

Future Food Education Modules

Teacher's Guide Years 3-4





Educational Modules

Future Foods

Bunjil Place have teamed up with multi-sensory experience designers, Post Dining, to develop four "Future Food" modules based on the themes of Casey Cornucopia, exploring the food systems of the Casey region.

The modules encourage students to consider issues of food security in building a sustainable future. They will be encouraged to incorporate design thinking, scientific analysis and the creative arts to reimagine food systems and what we put on our plates!

The four modules for year levels 1-8 include:

1. Food Waste
2. Water Footprint of foods
3. Future Proteins
4. Local Native Foods.

We hope you enjoy this adventure into our culinary future...

Bon voyage!

Module 1: Food Waste



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Module 1: Food Waste



[This module has an accompanying powerpoint](#)

Curriculum Links

Cross Curriculum Priorities



Sustainability

Year 3-4 Content

HEALTH & PE | Personal, social and community health | Making healthy and safe choices | [AC9HP4P10](#): investigate and apply behaviours that contribute to their own and others' health, safety, relationships and wellbeing

DESIGN & TECHNOLOGIES | Knowledge and understanding | Technologies context: Food and fibre production; Food specialisations | [AC9TDE4K04](#): explore how food can be selected and prepared for healthy eating

Year 4 Content

HASS | Knowledge & Understanding | Geography | [AC9HS4K06](#): sustainable use and management of renewable and non-renewable resources, including the custodial responsibility First Nations Australians have for Country/Place

HASS | Knowledge & Understanding | Civics & Citizenship | [AC9HS4K08](#): the roles of local government and how members of the community use and contribute to local services

SCIENCE | Science understanding | Biological sciences | [AC9S4U01](#): propose actions or responses to an issue or challenge that consider possible effects of actions

Learning Objectives

Understand what food waste is; there is a lot of food waste in Australia; how we can reduce food waste at home

Learning Outcomes

- Be able to identify one or more ways to reduce food waste
- Know how to dispose of food waste sustainably



Module 1: Food Waste



SLIDE 1-3 10 min



Discussion:

Q: Ask if students know what food waste is?

- Encourage answers which are examples of food waste or answers which mention food going bad or going in the bin.
- Conclude with the definition: "food that is thrown away or goes off before it can be eaten"

Q: Ask if students know why we have food waste & where does it come from?

- Prompt answers such as buying too much food, serving ourselves more food than we can eat, forgetting about food in the cupboard or fridge, leaving food out of the fridge for too long, not knowing which parts are edible.
- Not all food waste is from households - 1/3 is from houses, but another 1/3 is from farms, and 1/3 is from the food industry, such as restaurant, cafes and supermarkets.

SLIDE 4-6: 5-6 min



Learn about Food Waste in Australia

- Australia currently wastes 7.3 million tonnes of food each year;
- This is the equivalent of 13,000 Olympic sized swimming pools;
- OR one in five shopping bags ending up in the bin.

Why should we think about reducing food waste?

- If food scraps end up in landfill they are trapped without air among all the other general waste: when they break down like this they release methane gas, which leads to climate change;
- Food waste feeds climate change and accounts for 8-10% of global greenhouse gas emissions.



Module 1: Food Waste



SLIDE 8 4-5 min



Ways to reduce food waste:

We can COOK some scraps that often get thrown away:

- leafy green tops of carrots and beetroot;
- vegetable skins e.g. pumpkin, potato, carrot, cucumber;
- stems of broccoli or cauliflower;
- Sometimes scraps need to be cooked for longer before they can be eaten, like pumpkin skin.

BONUS: Health benefits of eating vegetable skins

- High in fibre which is good for our tummy and helps us go to the toilet!

SLIDE 9 5 min



We can CREATE new foods from waste:

- Many plants can be regrown at home from food scraps, such as a seed or a vegetable top.
- Has anyone tried re-growing food from scraps? If so, what did you grow?

What vegetables could you re-grow from scraps?

- Spring onions re-grow quickly by putting the white bottoms with roots in a glass of water;
- Root vegetables like carrots and beetroot tops (the part you cut off where the leaves sprout from) will re-sprout edible greens if placed semi-submerged in water;
- Cos lettuce, bok choy, celery, leeks all regrow if the bottom is placed in water on a windowsill;
- Avocado seeds can also be sprouted from a glass of water - but it can take 10-15 years until you get a tree large enough to produce more avocados!



Module 1: Food Waste



SLIDE 10-12 5 min



We could COMPOST our food scraps:

- Composting is recycling food scraps as compost to turn into nutritious soil to use for growing more plants.
- This is a natural process where food decays with help from microorganisms such as bacteria, worms and fungi.

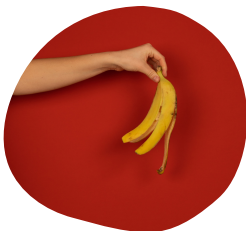
QUESTION: Does anyone know the benefits of composting?

- Compost improves the quality of soil, which makes plants grow faster and stronger.
- Composting saves food from landfill

QUESTION: How does compost help the quality of the soil?

- Compost recycles nutrients from food and puts them back into the soil for plants to pick up through their roots.
- Bacteria, bugs and worms feed on the compost converting bigger pieces of food waste into soil.

SLIDE 13-18 10 min



GUESSING GAME

Get everyone to stand up. Show the slides one at a time and ask students whether they could COOK, CREATE or COMPOST this food waste. Allocate one corner of the room for cook, create and compost, and ask students to move to the corner that matches their answer.

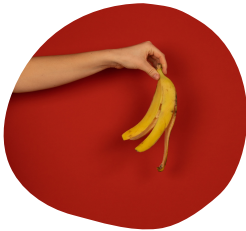
1. Banana peel: COOK as a curry or bake into banana bread
2. Egg shells: COMPOST
3. Stale bread: COOK into a bread-and-butter pudding, or make into breadcrumb
4. Mouldy bread: COMPOST
5. Celery: CREATE: re-grow tops in a glass of water



Module 1: Food Waste



SLIDE 13-18 10 min



GUESSING GAME cont.

Hint: Some foods may have more than one answer.
(And they can all be composted)

ALTERNATE OPTION: DRAWING ACTIVITY

Can you draw:

- One piece of food waste that you could cook, and what you would make with it;
- One piece of food waste that you could create more food from, and what it would grow into;
- One piece of food waste that you could compost.

BONUS ACTIVITY



Grow celery on windowsill in classroom

Place celery bottoms in a recycled glass jar, filled with water - leave on the windowsill in the sun and watch the tops re-grow! Toothpicks may help to keep the celery in place. This can also be done with spring onions, root vegetables and herbs!

Name: _____

Help save food waste!

Can you draw one piece of food waste that you could cook,
one that you could create more food from,
and one that you could compost?

I could cook...



I could create...



I could compost...



Module 2: Water Footprint

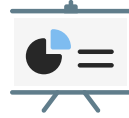


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Module 2: Water Footprint



[This module has an accompanying powerpoint](#)

Curriculum Links

Cross Curriculum Priorities



Sustainability

Year 3-4 Content

HEALTH & PE | Personal, social and community health | Making healthy and safe choices | [AC9HP4P10](#): investigate and apply behaviours that contribute to their own and others' health, safety, relationships and wellbeing

Year 4 Content

HASS | Knowledge & Understanding | Geography | [AC9HS4K05](#): the importance of environments, including natural vegetation and water sources, to people and animals in Australia and on another continent

SCIENCE | Science understanding | Biological sciences | [AC9S4U01](#): propose actions or responses to an issue or challenge that consider possible effects of actions

SCIENCE | Science understanding | Earth and space sciences | [AC9S4U02](#): identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and ocean; precipitation; evaporation; and condensation

Learning Objectives

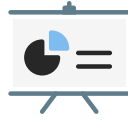
Recognise that different foods use different amounts of water to produce

Learning Outcomes

- Describe what water footprint means
- List foods with a low and high water footprint
- Describe what factors affect a food's water footprint



Module 2: Water Footprint



SLIDE 1-3 6-7 min



Hand out printed copies of the worksheet and have students fill them in as you go through the module

Introduce Water Footprint:

Q: Does anyone know what water footprint is?

A: It's the amount of water needed to grow, farm and process food.

DISCUSSION: Where do you think water is used in process of making our food?

Allow students to come up with some answers

- Water used to GROW the crops, both rain and irrigation.
- Water for animals to drink;
- Water used to FARM food: harvesting, fertilising, cleaning equipment;
- Water in food PROCESSING factories e.g. water added to canned food, or water to clean factory machinery.

All products have a water footprint not just food

- Clothes, cars, pens and pencils can all have their water footprint measured.

SLIDE 4 2 min



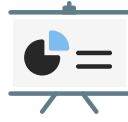
OPTIONAL Deep Dive:

Water footprint is made up of green, blue and grey water:

- Green water: rain water
- Blue water: surface and groundwater reservoirs (irrigation)
- Grey water: fresh water used to dilute any pollution created during the production process.



Module 2: Water Footprint



SLIDE 5 2 min



Environmental Impact:

- Food production is a water intensive process: most of the total volume of water is used to grow feed for the animals;
- From 1996-2005, food production made up 92% of the total global water footprint;
- This is important because fresh water is a limited resource;
- The food system is a valuable place to make changes to our global water usage for a sustainable future.

Statistics from: <https://waterfootprint.org/en/water-footprint/product-water-footprint/water-footprint-crop-and-animal-products/>

SLIDE 6-9 10 min

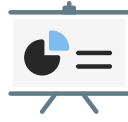


ACTIVITY: Which food product has the lowest footprint?

1. In table groups ask students to discuss the water footprint of Beef, Chicken, Kangaroo and Chickpeas, and rank them in order of Highest - Lowest water footprint;
2. Ask students to put their hands up if they think the lowest water footprint is chicken / chickpeas / kangaroo / beef.
3. Choose a table to share their answers and ask what went into their reasoning.
4. Reveal answers on the next slides- starts with the lowest. Note: lower water footprint foods are more sustainable = less water.



Module 2: Water Footprint



SLIDE 6-9 10 min



Activity Cont.

Note: lower water footprint foods are more sustainable.
Low footprint = less water. (We will explore high and low water footprint further in the upcoming slides)

ANSWERS

1. Chickpea (1300L for every 1kg of food)
2. Kangaroo (3000L of water per 1kg)
3. Chicken (3300L of water per 1kg)
4. Beef (15,400L of water per 1kg)

(Kangaroo and chicken are very close)

SLIDE 10-11 5 min

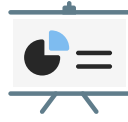


Explore high water footprint:

- Farmed animals require farmed feed AND drinking water to live;
- 98% of water footprint for farmed animals comes from the water footprint of their feed!
- Cows require more food and more water because they are significantly larger than chickens;
- Highly processed foods have high water footprint because of all the processing and equipment needed to make them.



Module 2: Water Footprint



SLIDE 12-14 7-8 min



What makes a LOW water footprint?

Overall plants need less water than animals as they get most of their energy from the sun rather than other plants.

Other foods with low water footprint

- Fruits and vegetables;
- Grains and cereals (like oats, wheat for bread);
- Legumes like baked beans, chickpeas, lentils;
- Plant foods, and eggs, which don't need processing.

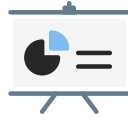
Exception: nuts have a high water footprint as these trees and crops require a lot of water to grow.

Why do Kangaroos have a lower water footprint than other large animals and other red meats?

- Indigenous to Australian environment, where there's less water;
- Kangaroos eaten rely on native scrub, hence farmers do not have to grow feed for them. They also typically eat less than livestock;
- They don't need a lot of water as their intestines reabsorb/recycles water passing through their body;
- This is compared to other livestock who do not recycle water in their body and need to drink much more water than a kangaroo;
- They can go months without drinking any water at all!



Module 2: Water Footprint



SLIDE 15 – OPTIONAL



Discuss alternate low water footprint foods:

- Seaweed - no freshwater required for farming or drying
- Native plants - many adapted to dry environments
- Edible insects - small & short lifespan therefore very little water needs, often obtain water from food sources
- Wild camel - adapted to deserts

Name: _____

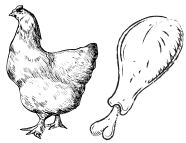
The Water Footprint of Food

1. What is a water footprint?

2. Can other products have a water footprint? YES / NO

3. Is water a limited resource? YES / NO

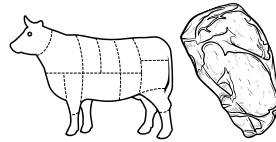
4. Number the following foods by their water footprint from lowest (1) to highest (4)



___ chicken



___ chickpeas/lentils



___ beef



___ kangaroo

5. What is one reason beef has a very high water footprint?

6. What kinds of foods usually have higher water footprint?

7. What kinds of foods usually have lower water footprint?

8. Why does kangaroo have a lower water footprint than other meats?

Module 3: Future Proteins



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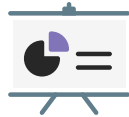
Postdining

Casey Cornucopia

Y3-4 Future Food Education Modules



Module 3: Future Proteins



[This module has an accompanying powerpoint](#)

Curriculum Links

Cross Curriculum Priorities



Sustainability

Year 3-4 Content

HEALTH & PE | Personal, social and community health | Making healthy and safe choices | [AC9HP4P10](#): investigate and apply behaviours that contribute to their own and others' health, safety, relationships and wellbeing

DESIGN & TECHNOLOGIES | Knowledge and understanding | Technologies context: Food and fibre production; Food specialisations | [AC9TDE4K03](#): describe the ways of producing food and fibre

Year 4 Content

HASS | Knowledge & Understanding | Geography | [AC9HS4K06](#): sustainable use and management of renewable and non-renewable resources, including the custodial responsibility First Nations Australians have for Country/Place

Learning Objectives

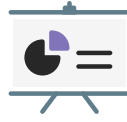
To identify protein sources from unconventional food sources.

Learning Outcomes

- Define protein
- List foods with high protein content
- Identify and name edible insects



Module 3: Future Proteins



SLIDE 7-9 5-7 min



ACTIVITY: "Who Am I" game

Who Am I #1: Crickets

1. I am a source of protein that does not need to be refrigerated;
2. I can be eaten whole or ground up into a powder;
3. I am small and usually brown in colour;
4. My exoskeleton is rich in a fibre and calcium;
5. I chirp loudly;
6. I feed on grasses and plants;
7. I am a cricket!

Crickets are very nutritious!

- Bugs have a skeleton on the outside rather than the inside like our bones;
- Whether eating crickets whole or ground, the exoskeleton is consumed;
- Because we eat their skeleton, we get lots of calcium which then helps build our own bones and teeth!

SLIDE 10-12 8-10 min

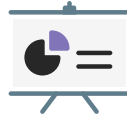


Who Am I #2: Mealworms

1. I am very small, and I have a long brown body;
2. I am often used to feed pet lizards or chickens, but humans can eat me too!
3. If you don't eat me, I will turn into a beetle;
4. I wriggle around and have very tiny legs that you can hardly see;
5. I live on the ground and like dark places;
6. I am a mealworm!



Module 3: Future Proteins



SLIDE 10-12 8-10 min



Mealworms Cont.

Mealworms are very nutritious!

- As with all insects, mealworm's outer skin is an important prebiotic fibre for gut health - something you won't find in any animal meats;
- Prebiotic foods are not absorbed into our gut, but instead provide a food source for the healthy bacteria living in our gut.

Lifecycle

Mealworms are the larvae (baby) form of a darkling beetle. The beetle will lay hundreds of eggs which hatch into mealworms. Then just like how a caterpillar turns into a cocoon, mealworms turn into a pupae - encasing themselves in a hard shell where they don't eat or drink or move. They stay like this for a couple of weeks before hatching into a beetle.

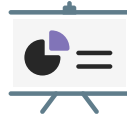
SLIDE 14 1 min



WARNING - DO NOT GO AND EAT BUGS YOU FIND IN THE GARDEN. THESE ARE NOT SAFE TO EAT. ONLY EAT BUGS IF THEY HAVE BEEN COOKED BY AN ADULT AND ARE BEING SERVED TO YOU AS FOOD.



Module 3: Future Proteins



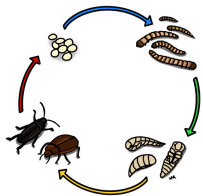
SLIDE 13 5-6 min



Why eat bugs?

- People in 130 countries around the world eat insects all the time - there are nearly 2000 known edible species;
- Insects need less land than other farm animals because they are so small. They can be farmed in boxes which are stacked on top of each other;
- They need less water and feed than other animals because they are small and because they live for only a few weeks;
- They can be grown almost anywhere including in people's backyards, and fed on food scraps;
- They are delicious!
- As our population around the world increases, bugs are one of the ways we can meet everyone's protein needs in a sustainable way.

SLIDE 15 OPTIONAL ACTIVITY



Grow your own mealworm farm:

- You will need some layered containers, at least two with a mesh bottom;
- Start with meal worms sourced from a pet shop in one layer;
- Once the mealworms progress through each stage of the cycle you will end up with a layer for worms, pupae and beetles;
- Keep in a dark environment and watch the cycle of life!



For more info visit: <https://bugible.com/2018/03/20/how-to-farm-your-own-mealworms/>





You may like to offer your students edible insect tastings.
Purchase some snack crickets or mealworms from
Circle Harvest <https://circleharvest.com.au/>

Name: _____

Future proteins

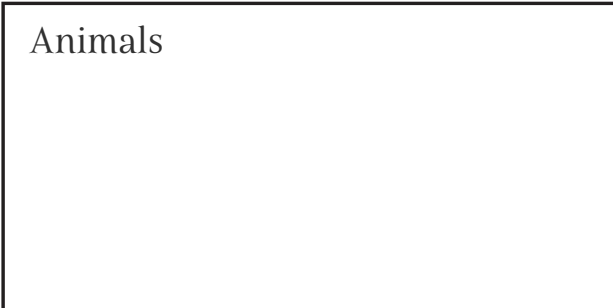
1. Our bodies need protein for:

 _____  _____ + _____

 _____    _____

2. Draw 2 protein foods in each box that come from:

Animals



Plants



3. Two future proteins are:

_____ + _____

4. How many countries eat insects regularly? _____

5. How many edible insect species are there? _____



6. Farming insects is good for the planet because



WARNING: DO NOT eat bugs you find yourself

Module 4: Native Foods



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Module 4: Native Foods



[Click on icon for
Powerpoint link](#)

Curriculum Links

Cross Curriculum Priorities



Aboriginal and Torres Strait Islander
Histories and Cultures

Year 3 Content

HASS | Knowledge & Understanding | Geography | [AC9HS3K03](#) the representation of contemporary Australia as states and territories, and as the Countries/Places of First Nations Australians prior to colonisation, and the locations of Australia's neighbouring regions and countries

Year 3-4 Content

DESIGN & TECHNOLOGIES | Knowledge and understanding | Technologies context: Food and fibre production; Food specialisations | [AC9TDE4K03](#): describe the ways of producing food and fibre

HASS | Knowledge and Understanding | Geography | [AC9HS1K04](#): how places change and how they can be cared for by different groups including First Nations Australians

Learning Objectives

To identify the Country we are on, and the foods native to the local environment

Learning Outcomes

- Identify Aboriginal place names
- Understand the local environment
- Name and identify local native flora and fauna



Module 4: Native Foods



SLIDE 1-3 2 min



Q: What do we mean by native foods?

A: Native foods are flora (plants) and fauna (animals) that grow naturally in Australia.

DISCUSSION:

- Has anyone tried any native foods?
- Do you remember where you tried them?
- Does anyone know the names of any native foods?

Examples

Top images: lemon myrtle, wattleseed, bush lime

Bottom images: saltbush, quandong, bush tomato

SLIDE 4 10 min



Why are native foods not more common in Australian diets?

- For 60,000 years before European settlement the Casey district was the the land of the Bunurong and Wurundjeri people;
- When European people moved to Australia, they started clearing and farming the land in their own way, and forced Aboriginal people to stop speaking their language and culture;
- A lot of the knowledge about native foods was lost.



Module 4: Native Foods



SLIDE 4 10 min



Why are native foods not more common... CONT.

- Today, very little of the original landscape is left due to farming, building cities and suburbs - so there aren't many places for native foods to grow;
- The Bunurong people still play an active role in the protection, preservation and awareness of their culture, heritage and environment through the Bunurong Land Council Aboriginal Corporation.

Reference:

<https://www.casey.vic.gov.au/caseys-history#:~:text=Aboriginal%20settlement,for%20the%20Aboriginal%20Protectorate%20Station.>

SLIDE 5-8 15 min



ACTIVITY:

1. Hand out a map outline of Australia (handout below)
2. Ask students to draw in and name all the states and territories

Show the original Aboriginal map of Australia.

- Each group had a different language and knew in depth about their own local climate and landscape;
 - They passed knowledge down generation to generation and looked after their Country;
 - By caring for the plants and animals, there was always enough food to go around. Where we live in Casey is the traditional land of the Bunurong/Boon Wurrung and Wurundjeri people.
3. Write the traditional Aboriginal Countries of the Casey region on the worksheet.



Module 4: Native Foods



SLIDE 9 5 min



What grows on Bunurong/Boon Wurrung & Wurundjeri Country?

- Water: we are near the beaches - seafood such as eels & mussels were found here;
- Plants: inland, plants such as wild yams, and plant roots, native spinach grew;
- Land animals: birds eggs, kangaroos and possums.

SLIDE 10 10 min



ACTIVITY: Draw a Chocolate Lily onto your map

"Chocolate Lily (aka. Nodding Chocolate Lily, *Dichopogon strictus*) gets its name from its chocolate scented flowers. Its bush food value, however, comes mainly from its juicy tubers, which can be eaten raw or cooked. This species is found in grassland, woodland and forest regions of New South Wales, South Australia, Queensland, Western Australia, Tasmania and Victoria."

<https://tuckerbush.com.au/chocolate-lily-arthropodium-strictum/>

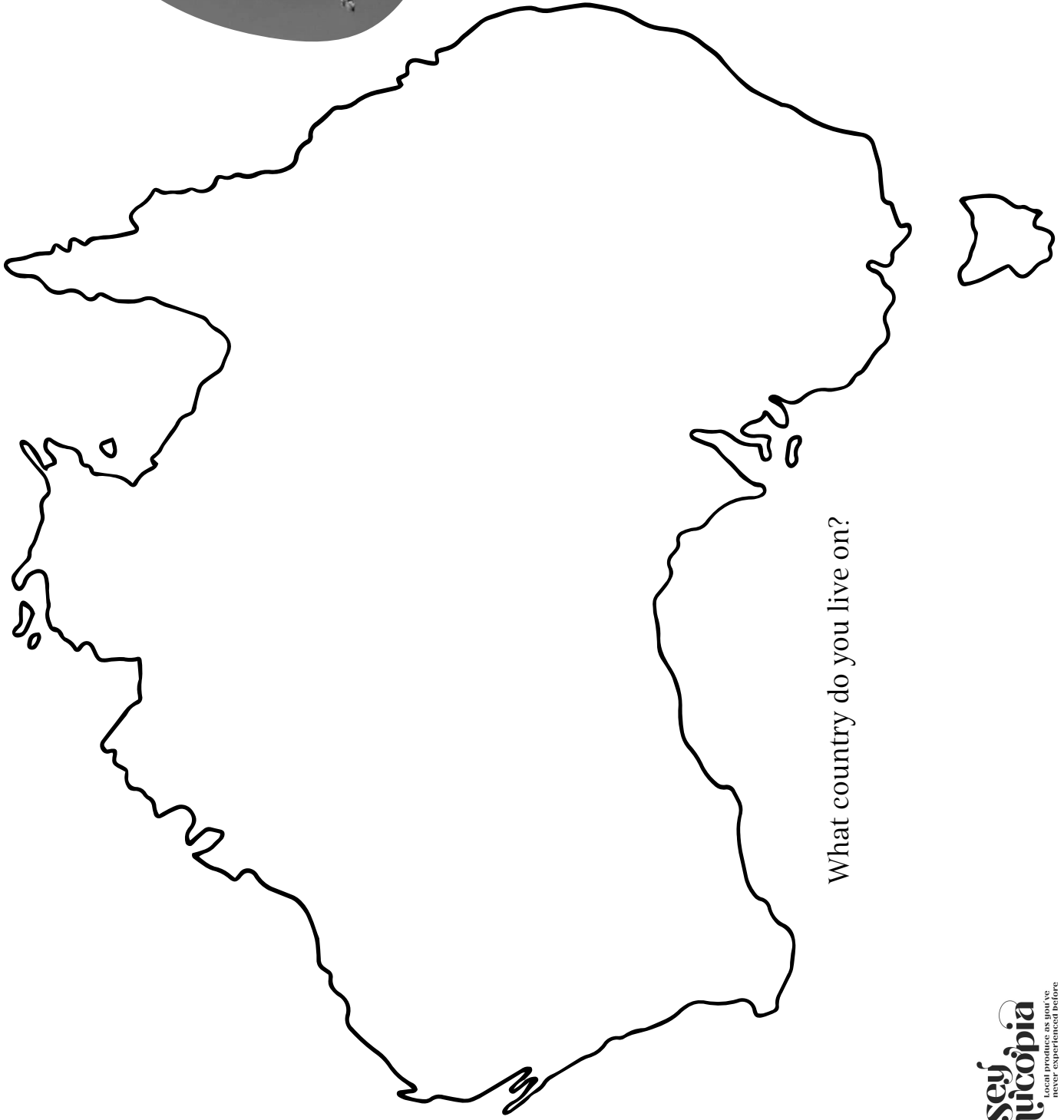
Bonus: Why draw plants?

Through looking closer at plants and taking the time to get to know them better, we also get to know the world around us that much better.

BONUS ACTIVITY

Purchase some native food samples and offer the students to try.

Try: <https://melbournebushfood.com.au/>



What country do you live on?

**These Future Food
Education modules have
been designed for Casey
Cornucopia by Post Dining.**

Postdining

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Hannah Rohrlach 0438 186 375 | Steph Daughtry 0466 590 855



We design multi-sensory experiences that reimagine the relationship between people, food and the environment. Our designs take the form of immersive performances, exhibitions, workshops, events and festival programming. For Arts Industry, Corporate and Educational groups.

**Learn more about
Post Dining here!**