



MAGNIFICENT MINIBEASTS
NSW NESA CURRICULUM ALIGNMENT
2019

NSW NESA CURRICULUM 2019

STAGE 1

SCIENCE & TECHNOLOGY

GEOGRAPHY

STAGE 1 SCIENCE & TECHNOLOGY

UNIT & ALIGNED CONTENT	CODE	OUTCOMES - A student:	CONTENT
LIVING WORLD Example of Magnificent Minibeasts content for this unit: <ul style="list-style-type: none"> All invertebrates have identifiable features which differentiate them from other species Invertebrate specimens of a range of species are provided for examination under magnification Large invertebrate models are provided Invertebrates live where their habitat needs are met The life cycle of several different species is showcased Science and technology has shown that all invertebrates require certain habitats and food sources seasonally Scientists have identified that invertebrates are impacted by many human actions Invertebrates change as they grow - many have different life stages 	ST1-4LW-S	describes observable features of living things and their environments	External features of living things Students: <ul style="list-style-type: none"> describe the external features of a variety of living things (ACSSU017) identify and group plants and animals using their external features (SciT SysT) Living things live in different places Students: <ul style="list-style-type: none"> identify that living things live in different places that suit their needs (ACSSU211) recognise that people use science and technology in their daily lives, including when caring for their environment and living things (ACSHE022, ACSHE035) Living things change Students: <ul style="list-style-type: none"> explore how living things grow, change and have offspring similar to themselves (ACSSU030, SciT)
SKILLS Example of how Magnificent Minibeasts content develops and applies skills: <ul style="list-style-type: none"> Students observe minibeasts, collect data and communicate results from invertebrates survey 	ST1-1WS-S	observes, questions and collects data to communicate and compare ideas	Students develop and apply skills in: <ul style="list-style-type: none"> scientific inquiry through the process of working scientifically

ADDRESSING KEY INQUIRY QUESTIONS FOR ST1 LIVING WORLD

Q: What are the external features of living things?

A: Invertebrates have observable external features such as body shape and parts that allow them to be identified

Q: How can we improve a local environment to encourage living things to thrive?

A: We can care for places by encouraging specific animal habitat, varied seasonal food sources and chemical free environments

Q: How do living things change as they grow?

A: Most invertebrates have different life stages and undergo partial or complete metamorphosis

Magnificent Minibeasts content supports:

Needs of Living Things (ASTA), Schoolyard Safari (Primary Connections), Watch it grow! (Primary Connections)

Magnificent Minibeasts content chiefly supports:

Cross-curriculum priorities (sustainability), general capabilities (critical and creative thinking, ethical understanding, personal and social capability) and civics and citizenship





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NSW NESA CURRICULUM 2019 STAGE 1	SCIENCE & TECHNOLOGY
	GEOGRAPHY

STAGE 1 GEOGRAPHY			
UNIT & ALIGNED CONTENT	CODE	OUTCOMES - A student:	CONTENT: Students:
FEATURES OF PLACES Example of Magnificent Minibeasts content for this unit: <ul style="list-style-type: none"> • Invertebrates require varied habitats and food sources • The more habitat diversity, the more invertebrate species will be able to survive • Invertebrates perform important roles in maintaining ecosystems • Invertebrates are affected by habitat loss and poisons • We can provide sustainable habitat for invertebrates • Invertebrate variation is dependent on weather and seasons 	GE1-1 GE1-2	describes features of places and the connection people have with places identifies ways in which people interact with and care for places	<ul style="list-style-type: none"> • Features of places: Investigate features of places and how they can be cared for • Weather and seasons: Investigate the weather and seasons of places

ADDRESSING KEY INQUIRY QUESTIONS OF FEATURES OF PLACES

Q: What are the features of, and activities in, places?

A: Different places have different features, both natural and man made which influence habitat suitability for invertebrates

Q: How can we care for places?

A: We can care for places by encouraging specific animal habitat, varied seasonal food sources and chemical free environments

Q: How can spaces within a place be used for different purposes?

A: Invertebrates have different habitat requirements and different food preferences: spaces with different features provide habitat variation

Magnificent Minibeasts supports geographical inquiry and tools for example:

FIELDWORK: Survey the school grounds or local park to capture and identify invertebrates as well as observe signs of invertebrate presence and habitat suitability.

GRAPHS AND STATISTICS: Tally the diversity and abundance of species and illustrate findings using graphs and statistics

VISUAL REPRESENTATIONS: Students observe invertebrates under magnification providing detail for visual representations

Magnificent Minibeasts content chiefly supports:

Cross-curriculum priorities (sustainability), general capabilities (critical and creative thinking, ethical understanding, personal and social capability) and civics and citizenship





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NSW NESA CURRICULUM 2019

STAGE 2

SCIENCE & TECHNOLOGY

GEOGRAPHY

SCIENCE & TECHNOLOGY

UNIT & ALIGNED CONTENT	CODE	OUTCOMES - A student:	CONTENT: Students:
<p>LIVING WORLD</p> <p>Example of Magnificent Minibeasts content for this unit:</p> <ul style="list-style-type: none"> Invertebrates have identifiable features that differentiate them from each other allowing for classification Invertebrate specimens are collected during a survey and a range of preserved species and models are also provided for examination under magnification Science has shown that invertebrates require specific habitat, weather and seasonal conditions The life cycle of several invertebrate species is showcased Students will conduct an investigation of an area for invertebrates which will highlight plant and animal lifecycles Invertebrate diversity and abundance is influenced by habitat availability - which in turn influences the higher food chain Environmental conditions affect the lifecycle of plants and animals Invertebrates have specific habitat requirements and niche roles (E.g. seed dispersal and pollination) underpinning complex interspecies relationships Plants and animals rely on specific invertebrates for survival Invertebrates are impacted by many human actions Science has demonstrated that different invertebrate species have unique behaviours and are active seasonally Plant diversity is important for invertebrate survival (E.g. agricultural monocultures are detrimental to bee health) Science has shown the affects of chemical use on invertebrates and the value of diverse habitats for invertebrates 	ST2-4LW-5	compares features and characteristics of living and non-living things	<p>Classification of living things Students:</p> <ul style="list-style-type: none"> collect data and identify patterns to group living things according to their external features, and distinguish them from non-living things (ACSSU044) SysT identify that science involves making predictions and describing patterns and relationships (ACSHE050, ACSHE061, SciT) <p>Life cycles of living things Students:</p> <ul style="list-style-type: none"> identify that living things have life cycles (ACSSU072) conduct an investigation into the life cycle of plants and/or animals (ACSSU072) <p>Survival of living things Students:</p> <ul style="list-style-type: none"> describe how living things depend on each other and the environment to survive (ACSSU073, SysT)
<p>SKILLS</p> <p>Example of how Magnificent Minibeasts content develops and applies skills:</p> <ul style="list-style-type: none"> Students collect data via a scientific investigation (minibeasts survey and habitat assessment). Data collected will determine habitat quality and diversity of invertebrates and these results can be communicated using scientific representations 	ST2-1WS-5	questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations	<p>Students develop and apply skills in:</p> <ul style="list-style-type: none"> scientific inquiry through the process of working scientifically

ADDRESSING KEY INQUIRY QUESTIONS FOR ST2 LIVING WORLD

Q: How can we group living things?

A: Invertebrates have common external features such as body shape and parts that allow them to be classified into groups

Q: What are the similarities and differences between the life cycles of living things?

A: Invertebrate species have different lifecycles - some undergo complete metamorphosis and others do not

Q: How are environments and living things interdependent?

A: Many invertebrates rely on host plants for their survival, or plants rely on particular invertebrates for pollination and seed dispersal

Magnificent Minibeasts content supports: Living and non-living things (ASTA), Feathers, fur or leaves? (Primary Connections), Plants in Action (Primary Connections), Friends or foe? (Primary Connections), Among the gum trees (Primary Connections).

Magnificent Minibeasts content chiefly supports:

Cross-curriculum priorities (sustainability), general capabilities (critical and creative thinking, ethical understanding, personal and social capability) and civics and citizenship





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NSW NESA CURRICULUM 2019 STAGE 2	SCIENCE & TECHNOLOGY
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STAGE 2 GEOGRAPHY

UNIT & ALIGNED CONTENT	CODE	OUTCOMES -A student:	CONTENT: Students:
PLACES ARE SIMILAR AND DIFFERENT Example of Magnificent Minibeasts content for this unit: <ul style="list-style-type: none"> Invertebrates are found in varied habitats and climates (E.g. Ground burrowing desert bees) Places can be protected or improved to encourage greater invertebrate diversity The more invertebrate diversity the better for biodiversity and agricultural productivity Animals are found in limited ranges, with distribution determined by habitat suitability Weather and climate influences habitat suitability for plants and animals and ramifications of that for humans (E.g. mosquito born disease) Climate change will impact invertebrate distribution and abundance People manage places differently which can influence invertebrate occurrence and ratios (E.g. chemical use, habitat modification) People are often fearful of invertebrates because they do not understand them 	GE2-1 GE2-2 GE2-3	examines features and characteristics of places and environments describes the ways people, places and environments interact examines differing perceptions about the management of places and environments	<ul style="list-style-type: none"> The Australian continent: investigate Australia's major natural and human features Climate of places: investigate the climates of different places Perception and protection of places: investigate how the protection of places is influenced by people's perception of places

ADDRESSING KEY INQUIRY QUESTIONS FOR PLACES ARE SIMILAR AND DIFFERENT

Q: How and why are places similar and different?

A: Different habitats occur due to climate and other geographical variations. Invertebrates are found in limited ranges where their needs are met.

Q: How do people's perceptions about places influence their views about the protection of places?

A: Invertebrates have specific habitat requirements. For example invertebrates are vital for pollination of agricultural and natural places. People who understand this have cause to protect invertebrate habitat for their own well being as well as that of biodiversity generally.

THE EARTH'S ENVIRONMENT Example of Magnificent Minibeasts content for this unit: <ul style="list-style-type: none"> Invertebrates require specific and varied natural habitats Natural vegetation is important for invertebrates Natural vegetation requires invertebrate interaction which is vital for biodiversity and ecosystem function Invertebrates are influenced by human behaviour (E.g. habitat modification, agricultural monocultures, pesticide use and garden design) More invertebrate species are found where habitat is diverse Invertebrates can be encouraged with sustainable practices Indigenous people harvested invertebrates sustainably 	GE2-1 GE2-2 GE2-3	examines features and characteristics of places and environments describes the ways people, places and environments interact examines differing perceptions about the management of places and environments	<ul style="list-style-type: none"> Different environments: investigate the natural characteristics of Australia Significance of environments: investigate the importance of natural vegetation and natural resources to the environment, animals and people Perception of environments: investigate the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments Protection of environments: investigate sustainable practices that protect environments, including those of Aboriginal and Torres Strait Islander Peoples
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ADDRESSING KEY INQUIRY QUESTIONS FOR THE EARTH'S ENVIRONMENT

Q: How does the environment support the lives of people and other living things?

A: Invertebrates such as bees are vital for pollination of agricultural and natural places. Invertebrates are a vital component of a complex food web. Invertebrates assist to regulate the environment

Q: How do different views about the environment influence approaches to sustainability?

A: Different agricultural practices, landscape design, and gardener's decisions impact invertebrates. People have differing views on land use, and management practices may not always be sustainable

Q: How can people use places and environments more sustainably?

A: Habitat and crop variation, and sustainable pest controls, improve invertebrate abundance and diversity, which supports ecosystem function and human well being

Magnificent Minibeasts supports geographical inquiry and tools for example:

FIELDWORK: Survey the school grounds or local park to capture and identify invertebrates as well as observe signs of invertebrate presence and habitat suitability.

GRAPHS AND STATISTICS: Tally the diversity and abundance of species and create graphs and statistics to reflect results

VISUAL REPRESENTATIONS: Students observe invertebrates under magnification providing detail for visual representations

GEOGRAPHICAL INQUIRY: Allows scope for development of geographical investigation and presentation of findings (E.g. How does invertebrate diversity and abundance within survey site influence higher food chain)

Magnificent Minibeasts content chiefly supports:
Cross-curriculum priorities (sustainability), general capabilities (critical and creative thinking, ethical understanding, personal and social capability) and civics and citizenship





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STAGE 3

SCIENCE & TECHNOLOGY

GEOGRAPHY

STAGE 3 SCIENCE & TECHNOLOGY

UNIT & ALIGNED CONTENT	CODE	OUTCOMES - A student:	CONTENT: Students:
LIVING WORLD Example of Magnificent Minibeasts content for this unit: <ul style="list-style-type: none"> Invertebrates diversity and abundance is influenced by the physical conditions of the environment Data and evidence can be gathered to determine invertebrate diversity are varied in their appearance and abilities Scientific knowledge and technology assist humans to understand invertebrate biology and threats Invertebrates are observed under magnification allowing the identification of adaptive features Invertebrates have adaptations that allow them to survive in their environment Many plants are reliant on a balance of particular invertebrates - for example parasitoid wasps predate caterpillars that left unchecked could destroy plants Changing physical conditions in the environment alters invertebrate diversity and abundance and hence effective ecosystem function Invertebrates are impacted by the physical condition of their environment including habitat, and climate variations, host plant relationships, and seasonal variation including climate change and sustainable management of environments is important for ecological services provided by them Humans can influence the survival of living things by considering and accommodating their requirements Invertebrate species distribution will alter with climate change affecting ecosystem function and even human health (E.g. mosquitoes) Invertebrates are vital for ecosystem function including agricultural production (E.g. pollinators, nutrient recyclers like dung beetles) Indigenous people sustainably harvested invertebrates and products such as witchetty grubs and sugarbag honey 	ST3-4LW-5	examines how the environment affects the growth, survival and adaptation of living things	Growth and survival of living things Students: <ul style="list-style-type: none"> describe how changing physical conditions in the environment affect the growth and survival of living things test predictions by gathering data and use evidence to develop explanations of events and phenomena (ACSHE081, ACSHE098, SciT) understand that scientific and technological knowledge is used to solve problems and inform personal and community decisions (ACSHE083, ACSHE100, SciT) Adaptations of living things Students: <ul style="list-style-type: none"> describe adaptations as existing structures or behaviours that enable living things to survive in their environment (ACSSU043, SciT) describe the structural and/or behavioural features of some native Australian animals and plants and why they are considered to be adaptations (SciT)
	ST3-5LW-T	explains how food and fibre are produced sustainably in managed environments for health and nutrition	Sustainably managing environments to source food and fibre Students: <ul style="list-style-type: none"> explore examples of managed environments used to produce food and fibre (SysT) investigate how and why food and fibre are produced in managed environments (ACTDEK021) explore plants and animals, tools and techniques used to prepare food to enable people to grow and be healthy (ACTDEK021) explain a sustainable practice used by Aboriginal and/or Torres Strait Islander communities to manage food and fibre resources
SKILLS Example of how Magnificent Minibeasts content develops and applies skills: <ul style="list-style-type: none"> Students collect data and communicate conclusions from invertebrate survey conducted to determine the ecological diversity and function of the local environment. Incursion aims to provide link between species diversity and effectiveness of ecological function 	ST3-1WS-5	plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions	Students develop and apply skills in: <ul style="list-style-type: none"> scientific inquiry through the process of working scientifically

ADDRESSING KEY INQUIRY QUESTIONS FOR ST3 LIVING WORLD

Q: How do physical conditions affect the survival of living things?

A: Invertebrates can only survive where their needs are met which includes nesting and foraging opportunities, climate and weather patterns

Q: How do the structural and behavioural features of living things support survival?

A: Invertebrates have different physical features and niche roles which are important for ecological function

Q: Why is it important for food and/or fibre to be produced sustainably?

A: A sustainable approach needs to be implemented to address the issues facing all invertebrates which include habitat loss, chemical use and monocultures. Humans rely on invertebrates for ecosystem services such as pollination and nutrient recycling

Magnificent Minibeasts content supports: Survival (ASTA), Desert Survivor's (Primary Connections)

Magnificent Minibeasts content chiefly supports:

Cross-curriculum priorities (sustainability), general capabilities (critical and creative thinking, ethical understanding, personal and social capability) and civics and citizenship





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STAGE 3

SCIENCE & TECHNOLOGY

GEOGRAPHY

STAGE 3 GEOGRAPHY

UNIT & ALIGNED CONTENT	CODE	OUTCOMES - A student:	CONTENT: Students:
<p>FACTORS THAT SHAPE PLACES</p> <p>Example of Magnificent Minibeasts content for this unit:</p> <ul style="list-style-type: none"> • People change the environment for invertebrates by reducing habitat and modifying it through land use like agriculture and chemical use • The natural environment provides vital ecosystem services such as pollination, which in turn influence agricultural success and biodiversity • People influence places through land use, chemical use, introducing foreign species to Australia (like honey bees), and altering species diversity through modifying habitat • Human induced climate change will impact invertebrate distribution and activity • Bushfire removes habitat for invertebrates. A contemporary example occurred in South Australia which contributed to the extinction of the green carpenter bee in that state. 	<p>GE3-1</p> <p>GE3-2</p> <p>GE3-3</p>	<p>describes the diverse features and characteristics of places and environments</p> <p>explains interactions and connections between people, places and environment</p> <p>compares and contrasts influences on the management of places and environments</p>	<ul style="list-style-type: none"> • Factors that change environments: investigate the ways people change the natural environment in Australia and another country • Environments shape places: investigate how the natural environment influences people and places • Humans shape places: investigate how people influence places • Bushfire Hazard: investigate the impact of ONE contemporary bushfire hazard in Australia

ADDRESSING KEY INQUIRY QUESTIONS FOR FACTORS THAT SHAPE PLACES

Q: How do people and environments influence each other?

A: Invertebrates are vital for pollination, seed dispersal and nutrient recycling however habitat diversity is vital for invertebrate abundance - which is influenced by human activity

Q: How do people influence places and the management of spaces within them?

A: Different agricultural practices, habitat alteration, landscape design, and even an individual gardener's decisions (like chemical use), influence habitat suitability for invertebrates

Q: How can the impact of bushfires on people and places be reduced?

A: Planned and appropriate fire regimes can reduce bush fire risk for people and biodiversity, including invertebrates

Magnificent Minibeasts supports geographical inquiry and tools for example:

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GRAPHS AND STATISTICS: Tally the diversity and abundance of species and create graphs and statistics to communicate results

VISUAL REPRESENTATIONS: Students observe invertebrates under magnification providing detail for visual representations

GEOGRAPHICAL INQUIRY: Allows scope for development of geographical investigation and presentation of findings (E.g. How does invertebrate diversity and abundance within survey site influence higher food chain)

