honeydew](https://www.sciencelearn.org.nz/videos/760-honeydew), [Moths](https://www.sciencelearn.org.nz/videos/632-scale-insects) and [Scale insects](https://www.sciencelearn.org.nz/videos/632-scale-insects) and the article [Honeydew ecosystem](https://www.sciencelearn.org.nz/resources/1436-honeydew-ecosystem)
* Printed copies of the [food web cards](http://www.sciencelearn.org.nz/content/download/7258/112954/version/12/file/Food+web+cards.pdf)
* Lengths of brightly coloured string to show the links between different organisms in the food web
* Blu-Tack or similar to fix the string to the cards

**What to do**

1. Watch the video clips [Honeydew](https://www.sciencelearn.org.nz/videos/760-honeydew), [Moths](https://www.sciencelearn.org.nz/videos/632-scale-insects) and [Scale insects](https://www.sciencelearn.org.nz/videos/632-scale-insects) and read the article [Honeydew ecosystem](https://www.sciencelearn.org.nz/resources/1436-honeydew-ecosystem). (For an overview about ecosystems, read the article [Ecosystems](https://www.sciencelearn.org.nz/resources/993-ecosystems).)
2. As a class, discuss what the students understand about ecosystems and food webs and what they know about honeydew, moths and scale insects. (The video clip [Understanding food webs](https://www.sciencelearn.org.nz/videos/37-understanding-food-webs) provides some background information on food webs.)
3. Give pairs or small groups of students a copy of the food web cards. Ask them to spread out the cards and then to try to connect the cards together using string and Blu-Tack. (For example, a piece of string could connect the honeydew to sooty mould. The mould is also eaten by beetles, so they’d need another piece of string from the mould to beetles.) Challenge students to see how many links they can make – the more connections and the bigger they can make their food web, the better! If necessary, have students refer to other video clips or other articles in the context to better understand the organisms in this ecosystem.

**Discussion questions**

* There is a card for flowers or nectar that are only available in spring. What might the birds eat when the nectar isn’t available?
* Do all birds eat beetles? What else could they eat in the bush?
* What does a food web tell us about the relationships within an ecosystem?

**Extension ideas**

* Ask students to try constructing the food web with and without wasps. Remember that wasps will eat all of the honeydew and kill the scale insect, so there will be only one piece of string coming from the honeydew card and going to the wasp. What does this mean for the rest of the ecosystem?
* Ask students to make more cards for other species to add to the food web. To do this, you’d need to provide access to information sources so that your students can do some research on other species that are found in the New Zealand bush. How big can they make their ecosystem?
* Ask the students to predict possible outcomes of an organism within the ecosystem either being eliminated or increasing greatly in population size. Encourage students to realise that either event would have a flow-on effect to the other organisms due to the connected nature of an ecosystem.