ALEP

19

Aboriginal Landcare Education Program

RECOGNISE FAUNA





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CONTENTS

PUBLICATION NOTES

BHP Billiton Iron Ore is proud to support Greening Australia to provide valuable conservation and land management training to communities throughout the Pilbara through the Indigenous Training Program.

This Learning Guide series has been developed as part of our partnership of the program.

Gavin Price, Head of Environment, BHP Billiton Iron Ore

Greening Australia is proud to produce and provide the comprehensive suite of new ALEP Learning Guides. The guides are compatible with the new horticulture and conservation industries training package and suited to developing skills in Indigenous communities within remote areas of the country where employment opportunities are limited. We would like to thank BHPBIO for their generous support in the development of the guides.

Brendan Foran, National CEO Greening Australia

The second series of ALEP Guides is aligned with a number of units of competence from the *Training Package AHC10 – Agriculture, Horticulture and Conservation and Land Management* (Release 8.0). The units selected are frequently used within Certificates I to III in Horticulture and Conservation and Land Management. As such they cover, where possible, the elements, performance criteria and required skills and knowledge of each unit.

The principal goal of these resources is to support the learning process; the learning activities may complement a trainer's assessment plan. The intent is that they will be used in an interactive manner with learners rather than as self-paced study guides. The structure and sequence have been designed to follow the logical steps of the practical tasks wherever possible. Concepts are introduced and then consolidated with discussion and/or practical activities.

The writers consider that these guides can provide a sound technical foundation but also strongly encourage trainers to complement the guides with additional, authentic resources from relevant industry texts and websites. The guides can be used in part or in their entirety but should always be linked to practical activities to strengthen the teaching and learning.

Genuine consideration was given to the level of language used in the guides. The goal has been to find a balance between simplifying the language to an accessible level and ensuring that the vocational concepts are addressed. The writers contend that with appropriate support these texts can provide an opportunity for students to strengthen their language, literacy and numeracy skills, which may be required for pathway progression.

A number of Aboriginal people have been involved in developing this ALEP Guide, which is considered suitable for use within a program based on Aboriginal pedagogies.

INTRODUCTION

Welcome to *Recognise fauna*. In this unit you will learn how to name and describe animals. This information might be useful for compiling reports, participating in surveys or helping visitors learn about your region.

This guide provides some foundational information about identifying fauna, but learning will also need to be undertaken practically in the field by observing fauna and accessing available references. The best way to learn this kind of information is with repeated practice and the support of a trainer and/or workplace supervisor.

EQUIPMENT REQUIRED

To complete this training you will need the following:

1. Appropriate Personal Protective Equipment (PPE)
2. A range of reference sources, including texts and experts
3. Access to the internet for research (preferred but not essential)
4. Equipment suitable for chosen survey method
5. Permits and ethics applications as required

LEARNING ACTIVITIES

There are four kinds of activities to complete. These activities may go toward your final assessment.

SECTION	ACTIVITY	SATISFACTORY (Y/N)	DATE
RESEARCH ACTIVITIES			
1.5	Research an arthropod		
1.6	Scientific names for fauna in your region		
4.2	Extinct, vulnerable and endangered species and notifiable pest fauna in your region		
DISCUSSION ACTIVITIES			
2.1	Identify locations of target species		
2.2	Identify the survey type		
2.3	Your workplace procedures		
3.3	Accessing expert support		
4.1	Your workplace documentation requirements		
4.3	Sharing information		
WORKBOOK ACTIVITIES			
1.3	Classification		
1.5	Find an arthropod and use a dichotomous key		
PROJECT			
2.4	Plan your survey		
3.3	Record field notes		
4.3	Sharing information		

1 BEFORE YOU START

1.1 WHAT IS FAUNA?

Fauna is another word meaning animals. The word was first used in English about 250 years ago and came from the name of Fauna, a Roman fertility goddess.

Around the same time, the word flora was first used to talk about plants. Flora was a Roman goddess of flowers.

It is mainly in science that we talk about the flora and fauna of a region. In horticulture and conservation and land management (CLM) it is important to learn a bit about the science behind the work we do.

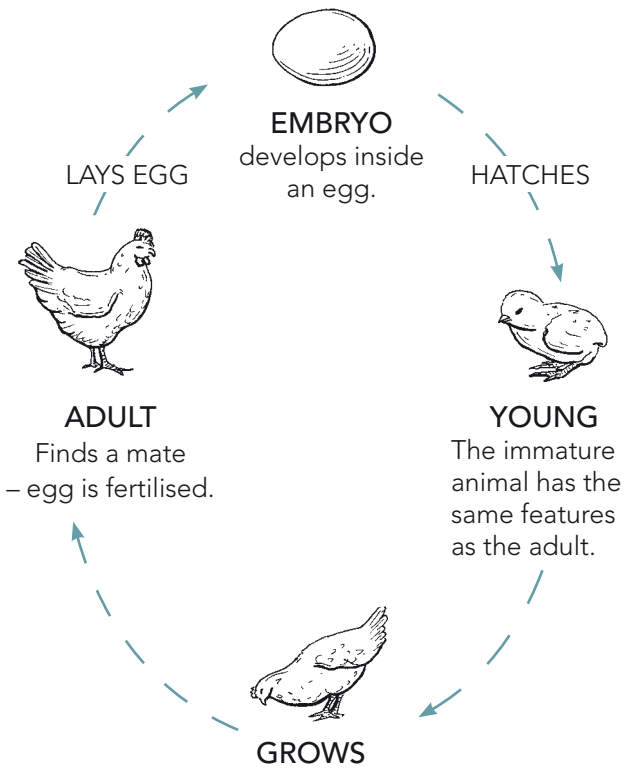
1.2 ANIMAL LIFE CYCLES

A life cycle is a way of thinking about the different developmental stages animals go through from conception to death. We use a circle to help think about this because it goes around and around from one generation to the next.

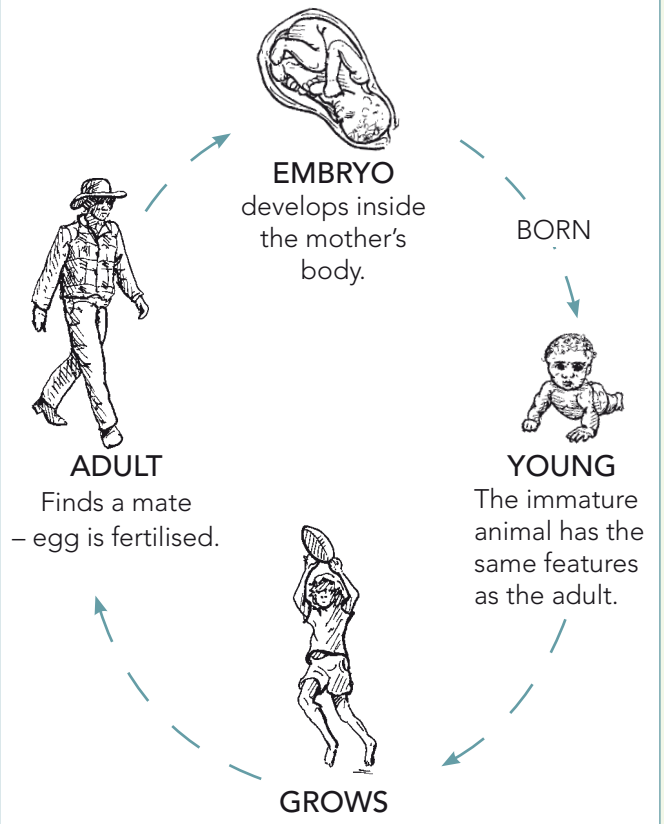
Most people know about this process, but there might be some new words to learn for the various stages.

Many animals such as mammals, reptiles and birds have a simple life cycle.

SIMPLE LIFE CYCLE – E.G. CHICKEN

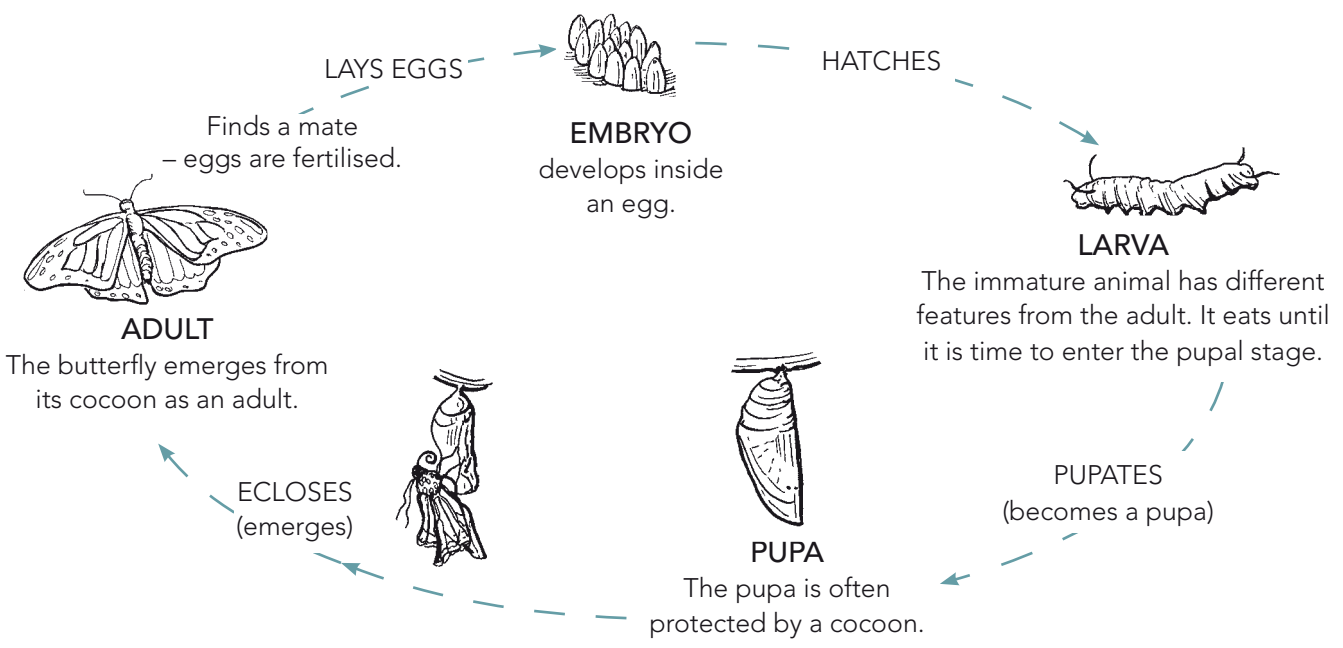


SIMPLE LIFE CYCLE – E.G. HUMAN



Some other animals change completely between being immature and mature. This change is called **metamorphosis.** Many insects go through a complete metamorphosis during their life cycle, for example, moths and butterflies.

COMPLETE METAMORPHOSIS – E.G. BUTTERFLY



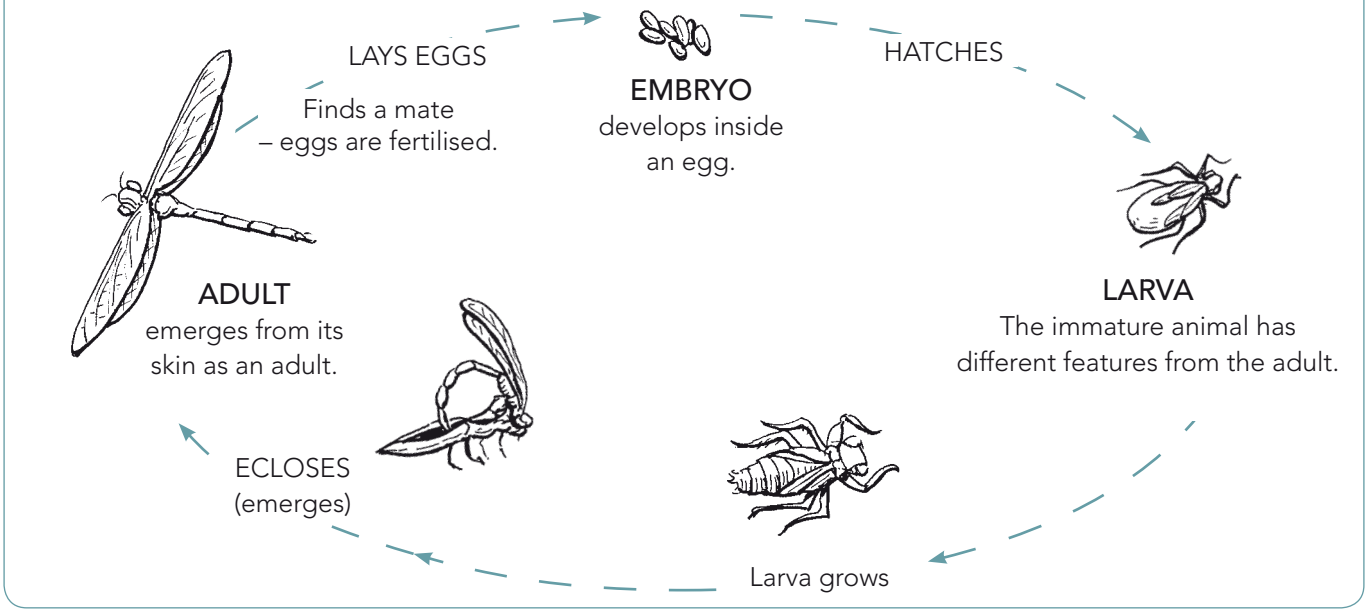
Some animals go through an **incomplete metamorphosis**. This means they change but they don't go through the pupal stage, for example, dragonflies, grasshoppers, cicadas, jellyfish and amphibians.

For insects metamorphosing in this way, the nymph **moults**, getting rid of the old shell as it grows. It may moult several times. Eventually, the adult emerges in its new form.

Note

Not all animals that moult go through metamorphosis, e.g. snakes, spiders

INCOMPLETE METAMORPHOSIS – E.G. DRAGONFLY



1.3 CLASSIFICATION

Classification is a way of grouping things that have similar features.

In everyday life we classify people into cultural/language backgrounds and families. This classification system is based on who our parents are and where we are born.

In western science there is a classification system for all living things based on similarities. This can be in appearance, behaviour and adaptations made through evolution. Adaptations are features of animals that have helped them survive, for example, the way beaks, wings, flippers and mouthparts have formed to meet the animal's needs in their environment.

This classification system gives living things their scientific names. The science of naming and classifying living things is called taxonomy.

The highest level of classification that we will look at is kingdom. The three kingdoms you will work with regularly in horticulture or CLM are plants, animals and fungi.

In this guide we will focus on members of Kingdom Animalia, otherwise known as **fauna** or animals.

KINGDOMS

Plant
(Plantae)

- Many cells
- Cell wall is made of cellulose
- Have a nucleus

Autotrophic – they make their own nutrition through photosynthesis

Animal
(Animalia)

- Many cells
- No cell wall
- Have a nucleus

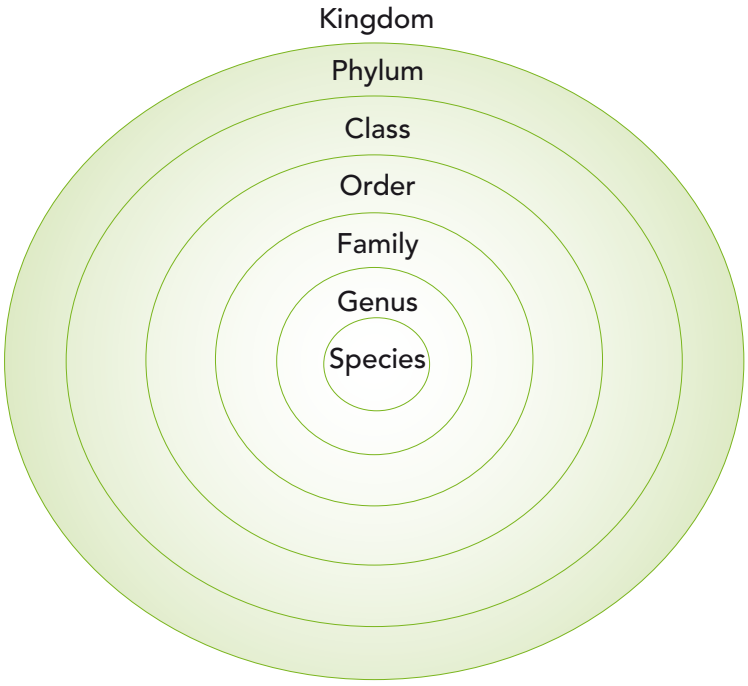
Heterotrophic – they get nutrition from other complex organic compounds

Fungi
(Fungi)

- Some are single cell and some have many cells
- Cell wall made of chitin
- Have a nucleus

Heterotrophic – they get nutrition from other complex organic compounds

CLASSIFICATIONS WITHIN KINGDOMS



Kingdom: a group of phyla

Phylum: a group of classes

Class: a group of orders

Order: a group of families

Family: a group of genera

Genus: a group of species

Species: a group of similar individuals

Species is the narrowest classification. Animals of the same species are very similar and can freely breed to produce fertile offspring. Animals of different species can breed, but their offspring generally can't. For example, a horse and donkey can produce a mule but it generally can't have young.

Many of the words we use in science come from ancient Greek and Latin languages. Latin was the language spoken by Romans.

If you learn some of the meanings of these words it will help with classification. See the *Glossary* for a start.

PUTTING IT TOGETHER

Below is the complete classification of the Little Corella.

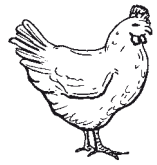
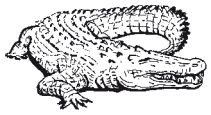
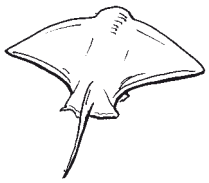
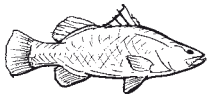
CLASSIFICATION FOR THE LITTLE CORELLA	
Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Psittaciformes
Family	Cacatuidae
Genus	*Cacatua*
Species	*sanguinea*

- Phylum Chordata
- Class
  - Order
  - Family
  - Genus
  - Species

It is useful to learn the broad terms for some common kinds of animals. Some of these names you will be familiar with and others might be new to you. Following is a very general introduction to some of the main classifications you will use.

There are about 35 phyla in the animal kingdom. The following animals are from phylum **Chordata**. Chordates are animals with a notochord at some stage of their development. This phylum includes all **vertebrates** (animals with a backbone) and other animals.

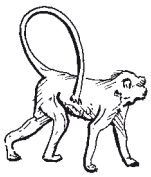
COMMON **CLASSES IN THE PHYLUM CHORDATA**

ANIMAL		FEATURES	CLASS
	Chicken Hawk Bush turkey	• Warm-blooded • Have feathers • Eggs with shells	**Aves (Birds)**
	Snake Lizard Crocodile Turtle	• Cold-blooded • Skin is scaled • Scales are dry to touch	**Reptilia**
	Frog Toad	• Cold-blooded • Young live in water and breathe with gills • Adults develop lungs • Moist skin	**Amphibia**
	Shark Ray	• Cold-blooded • Fish with cartilage skeleton instead of bone • Have jaws • Breathe with gills • Must swim to breathe	**Chondrichthyes**
	Most fish	• Cold-blooded • Fish with bony skeleton • Have jaws • Breathe with gills • Can breathe without swimming	**Osteichthyes**
	Human Kangaroo Dog	• Warm-blooded • Have fur/hair • Have mammary glands that produce milk	**Mammalia**

Now let's look at some common orders in the class **Mammalia**. Mammals are animals with hair or fur, and they produce milk for their young.

- Phylum Chordata
- Class Mammalia
- Order
  - Family
  - Genus
  - Species

COMMON **ORDERS** IN THE CLASS MAMMALIA

ANIMAL		FEATURES	ORDER
	Kangaroo Possum Wombat Bilby	• Give birth to underdeveloped young that are carried in a pouch	**Marsupialia**
	Whale Dolphin Porpoise	• Flippers at the front of their body • Breathe air through a blowhole • Give birth to live young	**Cetacea**
	Dugong	• Fully aquatic – live in water • Herbivores – eat only plants • Breathe air • Give birth to live young	**Sirenia**
	Echidna Platypus	• Lay eggs	**Monotremata**
	Monkey Gorilla Human	• Eyes face forward • Opposable thumbs • Give birth to live young	**Primates**
	Dog Cat Bear Dingo	• Meat eaters • Pointed canine teeth and molars • Claws • Give birth to live young	**Carnivora**

WORKBOOK ACTIVITY

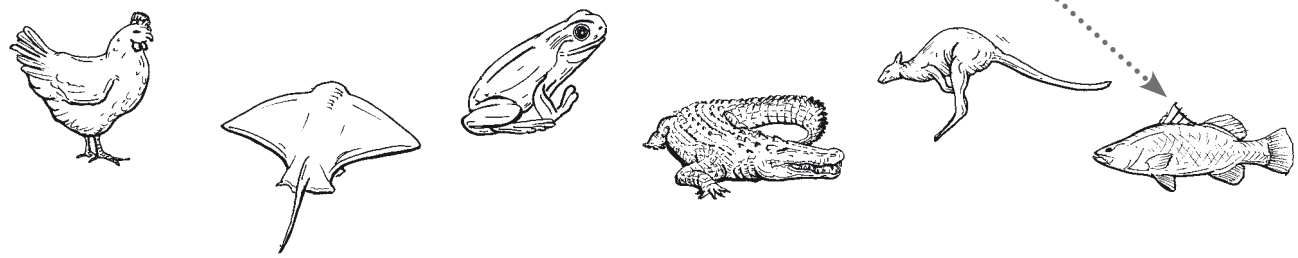
Complete the diagram below.

Draw a line to represent the relationships (5 lines needed).

1. Match the fauna from phylum Chordata with their class

CLASS

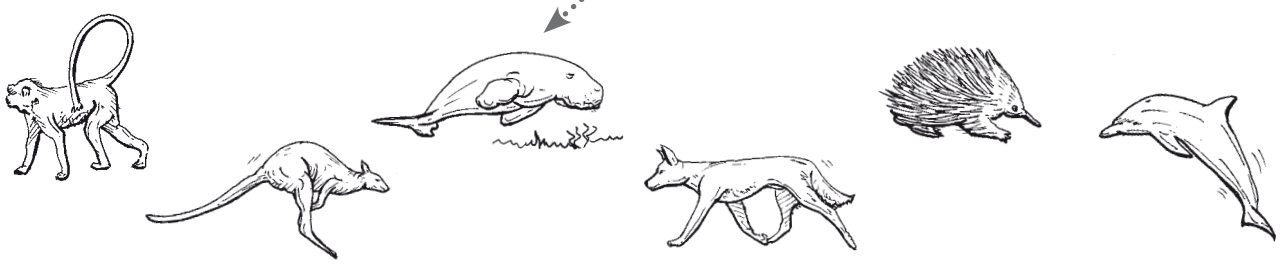
Mammalia | Amphibia | Reptilia | Aves | Osteichthyes | Chondrichthyes



2. Match the fauna from class Mammalia with their order

ORDER

Marsupialia | Carnivora | Primates | Sirenia | Cetacea | Monotremata



WORKBOOK ACTIVITY

Complete the diagram below.

1. Put the common names below into the correct circles

   Mammals

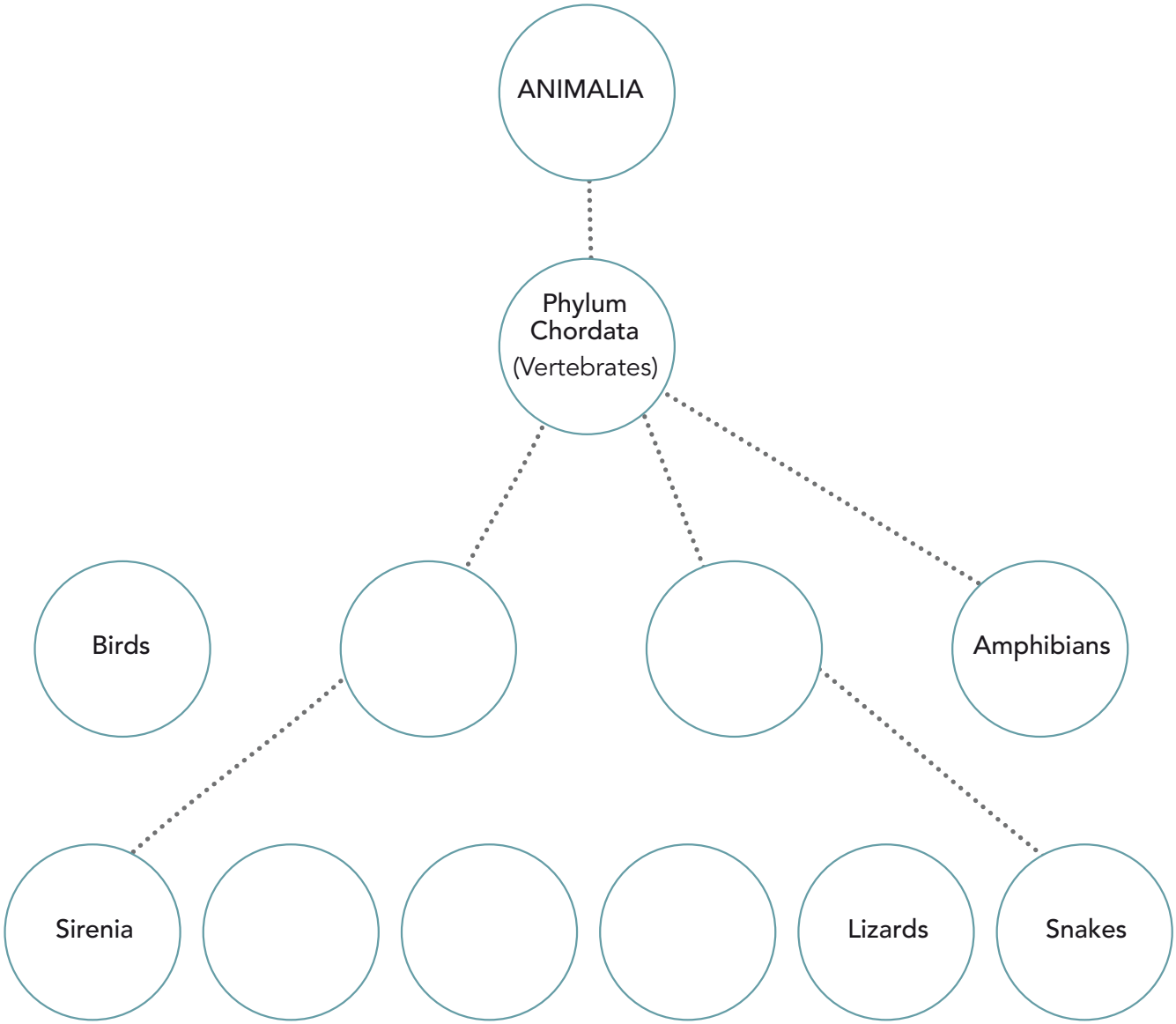
   Turtles

   Marsupials

   Crocodiles

   Reptiles

2. Draw in the missing lines to represent the relationships (5 lines needed)

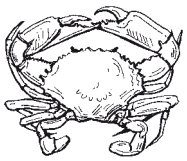


- Phylum Arthropoda
- Class
  - Order
  - Family
  - Genus
  - Species

The other main phylum of animals you will work with is **Arthropoda.**

Arthropods are **invertebrates** as they **do not** have a backbone. They are also cold blooded; they have an exoskeleton; and their body is segmented.

COMMON CLASSES IN PHYLUM ARTHROPODA

ANIMAL	FEATURES	CLASS
 Ant Butterfly Stick insect Beetle	• Three body sections • Three pairs of legs • Go through metamorphosis (change from young to adult)	**Insecta**
 Spider Scorpion	• Four pairs of walking legs	**Arachnida**
 Crab Lobster Prawn	• Three body sections – head and thorax might be joined • Two pairs of antennae • Have walking legs • Can have pincers on legs	**Crustacea**

POWER KNOWLEDGE

Learn Arthropod body parts: see *Resource R1*, page 27

1.4 NAMING ANIMALS

Non-specialists use **common names** to refer to animals. Aboriginal people will also often have traditional language names. These will change from place to place and between different languages. To avoid confusion, specialists use **scientific names** when working in the field.

The scientific way of naming all living things uses two names.

The first is the **genus.**

The second is the **species**.

Phylum
Class
Order
Family
▻ Genus
▻ Species

Mertens' monitor is one common name for the reptile pictured on the left. You might have a different name for it. It can be confusing to have different names for the same animal. When we use the scientific name, we know we are both talking about the same kind of animal.

The scientific name for this animal is *Varanus mertensi*.

Varanus is the genus and *mertensi* is the species.

Varanus mertensi.

Varanus gouldii.

There are other kinds of animals also called *Varanus* because they are in the same genus. They are closely related to the *mertensi* but are a different species. For example, on the right is the *Varanus gouldii*. You can see they are similar but different. They are different in appearance and behaviour. For example, the first one likes water, and the second one is usually on land.

1.5 DICHOTOMOUS KEYS

It is unlikely you will ever remember all the scientific names and classifications of the animals in your region. Sometimes you will need to use references to identify an animal you are not familiar with.

A dichotomous key is a document or computer program. It asks a series of questions and, based on your responses, leads you to work out the classification of the animal you are looking at.

Some of the words used will be difficult to understand at first; it's like learning a new language. Use a dictionary or ask people the meanings and try to remember some new words each time.

R2

POWER KNOWLEDGE

For an example of a dichotomous key, see *Resource R2*, page 28

RESEARCH ACTIVITY

Find a winged insect outside around your workplace. Use the dichotomous key from *Resource R2* to identify the order of the animal you find. *Resource 1* and the *Glossary* will help you to understand the scientific words used.

When you have identified your insect, research it to learn more. See *Resource 8* for a list of useful references.

1.6 LEARNING SCIENTIFIC NAMES

It is important to start learning the scientific names for animals in your region when you are working as a professional.

You will learn these names by:

- Using reference books with pictures
- Asking experts

You can also spend time thinking about the animals you know in your area and working out which ones are likely to be related. You can learn genus names and from there identify species within a genus.

RESEARCH ACTIVITY

Write down a list of all the animals from your region that you know, then find out their scientific names. You can record native and feral animals.

Use one sheet for each of the following classes of animals:

- Aves
- Reptilia
- Amphibia
- Chondrichthyes
- Osteichthyes
- Mammalia
- Insecta
- Arachnida
- Crustacea

You may use the following resources to help:

- Reference books
- Internet searching
- The support of your supervisor or trainer
- Contacting an expert

Use the template at *Resource 3*, *Record of Local Fauna* to record your information.

When you have finished, think about the items on the list. Can you see how some animals are related by their genus?

R3

See template *Resource R3*, page 30

1.7 LEGISLATION

In your role you may need to capture and handle animals. It is important to know that there are laws to protect animals from cruelty. Surveys and animal handling must always be done in a way that minimises pain, stress and discomfort to an animal.

There is an Australian Code and a number of Guidelines as well as legislation in each state.

The specific animals covered by each set of laws vary. In the broadest terms, the following are included:

- Fish
- Amphibians
- Reptiles
- Birds
- Mammals (excluding humans)
- Cephalopods (octopus, squid, cuttlefish, nautilus)
- Malacostraca (crabs, crayfish, lobster, prawns)

This includes the foetus of any reptile, bird or mammal that is past the normal mid-point of gestation or incubation.

There is also legislation to protect endangered, threatened and vulnerable species and ecological communities. This is written in the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC).

R4 R5

POWER KNOWLEDGE

To find the guidelines and legislation for your state, see *Resources R4* and *R5*, pages 31–32.

PERMITS & ETHICS APPLICATIONS

Your workplace will need to get a permit for survey work involving the capture of protected species.

In some states your workplace may need to get a permit or ethics approval to trap any mammal.

The ethics approval will detail:

- Why you are doing the survey
- How you will do the survey

CULTURAL PERMISSION

It is very important to check if approval is needed from the Aboriginal owners of the site you are visiting. Some sites should not be visited by men, others not by women, or not at particular times of year. Sometimes you will need to take the custodian of that place with you on your trip.

The chairperson of the local community council can tell you who you need to speak with about a particular area.

2 GET READY

Now you have found out some more information about naming and classifying animals, you can prepare for a planned activity to go out and identify fauna and record information about what you see. There are a few things to think about before you jump in the vehicle and head off.

At the end of this section you will develop a plan for your project.

2.1 TARGET SPECIES

Target species are the animals you are hoping to see. You might have a work assignment that requires you to participate in a survey targeting a particular species, or you might be monitoring your region and recording sightings.

It is useful to know the kinds of animals you hope to see. This can help you to select sites and situations where fauna is likely to be present. The kind of area where a particular species likes to live is called a habitat. If you know the preferred habitat for the target species, you can work out where to look for it.

DISCUSSION ACTIVITY

Where will you go in your region if you need to monitor feral animals?

.....

.....

Think of one endangered species in your region. Where will you go to look for it?

.....

.....

Are there other kinds of animals you need to monitor? Where will you go to find these?

.....

.....

2.2 SURVEY TYPE

Next you need to think about how you will view the animals or find evidence of the animals. There are a number of observation methods and trapping techniques.

METHODS OF OBSERVING FAUNA	
Call survey	Listen for and document animal calls
Camera trap	Use a camera with motion sensors to get images of animals
Hair funnel	Use sticky tubes to get hair samples from mammals
Opportunistic sighting	Record fauna sightings or evidence as you do your daily work
Scat and sign search	Look for and record evidence of fauna, such as tracks, scratches, nests, feeding marks, etc.
Set nets or traps	Catch the animal to study and then release it
Visual count	Count fauna in a particular location, such as at a wetland
Visual search	Search for insects, amphibians, reptiles and intertidal invertebrates in likely habitats

DISCUSSION ACTIVITY

What is the most appropriate way of identifying the following animals?

- Feral species
- Threatened or endangered species
- Nocturnal species

R6

See JSA template *Resource R6,* page 33

2.3 WORKPLACE PROCEDURES

It is important to know about any relevant workplace procedures before you begin.

WORKPLACE HEALTH & SAFETY (WHS)

If you need to leave your base to look for fauna, your WHS procedures probably require you to do a Job Safety Analysis (JSA). Your supervisor or trainer will complete the paperwork, but you need to contribute to the discussion. The kinds of things you need to think about are:

- How far away is the site?
- What kind of terrain will you travel through?
- Will you need to walk any distance?
- Will this be a day trip or an overnight stay?
- How many people will be going?
- What sort of PPE is needed?

You can use the JSA template from the *Resources* section if your workplace doesn't have one.

STANDARD OPERATING PROCEDURES (SOP)

SOPs or Safe Work Method Statements (SWMSs) give you a standard way for doing a particular task in your workplace. By following SOPs you will:

- Be safe
- Meet workplace requirements
- Minimise the impact on the environment
- Know the appropriate techniques and equipment to use

The sort of SOPs you might refer to are:

- SOP for fauna surveys
- SOP for away-from-base travel to remote areas
- SOP for overnight stays in remote areas

PERMITS & APPROVALS

You might need to get a permit or ethics approval, depending on:

- The animals you are surveying
- The survey methods you are using
- The places you are travelling to

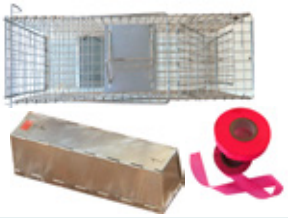
Your supervisor or trainer will be responsible for getting the permit, but you can learn about when this is needed.

DISCUSSION ACTIVITY

Talk with your trainer or supervisor about your workplace procedures for identifying fauna.

2.4 RESOURCES & EQUIPMENT

Next you need to think about the resources and equipment you need. Some will have been identified in the JSA and SOP.

Binoculars		Recovery gear	
Reference books		Drinking water	
Boots		Food	
Hat		Fuel	
Gloves for handling animals		Swags and camping gear	
Notebooks and pens		Cooking gear	
GPS, compass and maps		Survey equipment – traps, scales, tape measure, ruler, calico bags and flagging tape	
Camera		Baits	

PROJECT

What is/are the target species?

	TARGET 1	TARGET 2
Language name		
Common name		
Scientific name		

Where will you go to find these?

.....

What sort of survey will you do?

Call survey	
Camera trap	
Hair funnel	
Opportunistic sighting	
Scat and sign search	
Set nets or traps	
Visual count	
Visual search	

Is a permit required?

Yes		No	

Is a JSA required?

Yes		No	

Write down the PPE you need:

.....

.....

.....

Write down the observation/survey equipment you need:

.....

.....

Write down the camping equipment you need (if required):

.....

.....

3 RECOGNISE FAUNA

Once you are out in the field you are ready to start recognising fauna. As you look for the target species, you need to be aware of the area you are in. This is the animals' home and could be a fragile ecosystem.

3.1 PROTECT THE ENVIRONMENT

Prevent erosion – As you approach the site by vehicle, take care not to drive in a way that is likely to cause erosion in the longer term.

Noise – Remember that animals don't like a lot of loud noise so you will need to be quiet in your approach or you'll scare them all away.

Protect habitat – Minimise the disturbance of plants and natural debris around survey sites as you walk and drive; these may be used for nesting, food sources, etc.

Chemicals – Avoid chemical contact with the environment and animals you handle, e.g. from sunscreen, insect repellent, fuel, detergent.

Hygiene – Make sure hands and equipment are clean from blood, scat, chemicals and sweat to minimise disease spread, particularly when working in areas with threatened species.

Weeds – Make sure you are not carting weed seeds from one place to another on vehicles, clothing or equipment.

Camp area – take away all rubbish, and make sure the camp fire is out.

Waterways – Protect waterways by ensuring soap and repellent don't get into the water source; never tip wastewater back into the water source.

3.2 OBSERVE FAUNA

Observing fauna is a process where you identify an animal as a member of a particular species. You will work out the species based on:

1. Physical features – what it looks like
2. Behaviour – the things it does
3. Habitat – the area it is observed in

There are a number of ways you can actually observe fauna:

- Direct observation
- Scats and signs
- Traps

As you observe, you are looking for any or all of the three things above.

DIRECT OBSERVATION

This is when you actually watch and/or listen to an animal in their environment. This can include observing flocks of birds at a waterhole or feeding site.

You can use a recorded call playback of animal calls to prompt animals to respond. The response might come from the same species or from other animals.

You might also actively search for an animal around their habitat. This method is good to find arthropods, reptiles and amphibians.

(Image courtesy of G. Lienert)

SCATS & SIGNS

This kind of survey requires indirect observation. You don't necessarily see the animal, but you find clues it has been there. This method is very useful for surveying rare, nocturnal and/or very timid species.

Traces you might find are:

- Scats
- Scratches on trees
- Diggings
- Tracks
- Feeding marks on trees
- Hair, feathers, bones, carcasses, slough (shed skin)
- Nests, burrows
- Fur or hair samples from a hair funnel

Elliott trap

TRAPS

There are a number of different kinds of traps. They are designed to leave the animal unharmed. The kind of traps you use will depend on the target species. You should never use a trap without the guidance of someone with considerable experience.

Some traps use a lure or bait to attract the animal into a box or cage (Elliott or cage traps). Others use nets and small pits to guide the animals into captivity (pitfall and funnel traps). It is important to check traps regularly so animals are not distressed or left in the heat.

Pitfall trap

Handling animals is quite difficult. It is best to learn from an experienced person how to hold and release animals to avoid any harm to them or yourself.

If you need to handle animals be aware that this may affect their behaviour or cause heat stress in some species. Wearing gloves is recommended, particularly for amphibians so as not to damage their skin. Gloves also protect you.

Camera traps

Camera traps use motion sensors to photograph medium to large animals. The camera is positioned on or near an animal trail. This is a non-invasive method, as there is no need to capture or handle the animals.

R7

See Field notes template *Resource R7*, page 34

3.3 WRITE FIELD NOTES

It is important to write some field notes while you are doing the survey. It will be too difficult to remember everything when you get back to base.

The information you need to record will depend on the purpose of your observation. It is best to check with your supervisor what is required. This might include any of the following that you know:

- The name of the animal
- Site location where you recorded it
- Current land use (e.g. national park, pastoral, mining)
- Whether it was male or female (sex)
- The habitat – vegetation and terrain
- Measurements or estimates – these will depend on the species
- The number of each kind of animal seen (count)
- Physical characteristics
- Behavioural characteristics
- Any other information about how and where you observed it (e.g. what is in the scat? Bones, grass, hair, etc.)

You can record notes on paper, custom-made forms, a digital tablet or a handheld GIS device, e.g. CyberTracker. You can also take photographs.

If you don't know the species name at the time, you can find it out when you get back to site by asking someone, checking in reference books or looking it up on the internet.

Handy Tip

While you need to get down as much detail as you can, field notes don't have to be really well written or organised. This is done in the next stage, when you get back to base.

DISCUSSION ACTIVITY

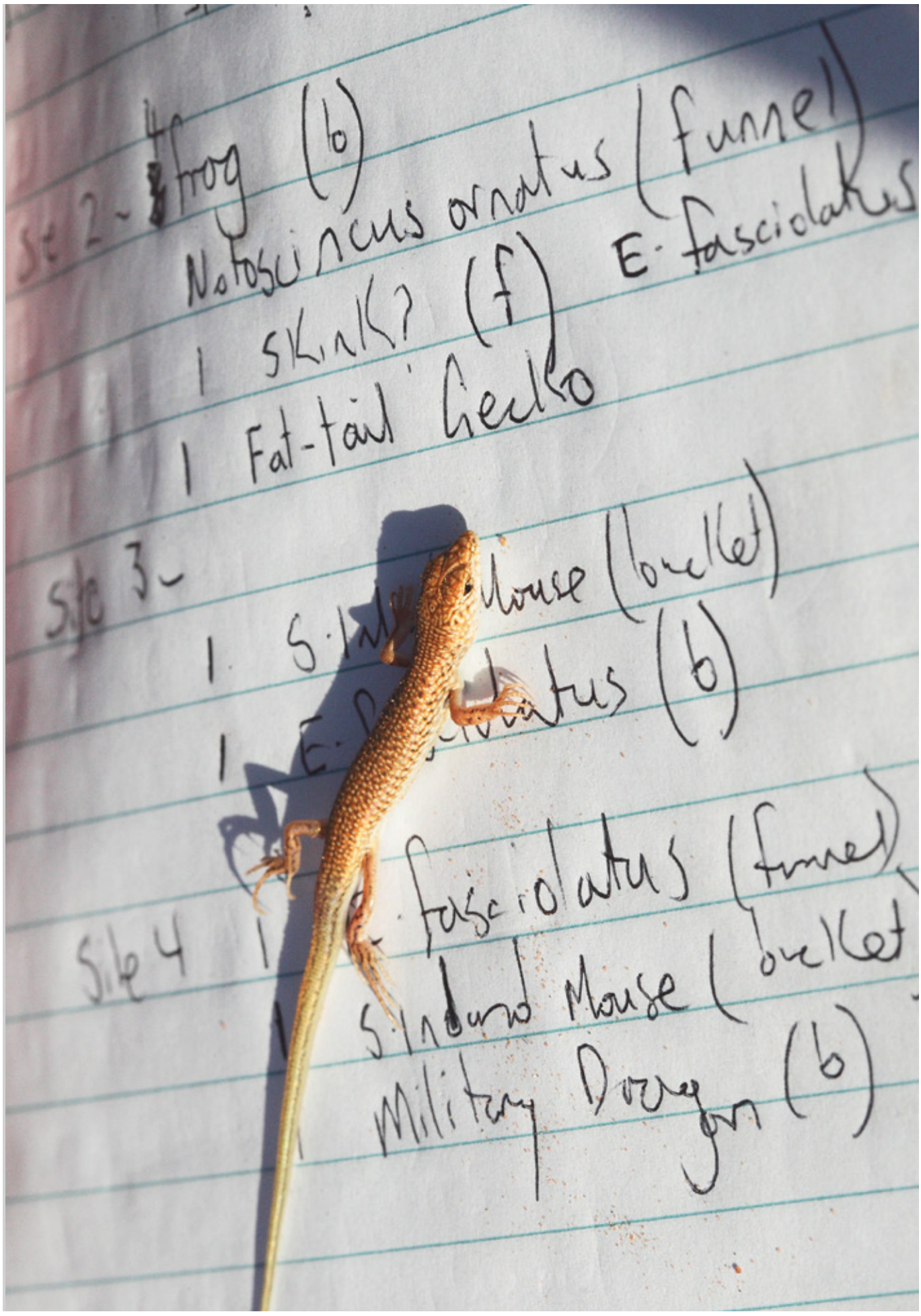
Who can you ask to help with identifying animal species?

.....

.....

PROJECT

While you are doing your survey, record your field notes using the appropriate method for your workplace. You can use the template at *Resource R7* if you do not have another method. The template can be photocopied and used for each animal or sign observed.



(Image courtesy of G. Lienert)

4 RECORD & REPORT

After the survey is finished, you need to organise your notes and take any actions that are necessary as a result of what you observed.

4.1 ORGANISE DOCUMENTATION

When you get back to base you need to update your field notes and fill in any missing information. You need to be able to find the scientific name for the animals you observed. Ask the appropriate person for support with identifying fauna (from *Section 3.3*).

Your workplace will have a procedure for storing your documentation and compiling a summary report. This might be on the computer or in a paper-based filing system.

This will help you learn more about identifying fauna as well as help your workplace track the fauna in your region.

DISCUSSION ACTIVITY

Talk with your supervisor about your workplace procedures for storing your documentation.

4.2 NOTIFY IF NECESSARY

If you observe any of the following kinds of animals you must report these to your supervisor:

- Extinct, vulnerable or endangered species
- Notifiable pest fauna

Your supervisor might have to report your observations to a government department to assist with programs they have in place for protection or eradication. This is an important way you can help protect your region.

RESEARCH ACTIVITY

Find out the species in your region that fit in one of the following categories. You can find this on the Department of the Environment website, www.environment.gov.au.

Extinct, vulnerable and endangered species

.....

.....

Notifiable pest fauna

.....

.....

4.3 SHARING INFORMATION

Once you have identified the fauna in your area, you will be able to share your knowledge with others. This might be written or you might talk about it.

Information about fauna in your area can be used for:

- Reports to funding bodies
- Annual reports for your workplace
- Flyers about your workplace or region
- Newsletters for your workplace or partner organisations
- Visitors to your area, such as tourists
- Partner groups such as government departments like Parks and Wildlife, CSIRO or local community groups

DISCUSSION ACTIVITY

Who do you need to share information with?

.....

What is the best way of sharing that information?

.....

PROJECT

With any of these projects, think about the people who you are preparing the information for and what they will be interested in learning from you.

Design a poster or flyer with information about some of the fauna species in your region.

OR

Prepare a short talk about some of the fauna in your area. This can be designed for a school group, tourists or visitors who want to learn more about your region.

OR

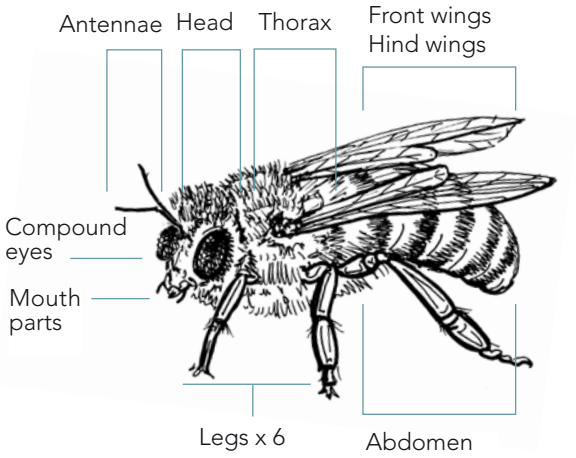
Write a newsletter article about the survey and the animals you identified.

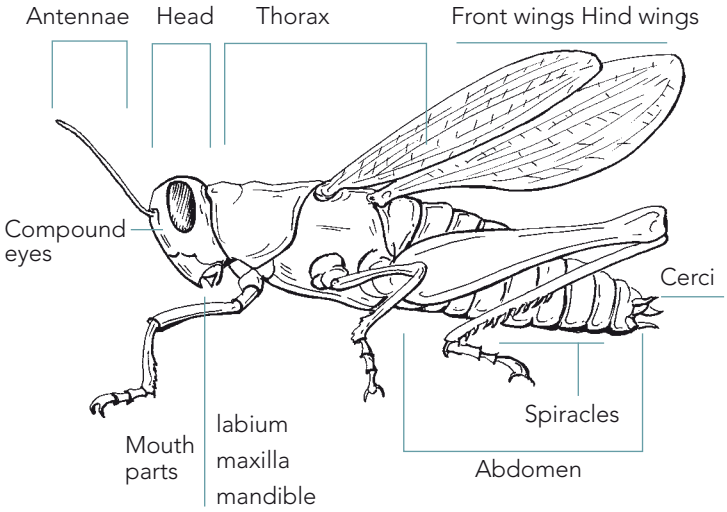
RESOURCES

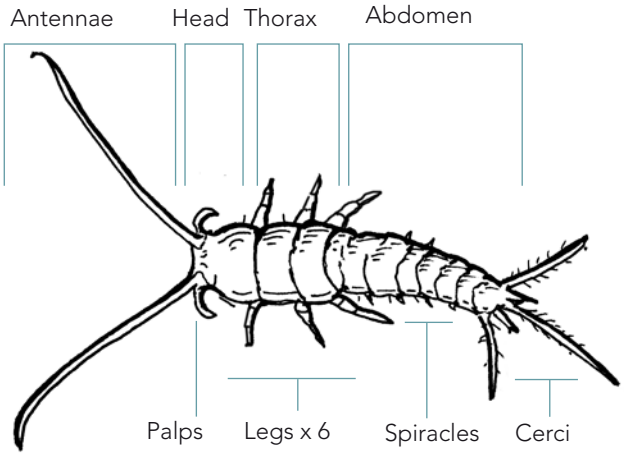
ARTHROPOD BODY PARTS

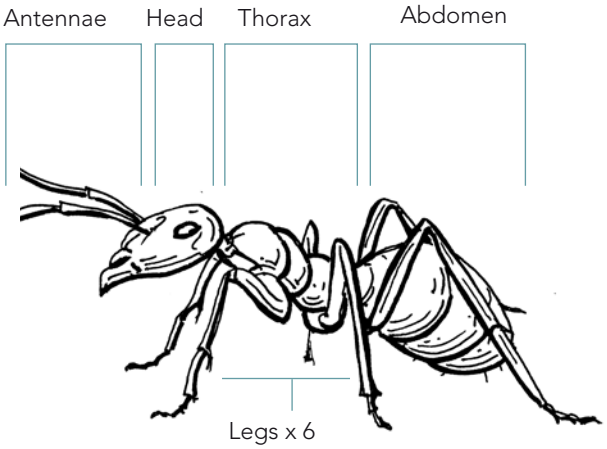
R1

INSECTS









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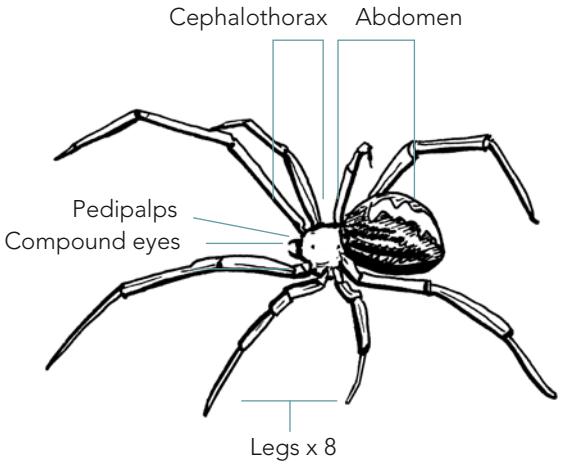

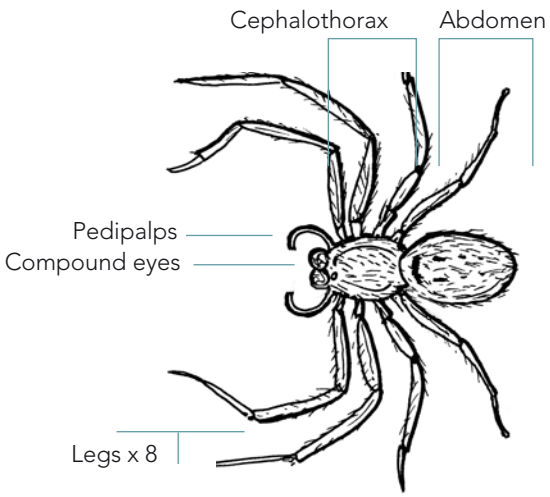

R2 DICHOTOMOUS KEY TO IDENTIFY WINGED INSECTS

1a	Insect has 1 pair of wings	YES, Order Diptera (flies, mosquitoes)
1b	Insect has 2 pairs of wings	YES, go to 2
2a	Insect has extremely long prothorax (neck) region	YES, go to 3
2b	Insect has regular length or no prothorax at all	YES, go to 4
3a	Forelegs come together in a praying position	YES, Order Mantodea (mantids)
3b	Forelegs do NOT come together in a praying position	YES, Order Raphidioptera (snakeflies)
4a	Wings are armour-like with membranous hind wings underneath	YES, Order Coleoptera (beetles)
4b	Wings are NOT armour-like	YES, go to 5
5a	Wings twist when insect is in flight	YES, Order Strepsiptera (twisted-wing parasite)
5b	Wings flap up and down without twisting	YES, go to 6
6a	Wings are triangular in shape	YES, go to 7
6b	Wings are NOT triangular in shape	YES, go to 8
7a	Insect has a proboscis and lacks long filaments at abdominal tip	YES, Order Lepidoptera (butterflies)
7b	Insect lacks a proboscis and has long filaments at abdominal tip	YES, Order Ephemeroptera (mayflies)
8a	Head is elongated (snout-like)	YES, Order Mecoptera (scorpionflies)
8b	Head is NOT elongated (snout-like)	YES, go to 9
9a	Insect has 2 pairs of cerci at tip of abdomen	YES, Order Dermaptera (earwigs)
9b	Insect does NOT have 2 pairs of cerci at tip of abdomen	YES, go to 10
10a	All 4 wings are similar in both size and shape to each other	YES, go to 11
10b	All 4 wings are NOT similar in size nor in shape to each other	YES, go to 16
11a	Eyes nearly cover or make up entire head	YES, Order Odonata (dragonflies)
11b	Eyes do NOT nearly cover nor make up entire head	YES, go to 12
12a	All 4 wings are finely veined and are almost 2x longer than abdomen	YES, Order Isoptera (termites)
12b	All 4 wings are NOT finely veined and are NOT almost 2x longer than abdomen	YES, go to 13

13a	All 4 wings are transparent with many crisscrossing veins	YES, Order Neuroptera (lacewings)
13b	All 4 wings are NOT transparent with many crisscrossing veins	YES, go to 14
14a	Insect has a proboscis far back beneath the head	YES, Order Hemiptera (true bugs)
14b	Insect does NOT have a proboscis far back beneath the head	YES, go to 15
15a	Fan-like hind wings fold flat under forewings covering most of abdomen	YES, Order Plecoptera (stoneflies)
15b	Hind wings fold roof-like and are wider at the base than the forewings	YES, Order Megaloptera (dobsonflies)
16a	Insect is less than 3 mm long and has 3 simple eyes as well as compound eyes	YES, Order Zoraptera (zorapterans)
16b	Insect lacks 3 simple eyes in addition to lacking compound eyes	YES, go to 17
17a	Insect has long hind legs used for jumping and a flat-sided head	YES, Order Orthoptera (crickets, grasshoppers)
17b	Insect lacks long hind legs and has a typical rounded head	YES, go to 18
18a	Membranous wings are edged by tiny hairs; body also has tiny hairs	YES, Order Trichoptera (caddisflies)
18b	Wings are NOT edged by tiny hairs	YES, go to 19
19a	Forewings are half-leathery (at base) and half-membranous (at tip) in texture	YES, Order Hemiptera (true bugs)
19b	Forewings are uniform in texture and appearance	YES, go to 20
20a	Body is both oval and flattened	YES, Order Blattodea (cockroaches)
20b	Body is NOT both oval and flattened	YES, go to 21
21a	Insect has a constricted waist	YES, Order Hymenoptera (bees, wasps)
21b	Insect lacks a constricted waist	YES, Order Embioptera (web-spinners)

R3 RECORD OF LOCAL FAUNA

REGION	
CLASS	

Common/language name	Scientific name

NATIONAL CODE & GUIDELINES

R4

NAME OF DOCUMENT	DESCRIPTION
Australian code for the care and use of animals for scientific purposes 8th edition (2013)	The Code applies to research involving animals, including wildlife surveys. It states that steps must be taken at all times to safeguard the wellbeing of animals by avoiding or minimising pain and distress to the animals. Unless there is evidence to the contrary, it must be assumed that procedures and conditions that would cause pain and distress in humans will also cause pain and distress in animals.
Survey guidelines for Australia's threatened: • *Bats* • *Reptiles* • *Birds* • *Frogs* • *Fish*	Guidelines for detecting fauna listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999.* There is a separate publication for each of these available from www.environment.gov.au
Guidelines: *Opportunistic research on free-living wildlife*	These guidelines were developed in NSW and Queensland but are designed to assist people and organisations to meet the requirements of the Australian Code of Practice above, so they are relevant to the whole of Australia. They firstly advise to seriously consider if a survey is required; perhaps there has already been a survey done. They give advice on the best survey techniques to use for different animal families. These are designed to minimise pain, suffering or distress to animals.
Guidelines: *Wildlife research*	
Threatened species survey and assessment guidelines: field survey methods for fauna	
Terrestrial vertebrate fauna survey guidelines for Queensland	

R5 ANIMAL WELFARE LEGISLATION BY STATE

STATE	LEGISLATION	PENALTY FOR CRUELTY TO ANIMALS*
ACT	*Animal Welfare Act 1992* and Animal Welfare Regulation 2011	Maximum: $11,000 and imprisonment for one year
NSW	*Prevention of Cruelty to Animals Act 1979* and Prevention of Cruelty to Animals Regulation 2012 *Animal Research Act 1985* and Animal Research Regulation 2010	Maximum: $22,000 or imprisonment for two years, or both, in the case of an individual
NT	*Animal Welfare Act* and Animal Welfare Regulations	Maximum: $21,600 or imprisonment for 18 months
QLD	*Animal Care and Protection Act 2001* and Animal Care and Protection Regulation 2012	Maximum: $220,000 or imprisonment for three years
SA	*Animal Welfare Act 1985* and Animal Welfare Regulations 2012	For death or serious harm maximum: $50,000 or imprisonment for four years Ill treatment maximum: $20,000 or imprisonment for two years
TAS	*Animal Welfare Act 1993* and Animal Welfare Regulations 2008	Maximum: $13,000 and/or imprisonment for one year
VIC	*Prevention of Cruelty to Animals Act 1986* and Prevention of Cruelty to Animals Regulations 2008	Maximum: $35,500 or imprisonment for one year
WA	*Animal Welfare Act 2002* Animal Welfare (General) Regulations 2003 Animal Welfare (Scientific Purposes) Regulations 2003	Minimum: $2000, maximum: $50,000 and imprisonment for five years

** Where the legislation prescribes penalty units, an approximation indicates the dollar value at the time of writing.*

JOB SAFETY ANALYSIS

R6

Organisation		
Job	Location	
Procedure developed by	Approved by	Date

Tick the box for the PPE required.

Task Steps in the job	**Hazards Identified** What could cause injury?	**Risk Score**	**Controls** What can be done to minimise the risk of injury?	**Final Risk Score**

R7

FIELD NOTES

Fill out the information you know, and leave the rest blank.

Common/language name	
Scientific name	
Location co-ords/ref	
Sex (M/F)	
Survey method	
Habitat – terrain	
Habitat – vegetation	
General observations • Count • Where found • Surroundings • Other details	
Measurements or estimates	
Physical characteristics	
Behavioural characteristics	

RESOURCES TO HELP IDENTIFY FAUNA

R8

A field guide to the birds of Australia (9th edition)
Authors: Graham Pizzey and Frank Knight
Editor: Sarah Pizzey
Publishing info: 2012 HarperCollins Publishers (Australia) Pty Ltd

Atlas of Living Australia
Publishing info: www.ala.org.au
General info: An Australian Government initiative to share biodiversity knowledge

BowerBird
Publishing info: www.bowerbird.org.au
General info: Website for 'citizen science': where people can record sightings of flora and fauna

Field Companion to Mammals of Australia
Editors: Steve Van Dyck, Ian Gynther and Andrew Baker
Publishing info: 2013 New Holland Publishers

Field Guide to Australian Birds
Author: Michael Morcombe
Publishing info: 2004 Steve Parish Publishing Pty Ltd

Field Guide to the Birds of Australia (8th Edition)
Authors: Ken Simpson and Nicholas Day
Publishing info: 2010 Penguin Books Australia

FishBase
Publishing info: www.fishbase.org
General info: A global information system on fishes

Reptiles and Amphibians of Australia
Author: Harold G. Cogger
Publishing info: 2014 CSIRO Publishing

Swainston's Fishes of Australia: The complete illustrated guide
Author: Roger Swainston
Publishing info: 2011 Viking Australia

The Mammals of Australia (3rd edition)
Editors: Steve Van Dyck and Ronald Strahan
Publishing info: 2008 New Holland Publishers

The Michael Morcombe and David Stewart eGuide to the Birds of Australia
Authors: Michael Morcombe and David Stewart
Publishing info: www.mydigitalearth.com
General info: An app to assist with bird identification

The Slater Field Guide to Australian Birds (2nd edition)
Authors: Peter, Pat and Raoul Slater
Publishing info: 2009 New Holland Publishers

Tracks, Scats and Other Traces: A Field Guide to Australian Mammals (revised edition)
Author: Barbara Triggs
Publishing info: 2004 Oxford University Press Australia

GLOSSARY

Constriction	A constriction is the place where something becomes narrower (skinnier).
Diurnal	A diurnal animal is one that is active during the day. It is the opposite of nocturnal.
Exoskeleton	An exoskeleton is a protective covering on the outside of a body. A crayfish has an exoskeleton.
Fore	In the front (so forewings are the wings that are in front of hind wings).
Gestation	Gestation is the process of development between conception and birth of an animal.
GIS device (e.g. CyberTracker)	A Geographical Information System device looks a bit like a GPS but allows you to enter more information. This information can then be analysed and mapped on a computer when you get back to base.
Hind	At the back (so hind wings are the wings behind the forewings).
Incubation	Incubation is the process of sitting on or warming eggs to keep the embryo alive until hatching.
Lateral	Lateral means it is to do with the sides, e.g. a lateral stripe is a stripe down the side.
Membranous	Something is membranous if it is made of membrane, which is a thin, flexible layer of organic tissue, e.g. the layer of fascia that covers the muscles in an animal.
Nocturnal	A nocturnal animal is one that is active at night time.
Notochord	A notochord is a skeletal rod made of cartilage. It may develop into a backbone or remain as cartilage into adult life. All chordates have a notochord at some stage of their development.
Parasite	A parasite is an organism that lives on or in another organism.
Pedipalps	Please see the diagrams of arthropods in the *Resources* section.
Proboscis	The proboscis of an insect is a long sucking mouthpart that looks like a straw.
Segmented	If an animal is segmented it has several sections to its body. The skinny area between the segments is called a constriction (see above).
Transparent	Something is transparent if you can see through it.
Vertebrate	A vertebrate is an animal with a spinal column or backbone.
Add your own words and meanings here	

GLOSSARY OF LATIN & GREEK TERMS

Aqua	Water
Arthro	Joint
Bi	Two
Bovine	Like a cow
Bucc	Mouth
Canine	Like a dog
Carne	Meat
Carnivore	Eats meat
Cent	Hundred
Cilia	Short, hairlike
Crani	Skull
Deci	Ten
Dent	Tooth
Derm	Skin
Equine	Like a horse
Feline	Like a cat
Flagella	Like a whip
Gastro	Stomach
Herbivore	Eat plants
Hetero	Different
Hex	Six
Homo	Same
Hydra	Water
Lab	Lip
Later	Side
Lingu	Tongue
Macro	Long
Magna	Big
Mamm	Breast – produces milk
Mandible	Lower jaw
Manus	Hand

Mare	Sea
Maxilla	Upper jaw
Medi	Middle
Micro	Small
Milli	Thousand
Mono	One
Neo	New
Non	Not
Nox	Harmful
Oct	Eight
Ocul	Eye
Omni	All
Omnivore	Eats meat and plants
Otus	Ear
Ova	Egg
Petra	Rock
Pod / ped	Foot
Pseudo	False / fake
Quad	Four
Quin	Five
Rostr	Beak
Semi	Half
Syn or Sym	With
Terra	Earth
Therm	Heat or warmth
Tri	Three
Trich	Hair
Troph	Eat
Ungul	Claw, hoof, nail
Ventri	Belly

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NOTES

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ALEP

Aboriginal Landcare Education Program

RECOGNISE FAUNA

This learning guide will help you to name and describe animals. This information might be useful for compiling reports, participating in surveys or helping visitors learn about your region.

Topics include:

- USING SCIENTIFIC NAMES
- RELEVANT LEGISLATION
- RESOURCES & EQUIPMENT
- SURVEY TYPES
- WORKPLACE PROCEDURES
- RECORDING & REPORTING
- SHARING INFORMATION

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