

YEAR 5 BIOLOGICAL SCIENCE UNIT PLAN

Year / Level	Year 5
Science Strand	Biological Science
Unit Title	Survival Scientists – Living Things in Challenging Environments
Duration	7 lessons × 40 minutes
Unit Overview	Students investigate how environmental conditions create survival challenges and examine how structural features and behaviours enable plants and animals to survive. Using evidence from Australian desert, Swedish boreal forest and Mexican tropical rainforest habitats, students compare organisms, identify patterns and relationships, plan a research investigation and make a reasoned prediction. Students also investigate biomimicry to explain how scientific knowledge about living things can inform human actions and solve problems. The unit culminates in an International Survival Science Museum informative library display.
Achievement Standard	By the end of Year 5, students explain how the form and behaviour of living things enables survival. They identify examples where scientific knowledge informs the actions of individuals and communities. Students plan safe investigations to identify patterns and relationships and make reasoned predictions. They organise information, describe patterns and relationships, draw reasoned conclusions, and use language features that reflect purpose and audience when communicating ideas and findings.
Unit Rationale	This sequence moves students from observing habitat conditions, to explaining structure–function and behaviour–survival relationships, then to independent inquiry and communication. Repeated comparison across contrasting environments supports students to move beyond isolated facts and construct evidence-based explanations. Biomimicry provides an authentic context for understanding how biological science can inform human design, decisions and community action.
Key Concepts	• Different habitats create different survival challenges. • Structural features and behaviours enable living things to survive in specific habitats. • Plants and animals may solve similar survival problems in different ways. • Evidence can be compared to identify patterns and relationships. • Scientific knowledge about living things can inform human actions and inspire biomimicry solutions. • Scientific explanations use evidence, accurate vocabulary and purposeful visual features.
Australian Curriculum Science Content Descriptors	Science Understanding: • AC9S5U01 – Examine how particular structural features and behaviours of living things enable their survival in specific habitats. Science as a Human Endeavour: • AC9S5H02 – Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions.
Science Inquiry Skills	• AC9S5I01 – Pose investigable questions to identify patterns and test relationships and make reasoned predictions. • AC9S5I02 – Plan and conduct repeatable investigations to answer questions, including describing potential risks and planning for safe investigation. • AC9S5I04 – Construct and use appropriate representations to organise and process data and information and describe patterns, trends and relationships. • AC9S5I05 – Select evidence to draw reasoned conclusions and pose questions for further investigation. • AC9S5I06 – Write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features.
General Capabilities	• Literacy – scientific vocabulary, comparative language, explanation and informative text. • Critical and Creative Thinking – questioning, pattern recognition, reasoning, biomimicry design. • Personal and Social Capability – collaboration, peer discussion, responsible use of shared resources. • Digital Literacy – may be used to create or present the museum display, where appropriate.
Cross-curriculum Priorities	Aboriginal and Torres Strait Islander Histories and Cultures may be meaningfully incorporated where locally appropriate, including respectful consideration of First Nations Australians’ scientific knowledge of living things, habitats and survival features. Ensure local knowledge is used with appropriate permissions and protocols.
Monitoring	Progress is monitored through questioning, science-journal responses, comparison tables, exit tickets, poster evidence hunts, teacher conferencing and review of the Survival Scientist Investigation. Teachers listen for progression from identifying a feature or behaviour to explaining how it enables survival and using evidence to identify patterns and relationships.
Formative Assessment	• Lesson 1 habitat comparison and investigable “I wonder” questions. • Lesson 2 structural feature explanations and plant/animal comparison.

	• Lesson 3 behaviour matrix, pattern statement and comparative explanation. • Lesson 4 investigation question, reasoned prediction, safe research plan and initial evidence. • Lesson 5 biomimicry explanation and application to people/communities. • Lesson 6 completed evidence, comparison, pattern, relationship, prediction check and scientific conclusion. • Ongoing oral explanations during teacher conferences.
Summative Assessment (Final Task)	International Survival Science Museum – students create an informative library display explaining how living things survive challenging environmental conditions. The display synthesises evidence about a chosen country/habitat, includes plants and animals, structural features and behaviours, a comparison with another country, a pattern and relationship, and one biomimicry example explaining how scientific knowledge informs human action and benefits individuals or communities.
Success Criteria	• I can explain how a range of structural features and behaviours help plants and animals survive challenging habitat conditions. • I can compare living things and habitats and use evidence to identify patterns and relationships. • I can develop an investigable question, make a reasoned prediction and plan safe, responsible research. • I can explain how scientific knowledge about a living thing has inspired biomimicry, solved a human problem and can help people or communities. • I can communicate a comparative scientific explanation using accurate vocabulary, evidence, labelled visuals and language suited to a museum audience.
Considerations for teaching and learning in this unit	• Use explicit visual teaching and repeated thinking chains: Environment → Challenge → Structure/Behaviour → Survival and Feature → Function → Human Problem → Design Solution. • Prioritise explanation over copying facts; model the difference between identifying and explaining. • Keep writing demands efficient so lesson time is spent observing, comparing, reasoning and discussing science. • Provide sentence starters, word banks and partially completed examples for students requiring support. • Extend students by requiring multiple examples, stronger evidence, more nuanced comparisons and independent biomimicry applications. • Use pair/group talk before writing and teacher conferencing to capture oral evidence of understanding. • Ensure poster access, movement and grouping support all learners.
Prior Knowledge Students Require	• Understand that living things have needs and live in habitats. • Recognise basic external features of plants and animals. • Make observations and simple comparisons. • Use tables and labelled diagrams to record information. • Familiarity with words such as plant, animal, habitat, environment and survival is helpful; specialised vocabulary is explicitly taught in the unit.
Investigating Safely	• This is primarily a classroom research investigation using posters and previously collected information. • Move safely when accessing shared posters/resources. • Use classroom resources appropriately and record information accurately. • Identify information sources used. • Teacher supervises movement and manages display materials. • Follow school risk-management procedures for any optional practical, outdoor or additional investigation.
Key Vocabulary	habitat • environment • climate • rainfall • temperature • water availability • survival • challenge • organism • structural feature • structure • function • behaviour • predator • camouflage • evidence • source • comparison • pattern • relationship • investigation • investigable question • prediction • biomimicry • technology • design • application • scientific knowledge • community • conclusion
Resources to support knowing and engaging your learners	• Environment Posters: Australian Desert, Swedish Boreal Forest, Mexican Tropical Rainforest. • Animal/Plant X-ray Posters: Thorny Devil, Water Holding Frog, Spinifex, Moose, Arctic Fox, Norway Spruce, Jaguar, Poison Dart Frog, Ceiba Tree. • Comparison Posters: behaviours and cross-country comparisons. • Biomimicry visuals: Gecko, Kingfisher, Lotus leaf, Thorny Devil, Owl, Cactus. • Year 5 Biological Science Journal/worksheets and Survival Scientist Investigation sheets. • Pencils, highlighters, display paper/card, drawing and labelling materials. • Optional digital presentation tools.

Teaching and Learning Sequence

Lesson	Focus / Big Idea	Pedagogy	Curriculum Links	Learning Intentions	Success Criteria	Differentiation	Hands-On & Adventure Tasks	Science Journal Evidence (Portfolio)	Assessment Links / Evidence Collected	Materials & Resources
Lesson 1 Around the World Habitats	Different environmental conditions create different survival challenges.	Visual inquiry; explicit teaching; guided comparison; questioning.	AC9S5U01 AC9S5I01	We are learning that different environments create different survival challenges.	I can describe different environments. I can identify physical challenges for living things. I can compare habitats.	Support: word bank, model one row, partner talk. Extension: justify which conditions create greatest challenge. Adjustments: reduced writing / oral response.	World Habitat Scientist investigation using three environment posters; compare conditions; generate three "I wonder" questions.	Habitat comparison table; difference + effect explanation; 3 science questions.	Formative: habitat descriptions, comparisons, evidence-based exit response, investigable questions.	Environment Posters; comparison worksheet; pencils/highlighters.
Lesson 2 Survival Superpowers	Structural features have functions that help plants and animals survive habitat challenges.	Explicit structure–function teaching; poster investigation; compare/contrast; pattern spotting.	AC9S5U01 AC9S5I04	We are learning how structural features help living things survive.	I can identify structural features. I can explain how they help survival. I can compare plants and animals.	Support: structure/function/survival prompts and teacher model. Extension: same problem–different structure pattern. Adjustments: investigate fewer organisms with depth.	Investigate at least 4 organisms including a plant, animal and two countries using X-ray posters.	Organism–challenge–structural feature–survival table; plant/animal comparison.	Formative: quality of structure–function–survival explanations and comparison.	X-ray Posters; Environment Posters; Lesson 2 worksheet.
Lesson 3 Smart Behaviours	Behaviours help organisms meet survival challenges; different behaviours can solve similar problems.	Classification; explicit contrast of structure vs behaviour; comparative inquiry; pattern detection.	AC9S5U01 AC9S5I06	We are learning how behaviours help living things survive.	I can explain behavioural features. I can compare behaviours. I can identify patterns.	Support: HAS/DOES rule, sentence frames. Extension: explain one behaviour with multiple survival advantages. Adjustments: oral rehearsal before writing.	Use comparison/environment posters to investigate finding food, avoiding predators and extreme temperatures across 3 countries.	Behaviour comparison matrix; pattern statement; comparative explanation.	Formative: behaviour–survival reasoning, pattern identification, use of comparative language.	Comparison Posters; Environment Posters; Lesson 3 worksheet.
Lesson 4 Survival Scientist Investigation – Plan & Begin	Scientists ask focused questions, make reasoned predictions, plan safe research and collect relevant evidence.	Inquiry planning; teacher modelling; student choice; guided research; conferencing.	AC9S5I01 AC9S5I02 AC9S5I04	We are learning to plan a scientific research investigation.	I can develop an investigable question. I can make a reasoned prediction. I can collect relevant information and begin identifying patterns/relationships.	Support: question bank, planning scaffold, teacher conference. Extension: student-generated question and broader evidence set. Adjustments: pre-selected sources/organisms.	Choose/develop investigation question; make prediction; plan safe/responsible research; collect initial evidence from posters.	Part A Plan; Part B Collect Evidence; early pattern/relationship.	Formative/inquiry evidence: question quality, reasoned prediction, safe plan, source selection, relevance of evidence.	All three poster sets; previous journal work; investigation sheets.
Lesson 5 Nature Inspires Humans	Biological structures/functions can inspire human designs that solve problems and benefit communities.	Explicit biomimicry model; case studies; application; creative design thinking.	AC9S5H02 AC9S5U01 AC9S5I06	We are learning how scientific knowledge helps solve human problems.	I can explain biomimicry. I can identify scientific applications. I can explain how communities use scientific knowledge.	Support: Feature → Function → Human Application scaffold. Extension: original biomimicry design with community benefit. Adjustments: complete table through class discussion.	Biomimicry Detectives: Gecko, Kingfisher, Lotus, Thorny Devil, Owl, Cactus; explain one example; optional design challenge.	Biomimicry table; one full explanation linking feature, function, application, problem and community benefit.	Formative: explanation of how biological knowledge informs human action and solves a problem.	X-ray Posters; biomimicry visuals; Lesson 5 worksheet; drawing materials.
Lesson 6 Research Investigation – Explain the Evidence	Scientists compare evidence to identify patterns and relationships and draw evidence-based conclusions.	Explicit fact/pattern/relationship teaching; research; comparison; CER-style reasoning; conferencing.	AC9S5I04 AC9S5I05 AC9S5I06 AC9S5U01	We are learning to explain patterns and relationships using scientific evidence.	I can compare evidence. I can explain survival strategies. I can prepare scientific information for an audience.	Support: sentence starters and teacher conference. Extension: multiple evidence examples and nuanced relationship. Adjustments: oral explanation accepted as supporting evidence.	Complete evidence hunt; compare two countries; identify pattern + relationship; check prediction; write scientific conclusion; connect biomimicry.	Completed evidence table; comparison; pattern; relationship; prediction check; scientific conclusion.	Key assessment preparation evidence: patterns, relationships, conclusion, cross-country comparison and oral explanation.	All poster sets; Lesson 4 plan; prior tables; biomimicry work; Lesson 6 sheets.
Lesson 7 International Survival Science Museum	Scientific understanding is synthesised and communicated clearly for a specific audience.	Authentic assessment; synthesis; visual communication; self-assessment; peer presentation.	AC9S5U01 AC9S5H02 AC9S5I04 AC9S5I06	We are learning to communicate scientific explanations.	I can explain survival using evidence. I can compare habitats. I can communicate for an audience.	Support: display headings/checklist/sentence starters. Extension: wider range of examples and stronger relationships. Adjustments: oral presentation can supplement written evidence.	Create informative library display; scientist quality check; museum walk/presentation; Science Passport reflection.	Final museum display: habitat, challenges, structures, behaviours, comparison, pattern, relationship, biomimicry, community benefit, labelled visuals, references.	SUMMATIVE: knowledge/understanding, inquiry, comparative explanation, biomimicry application, purpose/audience communication.	Completed investigation; all poster sets as references; assessment instructions/checklist; display materials; Science Passport.