www.ala.org.au

Education and the ALA

Direction of ALA Education

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What

- Provide concise guides for using the ALA and deliver training
- Provide ALA specific educational resources that align with the Australian Curriculum
- Make clear links between the ALA and other educational resources and education providers

How-to guides

- E-learning guides showing how to use the ALA

How-to guides?

Including, but not limited to…

- How to log a sighting
- How to find what species are in your area
- How to find information about a particular species and where it can be found
- How to compare the distributions of species
- How to overlap species distributions with environmental layers

Australian Curriculum

The Australian Curriculum: Science is based on three interrelated elements:

- **Science Understanding (SU)**
  - Conceptual understanding/Theories and applications in:
    - Biological sciences
    - Chemical sciences
    - Earth & Space sciences
    - Physical sciences
- **Science as a Human Endeavour (SHE)**
    - Nature & development of science
    - Use & influence of science
- **Science Inquiry Skills (SIS)**
    - Questioning & Predicting
    - Planning & Conducting
    - Processing & analysing data & information
    - Evaluating
    - Communicating

Curriculum cont....

Year 1

Science Understanding

- Living things have a variety of external features
- Living things live in different places where their needs are met

Science as a Human Endeavour

- Science involves exploring and observing the world using the senses

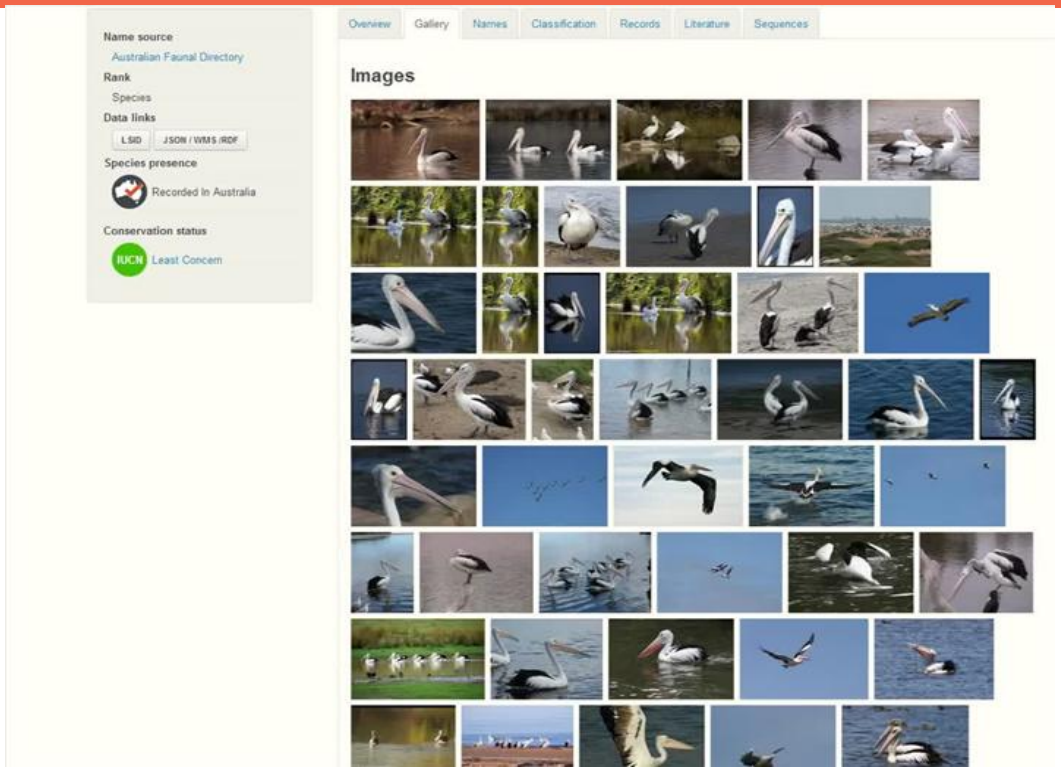
Science Inquiry Skills

- Respond to questions about familiar objects and events
- Explore and make observations by using the senses
- Engage in discussions about observations and use methods such as drawing to represent ideas
- Share observations and ideas

Atlas specific materials

- Year 1 students could be looking at similarities and differences between familiar birds using species information
- They could go on to log sightings from the schoolyard with teacher

Atlas specific materials



Choose one of the birds from the list.

The bird I have chosen is _____

In the box below, draw your bird's beak.

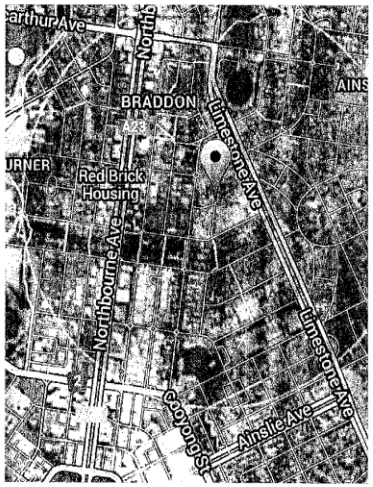
In the box below, draw your bird's feet.

ALA in high school

- Dr Ann Cleary – Merici College
- Year 12 – Biology class plotted maps to look at species within 1km of the school and then within a nearby reserve.
- Giving teachers the skills and understanding of the ALA so they can provide students with relevant local work samples that fit in with their assessment tasks and particular curriculum requirements

Year 12 Biology **BIODIVERSITY, ECOLOGY & INTERACTIONS** **2014**

Tasks for the Assignment



1) **Merici College local environment**
   Locate Merici College on the local area map. Select a 1 km radius and limit your observations to the "triangle" of Macarthur Ave, Limestone Ave, Ainslie Ave, Cooyong St and Northbourne Ave.
   a) List the categories of organisms found in the area of Merici College (below the taxonomic level of Kingdom; list both the group and the number of species).
   b) There are odd (incongruous) results in some of the data given on the website. For example, it states that there are no bacteria found around Merici. Give an explanation as to why this is an incongruous result and how could this data "error" have occurred. (100 words)

2) **Mt Majura Nature Reserve: Mount Ainslie**
   a) Now increase the display area to 5km. Identify and report on 10 clear differences between the flora and fauna of the Merici area and that of Mt Ainslie.
   b) Explain differences in the abiotic and biotic factors between the two areas that would lead to some of these differences in distribution. Give specific examples of factors and their impact on distribution (300 words)

3) **Food Web**: On a separate A3 sheet, use data from the data base to construct a food web for Mount Ainslie.
   a) This food web needs to include at least 10 species (no more than 15). Identify species on Mount Ainslie (you may use species identified in Q2). Use both the scientific name (genus and species) and common names when labelling and ensure that you have a range of kingdoms so that you are able to show their interactions.
   b) Complete the food web identifying producers and primary, secondary etc consumers.
   c) Use the food web you have created to evaluate what would happen if one of the primary consumers died out. Be very specific in your explanation. (100 words)

4) **Species protection**: The Golden sun moth has been

ALA links with other programs

- Scientists and Mathematicians in schools (SMiS)
- Existing partnerships where there is scope to enhance the experience by using the ALA
- Target future partnerships by training SMiS Project Officers

SHOWCASE

Science meets Indigenous culture

Arnold Von Senden, Indigenous Cultural Advisor, MacFarlane Primary School, Katherine, NT
Glenn Wightman, Biodiversity Conservation Division, Northern Territory Government

Much of Glenn's ethno biological research involves working with senior Aboriginal elders recording important bio-cultural knowledge. He enjoys visiting MacFarlane Primary School where he discovers what the younger generations know and are interested in learning.

Each class at MacFarlane Primary School participates in a valuable three week block of Indigenous cultural learning. Arnold and his wife Levina, both local Indigenous community members, collaboratively plan with teachers to create activities and excursions where students learn about Indigenous customs, language, music and hunting familiar to the Katherine region. They incorporate Glenn into their lessons whenever he is travelling through Katherine on his way to do field work.

Glenn and Arnold with students during their bush walk

With Glenn's help, students identified plants, researching their scientific and indigenous names and uses, and discussed local Aboriginal knowledge of the plants and animals. After walking in the bush around the school, students identified the plants, creating a botanical journal of the information. This year the school prioritised funds in order to plant a bush tucker garden with students planting and caring for the garden.

Glenn's class discussions range from topics about his work to the importance of school and learning. He enjoys the opportunity to listen to the students' stories about the biggest snake or fish they have encountered. "It's a good model for other schools, but it actually works because of the passion and commitment of the individuals. You can't model that, people either have it or not," he explains.

Despite his busy schedule, Glenn's enthusiasm for the school visits means he regularly makes time to drop by. He encourages others to join the Scientists in Schools program, "SiS is easy to do, it is highly rewarding and it can be done to suit your work load and expertise. Science is easy to involve young people and it works well in both classroom and outdoor scenarios."

Scientists in Schools
www.scientistsinschools.edu.au

CSIRO Education
PO Box 225, Dickson, ACT 2602
Phone 02 6276 6397
email scientistsinschools@csiro.au

Mathematicians in Schools
www.mathematiciansinschools.edu.au

Scientists and Mathematicians in Schools is an Australian Government initiative

Other program links….

- One school in NT is looking at the diversity of plants in their local area and sharing bio-cultural knowledge
- One school in north Queensland is monitoring seagrass habitats with a scientist

SHOWCASE

Beyond the classroom

Andrew Hislop, Tagai State College, Thursday Island, QLD
Jane Mellors, Queensland Fisheries

Over the past three years, Jane and Year 11 and 12 Tagai State College students have monitored seagrass habitats around Thursday Island. After initial training in the prescribed methodologies of the regional management agency, the Torres Strait Regional Authority, students monitored four sites, volunteering up to three hours a day over four days on a quarterly basis. On some days, they started at 5:30am!

What motivates these students to start at such an early hour and enter the collected data during their lunchtime? Their passion and enthusiasm generated by understanding the importance of seagrass meadows to the health and cultural wellbeing of their local Torres Strait Islander community.

Tagai State College students collecting seagrass data on the mudflats

Jane reflects on the change in the students, "Prior to the training day the students described the seagrass as 'that green stuff out on the mudflats'. By the end of the year they're telling everyone how it is dugong and turtle food plus it's an important nursery for fisheries and acts as a filter for land based pollutants."

"Seagrass is important, especially for us in the Torres Strait who depend on the sea for our food," commented one student. Students' understanding ensures data integrity during their monitoring. Confidence in the data is reflected by its inclusion in the Queensland State of the Environment reporting.

Jane presenting to the junior school students at Iama

To promote their project in the wider community, the Tagai College students named themselves *Meskep Kabuzig* (Intertidal Warriors) and designed a logo for their promotional materials. As part of their promotion, four students accompanied Jane to deliver a presentation to junior school students in Iama and run activities relating to their seagrass habitat project.

Result of the turtle mask activity

Jane finds her partnership rewarding, "It is great to be able to contribute to the future and to be in touch with the youth of today. To hear what they think and feel is important to them is such a grounding experience."

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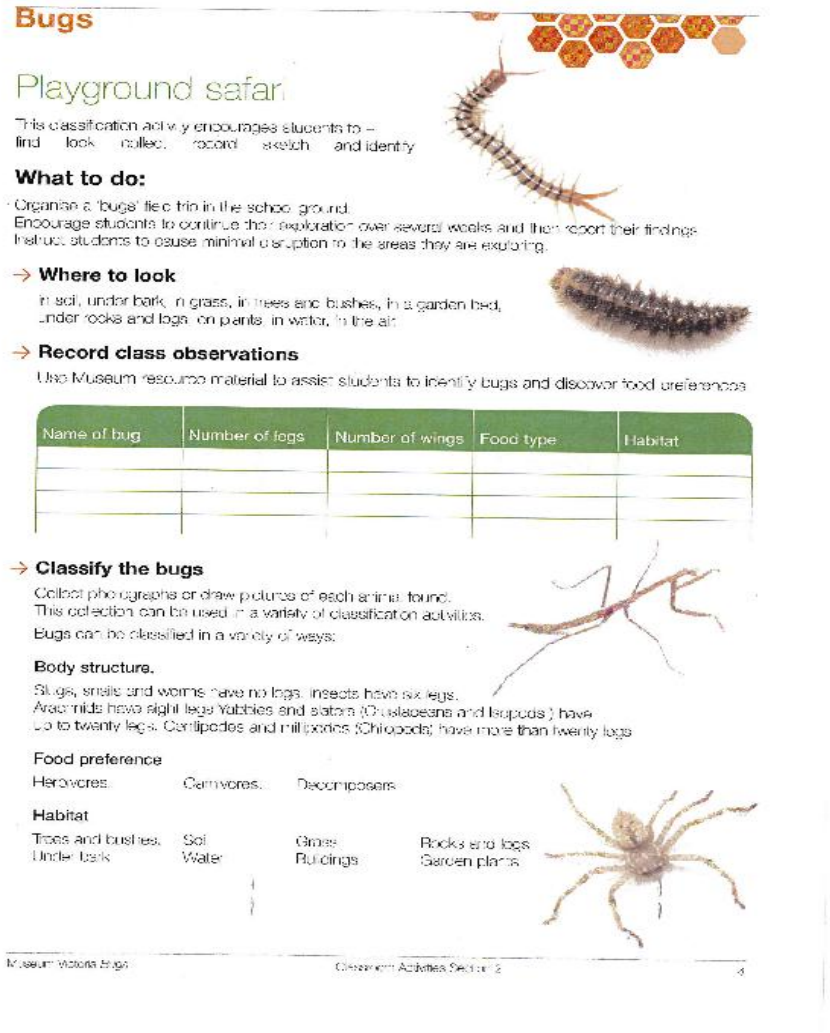
Links with other resources

- Museums have a lot of student educational resources linked to visits

- Bugs Alive follow-up activity has students finding and classifying insects. Links could be made to ALA to get the sightings logged, look at the distributions etc.



Bugs

Playground safari

This classification activity encourages students to – find look collect record sketch and identify

What to do:

Organise a 'bugs' field trip in the school ground.
Encourage students to continue their exploration over several weeks and then report their findings.
Instruct students to cause minimal disruption to the areas they are exploring.

→ **Where to look**

In soil, under bark, in grass, in trees and bushes, in a garden bed, under rocks and logs, on plants, in water, in the air.

→ **Record class observations**

Use Museum resource material to assist students to identify bugs and discover food preferences.

Name of bug	Number of legs	Number of wings	Food type	Habitat

→ **Classify the bugs**

Collect photographs or draw pictures of each animal found.
This collection can be used in a variety of classification activities.
Bugs can be classified in a variety of ways:

Body structure.

Slugs, snails and worms have no legs. Insects have six legs.
Arachnids have eight legs. Yabbies and slaters (Crustaceans and Isopods) have up to twenty legs. Centipedes and millipedes (Chilopods) have more than twenty legs.

Food preference

Herbivores Carnivores Decomposers

Habitat

Trees and bushes Soil Grass Rocks and logs
Under bark Water Buildings Garden plants

Museum Victoria Bugs Classroom Activities Section 2 4

In summary….

- Improve accessibility of the ALA by providing effective e-learning modules
- Raise profile of ALA and increase citizen science contributions to the ALA
- Work with teachers/citizen scientists/other ALA users to determine usage/needs/limitations





The Atlas of Living Australia Participants

www.ala.org.au

CSIRO

Australian museum
nature culture discover

MUSEUMVICTORIA

qm queensland museum

Tasmanian Museum & Art Gallery

Tasmania
Explore the possibilities

MUSEUM AND ART GALLERY NORTHERN TERRITORY

Northern Territory Government

South Australian Museum

WESTERN AUSTRALIAN museum

THE UNIVERSITY of ADELAIDE

Southern Cross UNIVERSITY
A new way to think

ATLAS OF LIVING AUSTRALIA
sharing biodiversity knowledge

CAMD COUNCIL OF AUSTRALASIAN MUSEUM DIRECTORS

CHAH
Council of Heads of Australasian Herbaria

CHAEC
Council of Heads of Australian Entomological Collections

CHAFC
COUNCIL OF HEADS OF AUSTRALIAN FAUNAL COLLECTIONS INCORPORATED

Council of Heads of Australian Collections of Microorganisms

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National Collaborative Research Infrastructure Strategy

Australian Government
Department of Agriculture, Fisheries and Forestry

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

ABRS

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ALA in high school

•Ecosystems are diverse, composed of varied habitats and can be described in terms of their component species, species interactions and the abiotic factors that make up the environment
•In addition to biotic factors, abiotic factors including climate and substrate can be used to describe and classify environments
•Human activities (for example, over-exploitation, habitat destruction, monocultures, pollution) can reduce biodiversity and can impact on the magnitude, duration and speed of ecosystem change
•Models of ecosystem interactions (for example, food webs, successional models) can be used to predict the impact of change and are based on interpretation of and extrapolation from sample data (for example, data derived from ecosystem surveying techniques); the reliability of the model is determined by the representativeness of the sampling (ACSBL029)

Specific unit goals Measured by this task	• Effectively communicate an understanding of interrelationships of organisms within the diversity of living things • Examine interrelationships of organisms and critically evaluate the impact of human activities • Construct and substantiate opinions based on factual information • Communicate scientifically using terminology specific to the content of this unit
Assessment Criteria specific to this task	• Research • Critical evaluation of data • Communicate using scientific language • Investigative skills