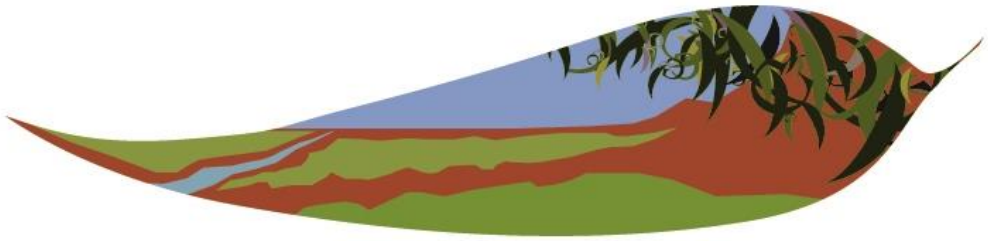
Northern Territory

Back Country Hunter Accreditation Course



Compiled by the
Northern Territory Firearms Council
for the
Northern Territory Parks and Wildlife Commission

SUPPORTED & FUNDED BY THE NORTHERN TERRITORY GOVERNMENT

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FOREWORD

The Back Country Hunting Initiative grew out of a “Territory Lifestyle Camping” concept developed by the NT Firearms Council some years ago. It became concerning to firearm owners who enjoyed an outdoor lifestyle in the traditional sense, centred around “going bush” on family camping trips that included hunting, that more and more of their favourite camping spots were being closed off and earmarked for high-volume tourism development.

Local Territorians were beginning to feel disenfranchised as their beloved outdoor lifestyle came under threat. Previously unoccupied pastoral leases were being fenced and stocked, Aboriginal land with native title was sought by Federal and Territory Governments for jointly managed National Parks or conservation reserves, and many felt the use of firearms for recreational hunting of feral animals was being unfairly restricted.

Fortunately, the NT Government has shown an understanding of these concerns and agreed to develop the Back Country Hunting (BCH) initiative, a concept that provides for limited access by permit for accredited Territorians to portions of the NT Estate that are suitable for ‘traditional’ outdoor camping and hunting activities.

While that is very positive for NT hunters, participants in the BCH initiative must understand that access to parcels of land managed by Parks and Wildlife Commission of the Northern Territory (P&W) and the NT Land Corporation is a privilege, not a right, and must be treated with the utmost respect. Many of the available areas are managed as Conservation Reserves or National Parks, and as such demand a high degree of environmental awareness and absolute compliance with the BCH Permit conditions. Participants must at all times be aware of and follow “World’s Best Practice” as it relates to vehicle access, campsite maintenance, campfire safety, litter removal, use of firearms and the hunting of feral animals and waterfowl if permitted.

Further, the boundaries of the allocated hunting area specified in the BCH permit must be clearly understood and strictly observed. Trespass onto adjacent permit areas must not be contemplated for any reason. Vehicles are generally restricted to existing entry tracks only, to encourage those who are willing to walk, and to reward greater effort in terms of distance walked from base-camp with decreased hunting pressure.

While most of us take this for granted, we are seeing an increase in unacceptable practices such as littering and vehicular damage in the more heavily utilised areas of the Top End. It must be clearly understood by all BCH participants that any failure to comply with the permit conditions and ‘Best Practice’ will likely result in the participant forfeiting accreditation along with continued participation in the scheme. Policing by subsequent users in the form of post-trip reports with photos will quickly highlight any parties who show a disregard for the basic principles of litter removal and minimum impact vehicle use. Furthermore, any level of non-compliance could place the entire BCH initiative in jeopardy.

A quick word about the BCH Accreditation Course: While the concept of another firearm accreditation course may be considered a burden by experienced hunters, we must all acknowledge the modern requirement to meet a certain “onus of responsibility” for firearm use, and to establish a common benchmark for all participants that will stand scrutiny by any third party. Considering the potential outcomes following on from accreditation, it is hoped that even the most seasoned hunters will appreciate the Course for what it is, and what can be achieved by its whole-hearted adoption.

To those new to hunting, or younger participants whose parents or immediate family were not hunters or outdoor orientated, the Course may provide useful guidelines for the conduct of responsible hunting within the BCH initiative and in the wider context.

Those of us who spent our formative years growing up in a time when firearm use was routine and widely accepted may tend to forget that many hunters today are not privileged to have a mentor, and may be blissfully unaware of some of the finer points of hunting and firearm use. The situation is not helped by society's attitudes and political agendas distorted by the sensationalist reporting of firearm-related incidents in the media. A quiet walk through the bush with a hunting rifle on the shoulder, searching for an elusive quarry, ever alert to the sights and sounds of nature, will never make the nine o'clock news.

ACKNOWLEDGMENTS

The Parks and Wildlife Commission appointed Hunting Facilitator at the time, Barry Scott, was instrumental in coordinating the Back Country Hunting (BCH) Initiative and drafting the P&W components of the initial BCH proposal.

Material for the BCH Accreditation Course was initially sourced from the P&W Guidelines for SSAA in association with the NTSC. That program was compiled by Dave Scammell and Brian McGrath from P&W, with the assistance of Brian Dudley, Executive Officer of the Northern Territory Shooters Council (now NTFC) in 1993.

Much of the layout and content for the Learning Units for hunting subjects are derived from the NSW Hunter Education Handbook 2005 provided to the NTFC by the New South Wales Department of Primary Industries Game Licensing Unit.

The NT Firearms Council Environment Delegate, Tony Orr, has been the principal author of the "Territory Lifestyle Camping" and "Back Country Hunting" proposals on which this program is based, and has overseen the drafting of the BCH Accreditation Course. Final edit and composition were undertaken by Brian Boyle, Australian Deer Association delegate and a Councillor on the NT Firearms Council.

THE NT FIREARMS COUNCIL

The Northern Territory Firearms Council is an incorporated consultative and advisory body representing the interests of legitimate firearms owners and users throughout the Northern Territory.

The Council is supported by the Northern Territory Government and solely funded by government financial grants which are used to resource the position of Executive Officer, fund the Council's operational functions, maintain the Mickett Creek Shooting Complex and manage the Council's Office in the Rifle Club building at Range #1.

Objectives of the Firearms Council

- Manage the Mickett Creek shooting complex on behalf of the NT Government
- Manage the NTFC office and related administrative functions
- Provide Executive members to serve on the Firearms Advisory Council pursuant to the requirements of the *Firearms Act* and forecast issues to be raised at this forum
- Provide suitable representatives to serve on the Firearms Appeals tribunal pursuant to the requirements of the *Firearms Act*
- Consult and negotiate where necessary with Parks and Wildlife Commission with respect to the declaration and management of the annual waterfowl hunting season
- Advise and provide information on range requirements for the design and maintenance of NT shooting ranges
- Maintain proactive liaison/consultation with government and opposition

Membership of the Council

There are twenty one members representing peak sports shooting and hunting organisations, dealers, gunsmiths, professional users, environment & conservation interests, training providers, independent members and the major regional centres outside of Darwin. These members appoint delegates to serve on Council and every sector of the firearms community is represented to at least some extent on Council. All delegates are volunteers. Check the contact page on the NTFC website for the current list of delegates and members.

NT Firearms Council contacts:

Darwin Office:
Mickett Creek Shooting Complex
Darwin Rifle Club Building
240 Brandt Road, Berrimah, NT.

Phone (08) 8947 1682, Email: info@ntfirearms.com.au

Postal: PO Box 39415, Winnellie, NT 0821

Contacts for delegates and members are available on the NTFC Website: www.ntfirearms.com.au

INTRODUCTION

ABOUT THIS HANDBOOK

The primary purpose of this handbook is to provide hunters in the Northern Territory with a source of knowledge and information to assist them to hunt safely, legally and responsibly on Public Land. A pass in the Hunter Accreditation Course is one of the requirements for application to participate in the Back Country Hunting initiative (BCH).

The hunting fraternity generally has, and continues to acquire education, knowledge and training to lift the standards of hunting practice in Australia.

To assist in the process of continual learning, the Northern Territory Firearms Council (NTFC) has compiled this Hunter Accreditation Handbook. The handbook is designed to be used by:

- Game hunters who:
  - wish to apply for access to the NT estate under the 'Back Country Hunting' initiative;
  - want to further their knowledge of hunting methods; or
  - are hunting on public land for the first time.
- Individuals, clubs and organisations as a learning guide for the reinforcement of knowledge and the safe and ethical practices of hunting.

The units of study contained in this handbook and updates are modified from the Parks and Wildlife Commission NT Guidelines for SSAA 1993, and the NSW Hunter Education Handbook 2005 which the NSW Department of Primary Industries Game Licensing Unit has kindly allowed the NTFC to use.

WHO CAN PARTICIPATE IN THE BCH PROGRAM?

Northern Territory Residents

Residents of the Northern Territory can participate in the BCH initiative subject to the following requirements:

i. Hold a current NT firearms licence;
ii. Be a current member of a P&W Approved Hunting Organisation;
iii. Have a BCH accreditation from a P&W approved BCH assessor;
iv. Have an appropriate BCH permit from P&W.

Residents outside of the Northern Territory

Residents of areas outside of the Northern Territory can participate in the BCH initiative subject to the following requirements:

i. Hold a current firearms licence accepted by the NT Police;
ii. Be a members of a hunting club or organisation that holds $20 million public liability which covers all members who participate in hunting on public land under permit or licence;
iii. Have a BCH accreditation from a P&W approved BCH assessor;
iv. Have an appropriate BCH permit from P&W;
v. Must be accompanied by an NT Resident with a BCH accreditation and Permit on the permitted hunt.

THE TRAINING AND ACCREDITATION PROCESS

Hunter education training in accordance with this handbook will be provided by Approved Hunting Organisations (AHOs) recognised by NTFC and Parks & Wildlife as having sufficient membership and structural integrity to adequately conduct the training and accreditation, and that carry appropriate public indemnity to cover applicants whilst participating in both training and accreditation, and the back country hunting activities on public land that follow. It is expected that individual AHOs would provide qualified trainers to conduct training and accreditation of their own members.

AHOs currently include but are not restricted to, Northern Territory branches of the following organisations:

- Sporting Shooters Association of Australia (SSAA)
- Field and Game Australia (FGA)
- Australian Deer Association (ADA)

Other organisations that wish to be recognised as AHOs should make an application to the Director, Northern Territory Parks and Wildlife Commission, with details of incorporation, current membership, trainer qualifications and details of public liability insurance cover for members while engaged in field activities including hunting. AHO's and the hunter accreditations for the BCH program will be subject to on-going audit and review.

The process for undertaking adequate training and accreditation for Back Country Hunting is outlined below:

Step 1: Successful completion of the NT BCH Accreditation Course

AHOs will conduct the training course and accreditation process within their own organisations at programmed times and locations that meet the needs of their membership. Times and locations will be advertised on the NTFC and P&W websites. Attendees will be expected to become competent in the following fields of knowledge:

a) relevant provisions of the Wildlife Act, and its associated Regulation and any related Codes of Practice;
b) principles for the safe use of firearms and hunting equipment;
c) ethics of hunting, including laws relating to wildlife and land access;
d) animal welfare issues related to hunting; and
e) such other matters as NTFC or P&W consider appropriate.

All the above information is included in the compulsory units of study in the NT Hunter Accreditation Course Handbook.

Step 2: Open Book Test from the Back Country Hunting Accreditation Course

This test can only be provided by a qualified AHO Assessor based on the compulsory units of study in this handbook.

Recognition of Prior Learning

To qualify for Recognition of Prior Learning (RPL) in any of the fields covered in the Accreditation Course, the applicant must provide evidence of prior learning to an AHO Assessor and undergo a closed book verbal test based on the compulsory units of study in this handbook.

Inter-state public land hunting accreditations such as the NSW Restricted Game Hunting Licence (R-Licence) may be used as RPL for part of the RPL accreditation process; subject to their approval by P&W. NT specific requirements for the BCH Program will still need to be accredited by a closed book test by the approved BCH Accreditation Course assessor. Inter-state applicants will need to check if a specific course has been approved by P&W for use in Accreditation for the BCH Program.

HOW TO USE THIS HANDBOOK

The Back Country Hunting Accreditation Course handbook is divided into the following 10 sections. Each section is comprised of study units that form the basis of the open-book test for accreditation.

Section 1: Code of Practice & NT Legal Implications

Section 2: Animal Welfare

Section 3: Safe Hunting Practices

Section 4: Ethics and Conservation

Section 5: Hunting with Rifles

Section 6: Hunting with Shotguns

Section 7: Disease Surveillance

Section 8: Game Utilisation

Section 9: Hunting Equipment

Section 10: Bushcraft and Survival Skills

About the Sections in the Handbook

Each section has the following structure:

- Table of Contents
- Introduction
- Learning Objectives
- Hunting Information
- Set Exercises
- A List of Reference Books for Further Reading and Learning
- Self-Assessment

PREPARING FOR THE OPEN BOOK TEST

The purpose of introducing the accreditation course is to ensure that applicants understand their responsibility and all relevant laws relating to wildlife, hunting practices, and land access in the NT.

It is the responsibility of the Back Country Hunting course applicant to become a current member of an Approved Hunting Organisation (AHO) for the purpose of undertaking the course and the open book test. The applicant must also hold a current NT Firearms Licence if applying as an NT resident.

If the applicant is new to hunting, it is highly recommended that some knowledge and experience be sought through an AHO membership prior to applying for Back Country Hunting accreditation.

Applicants must read the compulsory study units contained in this handbook and prepare themselves for the questions they will be asked by their AHO assessor.

As this is an open book test, applicants can refer to the contents of this handbook at any time to help them respond to the questions. Applicants with special needs can request a verbal assessment of their hunting knowledge.

The test will take approximately 30 minutes to complete. Applicants must demonstrate competence in answering the questions accurately. If unsuccessful, reassessment may be arranged with the relevant AHO.

APPLYING FOR A BACK COUNTRY HUNTING PERMIT

Back Country Hunting permits are only available to current members of Approved Hunting Organisations (AHOs) who have gained accreditation through the process in this handbook. The BCH Permit may then be issued by Parks & Wildlife NT.

How do I apply?

Back Country Hunting Permit application forms will be available from the following sources:

- Permits Office, Ground Floor, Goyder Building, Palmerston
- NT Firearms Council, Mickett Creek Shooting Complex, Darwin
- Approved Hunting Organisations (AHOs)
- downloaded from the NTFC or P&W websites

Completed application forms may;

- **be lodged in person at: BCH Permits, NT Firearms Council, Mickett Creek Shooting Complex, Darwin Rifle Club Building, 240 Brandt Road, Berrimah, NT; or**

- **posted to: BCH Permits: PO Box 39415, Winnellie, NT 0821**

Maps showing the areas available for Back Country Hunting at any given time will be available through the NTFC and P&W websites, or from the P&W Permits Office, Goyder Building, Palmerston. A booking system will be implemented to allocate hunting areas and manage access. Boundary coordinates, approved access tracks, and designated vehicle-accessible campsites will be provided and must be strictly adhered to as a condition of the permit. Vehicle access including quad-bikes and off-road buggies is restricted to those roads and tracks marked on the map provided with the permit. All access to hunting away from such tracks is to be gained on foot only.

WHAT CAN I HUNT?

Feral animal species that may be hunted on designated areas of the NT Estate under the Back Country Hunting permit include the following:

> Feral animals including: pigs, cats, dogs (not including dingo), deer, goats, camels and clean skin, unbranded: cattle; horses; donkeys; and water buffalo. **Note:** *no animal that is branded or ear tagged may be shot* under the BCH program unless specifically stated in the Permit

A list of feral animals that constitute available quarry will be provided on the Permit for the allocated hunting area. Not all feral species will be present or listed as lawful quarry at any given hunting area or at any given time. Hunters must read their Permits and be familiar with the Permit conditions before going hunting. Magpie geese and ducks may be hunted in season under an existing Waterfowl Hunting Permit **ONLY** if specifically approved by Parks & Wildlife for the specific area allocated to the BCH permit-holder at the time.

1. CODE OF PRACTICE AND NT LEGAL IMPLICATIONS

1.1 INTRODUCTION

It is a condition of any Permit issued for Back Country Hunting on the NT Estate that the permit-holder be aware of, and comply fully with, all NT legislation that relates to native wildlife, hunting, animal welfare and the use of firearms. This unit of study will assist the applicant to meet the requirements for the issuing of a Back Country Hunting permit.

1.2 LEARNING OBJECTIVES

On completion of this unit of study you will:

- Know and understand the required Code of Practice for hunting game and feral animals;
- Know how to access up-to-date Government Acts and Regulations online
- Know how to interpret key components of the Acts and Regulations relevant to hunting in the NT;
- Understand the penalties for breach of a permit condition, and certain firearms offences in the NT;
- Understand the NT animal welfare legislation as it relates to hunting and feral animal control;
- Understand the general protections relating to native fauna in the NT Wildlife Act;
- Understand the requirements of the current NT Firearms Act and Regulations

1.3 NT CODE OF PRACTICE FOR HUNTING

The following Code of Practice is proposed for NT Back Country Hunting and is derived from previous models and the PWCNT Guidelines. Accredited hunters must obey this Code as a condition of the Back Country Hunting Permit.

1. AWARENESS of relevant legislation.

It is the responsibility of an accredited BCH permit holder to be aware of and comply with all relevant legislation relating to wildlife, hunting, animal welfare and the use of firearms.

2. SAFE handling of firearms.

Where firearms are used, the rules for safe handling set out in the booklet *"Before You Shoot in the Northern Territory"* available from the NT Police must be complied with at all times.

3. AUTHORITY to enter land with a firearm for the purpose of hunting.

The hunter must not enter land with a firearm for the purpose of hunting without the express authority of the land-holder or manager, in this case NT P&W or the NT Land Corporation via the BCH permit system. Gaining accreditation by completing the course in this training manual does not automatically authorise the holder to hunt on any land.

The holder of a Back Country Hunting accreditation is only qualified to apply for a Permit, and must not hunt on any land without the express authority afforded by such a Permit. On the granting of a BCH Permit, the holder is entitled to hunt only on a specific area of land allocated during a specific time period.

4. TARGET IDENTIFICATION and safety.

A game animal must not be fired at unless it can be clearly seen and identified. *A Hunter should assume any shape, colour, movement or sound is a **human** until **proven** otherwise.*

Care must be taken that game is within range of the firearm and ammunition, and the shooter's capability. Care must also be taken to ensure that the shot poses no discernible risk of injury to any person or damage to any property. The range should be as close as circumstances permit in order to achieve this.

5. OBLIGATION to avoid suffering.

An animal being hunted must not be inflicted with unnecessary pain. To achieve the aim of delivering a humane death to a hunted animal:

(a) the firearms and ammunition used must be such as can be reasonably expected to humanely kill an animal of the target species at the distances over which they will be shot;

(b) the quarry must not be engaged unless it is within the reasonably accepted killing range

of the firearm and ammunition being used;
(c) the quarry must be targeted so that a humane kill is likely.

6. Lactating female with dependant young.
If a lactating female is killed, every reasonable effort must be made to locate and dispatch any dependent young.

7. Wounded animals.
If an animal is wounded, the hunter must immediately take all reasonable steps to locate it, so that it can be killed quickly and humanely.

8. Use of dogs.
Dogs and other animals may be used to assist hunters but only if:
(a) their use does not contravene the relevant NT Animal Welfare legislation; and
(b) their use for the purpose is specifically authorised by P&W on the allocated hunting area during the time period covered by the BCH permit.

1.4 IMPORTANT HUNTING LEGISLATION

The eight important pieces of NT legislation that all hunters need to be aware of are:

- the Animal Welfare Act
- the Firearms Act
- the Firearms Regulations
- the Parks and Wildlife Commission Act
- the Territory Parks and Wildlife Conservation Act
- the Territory Parks and Wildlife Conservation By-Laws
- the Trespass Act
- the Weeds Management Act

Up-to-date information on all the laws relevant to hunting in the NT is available on-line from the Acts, Regulations and By-Laws published at the following web addresses:

https://dcm.nt.gov.au/nt-legislation-and-publications/current-nt-legislation-database
NT Legislation database. This database contains all the current consolidated Acts and Subordinate Legislation of the Northern Territory (NT).

BCH Permit Applicants should familiarise themselves with the contents of these pieces of legislation, in particular those clauses relating to hunting with firearms and possible offences.

In summary, to comply with these Acts, Regulations and By-Laws you must:
- Only hunt on property that you have permission to hunt on;
- Only use firearms safely, with appropriate licences and approved storage facilities;
- Only hunt feral game in accordance with the Code of Practice;
- Never inflict unnecessary pain and suffering on game and feral animals;

1.5 BCH PERMIT CONDITIONS

It is vital and a requirement that all hunters read and understand the conditions of their Back Country Hunting Permit before entering their permitted hunting area. Permit holders must be aware of the boundaries of the permitted hunting area and stay within its boundaries.

NOTE: *The BCH permit is for hunting only. Permit holders are not allowed to sight in nor have target practice in their permitted areas*.

1.5 EXAMPLE ASSESSMENT QUESTIONS

Example Question 1

True or False? Up-to-date information on all the laws relevant to hunting in the NT is available on-line from Government web addresses:

Compile search terms for locating relevant legislation on the web.

List four serious breaches of NT law in relation to hunting:

1.
2.
3.
4.

Example Question 2

True or False? It is a condition of the BCH permit that the permit holder be aware of and obey all NT legislation that relates to hunting, animal welfare and the use of firearms.

True or False? If a Permit holder is concerned about where their firearm is shooting they can sight-in their rifle in a safe area in their permitted area.

List four pieces of NT legislation that relate to Back Country Hunting:

1.
2.
3.
4.

1.6 REFERENCES FOR FURTHER READING AND LEARNING

- the Animal Welfare Act
- the Firearms Act
- The Firearms Regulations
- the Parks and Wildlife Commission Act
- the Territory Parks and Wildlife Conservation Act
- the Territory Parks and Wildlife Conservation By-Laws
- the Trespass Act
- the Weeds Management Act

1.7 SELF-ASSESSMENT CHECKLIST		True	False
1.	The NT Code of Practice for Hunting is legally binding.		
2.	You will find all the current NT legislation, both Acts and Regulations, at the home page for the NT Government website.		
3.	It is a condition of issue for the Back Country Hunting Permit that the permit holder be aware of all NT legislation that relates to hunting, animal welfare and the use of firearms.		
4.	No animal when being hunted may be inflicted with unnecessary pain.		
5.	You may sight in your rifle in your permitted area.		
6.	The maximum penalty for discharging a firearm on land without permission is 10 years imprisonment.		
7.	Dingoes are protected fauna in the Northern Territory.		
8.	You are only permitted to hunt feral animal species listed on the BCH permit specific to each allocated hunting area.		
9.	You are not permitted to hunt native fauna under a Back Country Hunting permit.		
10.	Never inflict unnecessary pain and suffering on game and feral animals.		

2. ANIMAL WELFARE ISSUES

PART 2 LIST OF CONTENTS

2.1 INTRODUCTION

Humans utilise animals in a variety of ways. At times, and with reasonable cause, we kill both domestic and wild animals. The question with hunting is not if we should hunt, but rather the welfare principles we need to apply to the way in which we hunt. This unit of study will assist you to hunt animals without inflicting unreasonable or unnecessary pain and suffering on them.

2.2 LEARNING OBJECTIVES

On completion of this unit of study you will:

- Be able to be tested for a Back Country Hunting Accreditation with your nominated hunting method;
- Know where to shoot an animal to ensure a humane kill;
- Know when it is appropriate to aim for the head kill zone and when it is appropriate to use the chest kill zone;
- Know how to ensure a humane kill;
- Know what to do if a shot goes wrong;
- Understand your obligations under the NT Animal Welfare legislation.

2.3 SHOT PLACEMENT

There are only two acceptable points of aim when hunting animals with firearms: the chest kill zone and the head kill zone. People often reduce these zones to the chest and the brain, but in fact, the kill zones are larger than simply the actual physical extent of either the chest or of the brain. The chest kill zone includes the lungs and great vessels such as the vena cava and aorta and the head kill zone includes the spinal cord in the upper neck.

Single projectiles from rifles or shotguns kill by several means. They physically damage bone and soft tissue, they disrupt blood vessels causing serious blood loss and they impart energy into the animal with a tremendous concussive blow. In both the chest kill zone and the head kill zone projectiles produce all three of these effects.

Multiple projectiles from shotguns have both a concussive impact and the additional advantage of several impact sites in the killing zones on the targeted animal. Shot size and pattern are selected to ensure that there are a number of fatal hits.

With a projectile strike to the chest kill zone an animal may collapse unconscious on the spot but is more likely to retain consciousness for a very short period of time. Death is more commonly due to severe blood loss than to the concussive impact. It is not uncommon for a chest-shot animal to run for a few seconds before collapsing unconscious from the bleeding from the heart or other major vessels within the chest. Death is very quick, making this a humane way to kill an animal.

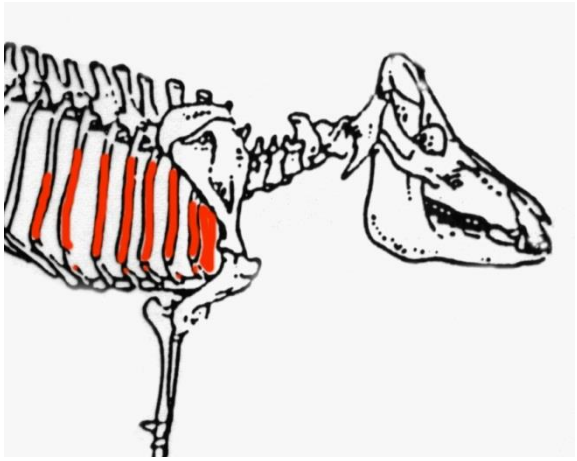
The concussive impact of a projectile strike to the head kill zone normally renders the animal instantaneously unconscious while at the same

time producing fatal bone and tissue damage and severe bleeding. There is no pain and suffering with this very humane death.

2.4 DEFINITION OF KILL ZONES

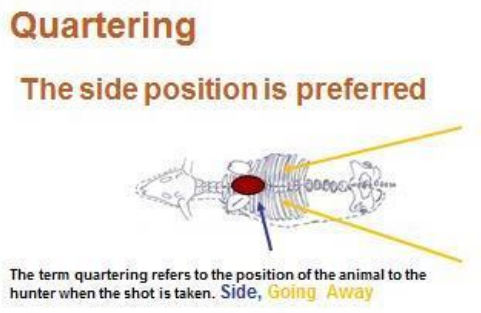
Chest kill zone

- ***Side on.*** The point of aim is just behind the shoulder at the middle of the chest. The kill zone includes the spinal column, the lungs, the major blood vessels to the heart and the heart itself.



- ***Front on.*** The point of aim is the base of the neck between the front legs.

- ***Quartering.*** The point of aim is diagonal to transect heart and shoulder. The projectile should pass through the base of the heart to lodge in the far shoulder



Head kill zone

- ***Side on.*** The point of aim is the base of the ear.
- ***Front on.*** The point of aim varies with the angle of the head. If the animal is looking down the barrel the point of aim is just above the centre of the nostrils. If the animal is looking at the ground the point of aim is the intersection of two lines drawn from each eye to the opposite ear.
- ***<u>Frontal head shots are not recommended for mature buffalo bulls</u>*** *as the construction of the outer skull and inner cranium can cause deflection of the bullet before it reaches the brain.*

The chest kill zone is preferred to a head shot in most hunting situations. The humane kill target area is much larger, more animals are taken with this aim and the likelihood of an animal escaping wounded is minimised.

The chest shot is the recommended zone for shooting at a moving animal, or in situations where a steady rest is not available, especially if exerted or breathing heavily. Low-power scopes or open sights, together with factory loads and standard trigger pressures, further suggest selecting the chest area as the safest target for a humane kill.

When shooting at a stationary animal from a steady rest such as a stump, log or tree-trunk with a heavy barrelled rifle that has a crisp trigger and a high power telescopic sight, the head shot can be taken by competent shooters. It is especially desirable that the rifle be tuned to your ammunition and the projectiles are hitting spot-on point of aim.

The risk with selecting the head kill zone when hunting on foot is that a small deflection in aim may result in an animal being wounded in the face or jaw and escape to become susceptible to starvation, thirst or infection. Also, animals with longer necks like horses camels and deer can move their heads faster and further and possibly the head kill zone is moved out of the point of aim while taking the shot. Head kill zone shots should only be attempted when the hunter is certain of making the shot.

2.5 THE SUCCESSFUL SHOT

The successful shot is one single shot that drops your animal instantaneously, at or within a few seconds of projectile impact. Death is swift and the struggle is minimal. This can be achieved when you:

- stalk as close to the animal as possible

without disturbing it;
- use a firearm/ammunition combination with adequate killing power;
- use an appropriate rifle sight (usually telescopic) with which you practice;
- use a firearm shooting true to point of aim;
- allow for the distance to target;
- take a firm, secure rest for your shot;
- have mastered breathing and trigger control;
- do not flinch on discharge of the firearm;
- target the chest kill zone.

From time to time things may go wrong. A round of ammunition may be defective or the animal may move just on the instant of firing. You may unintentionally pull the shot.

If the quarry collapsed on being shot but remains conscious: a prompt second shot to the head or chest is recommended. This MUST be done immediately to minimise further stress to the animal. Remember that when you are close to an animal, the projectile will strike an inch or two below the crosshairs of a telescopic sight.

Should the quarry animal be mortally wounded but is able to run a short distance: the hunter may consider refraining from a second hasty shot, but rather quietly follow the animal to its point of collapse. Animals shot fatally through the heart will often drop dead on the run. A second shot to the head kill zone may or may not be required when the fallen animal is approached.

If the quarry animal is wounded and able to run a long distance: immediately follow up the initial shot with as many additional shots to the chest as are necessary to kill the animal.

If the animal escapes out of range: take the time to mark two spots several metres apart and in line with where the animal was last seen. This will provide a reference to establish the line taken by the animal when walking it up.

If you have a rangefinder mark the distance to the spot where the animal was when the shot was taken. If you then mark the spot where the shot is taken you will be able to take a back reading to help find the spot where the animal was when the shot was taken.

Try to mark the animal's last known position with tape, paper, broken branches or a rock cairn, and then wait for 15 minutes or longer to allow the animal to settle. Then begin the tracking job by following blood spots or other sign of its passing. Periodically mark the blood trail with conspicuous markers like flag tape.

The strategy is to walk up on the animal at the place where it has gone to rest: so it is important to look ahead where it might be using your binoculars, not only at the sign on the ground. If you lose the trail, go back and review the flight path the animal has taken.

If the animal is not located by the method above, carefully check adjacent areas of possible concealment. Transects can then be walked in the direction the animal was most likely to have travelled. For example a wounded animal may be more likely to go downhill than up, to head towards water rather than away from it, or head towards known cover rather than out into the open.

On welfare grounds, all other hunting must be suspended until the animal is recovered or reasonably considered irretrievable.

If the shot results in a clean miss:
Are you sure? Often the sight picture is lost as the rifle recoils. In timbered country, you should always check to see if there are any signs of a hit. At the position where the animal was last seen, examine the ground carefully, looking for evidence of a projectile strike such as blood or body hair severed by the bullet. If there is no visible evidence of a hit, the animal's escape path should still be followed for at least 50 metres looking for any further evidence. If nothing is found after an extensive search it may be safe to conclude that the shot was a clean miss.

2.6 BLOOD TRAILS

When blood from an escaping animal with a fatal gunshot wound to the chest is splashed onto stones or leaf litter, the direction in which it was traveling can be determined by the shape of the

splashes. Any thin projections from the blood droplets will always point in the direction of travel.

A blood trail on grass or low bushes may indicate whether the hit is a pass-through, ie when splashes are evident on both sides of the animal's tracks. The type of blood may indicate the organ penetrated by the bullet, ie lung blood is often lighter in colour and frothy, whereas heart blood is usually a darker red. Remember to look for blood on branches and leaves off the ground and been look on the underside of leaves: blood may have been left there as the animal pushed through vegetation.

Pieces of bone, marrow and other tissue may also be present along the blood trail, assisting in assessment of the bullet strike and helping to plan the recovery action.

2.7 MANDATORY REQUIREMENTS of the Back Country Hunting Code of Practice

There are three cardinal animal welfare principles that must be strictly adhered to:

- No animal may be inflicted with unnecessary pain;
- If a female with suckling and dependent young is taken, every reasonable effort is required to locate and dispatch the young;
- All reasonable steps must be taken to locate and quickly kill a wounded animal.

Additionally, dogs may only be used to assist hunters provided that this use is in accordance with the conditions of the BCH permit for the allocated hunting area, and such use is fully compliant with the NT Animal Welfare legislation.

2.8 RECOMMENDED KILL ZONES

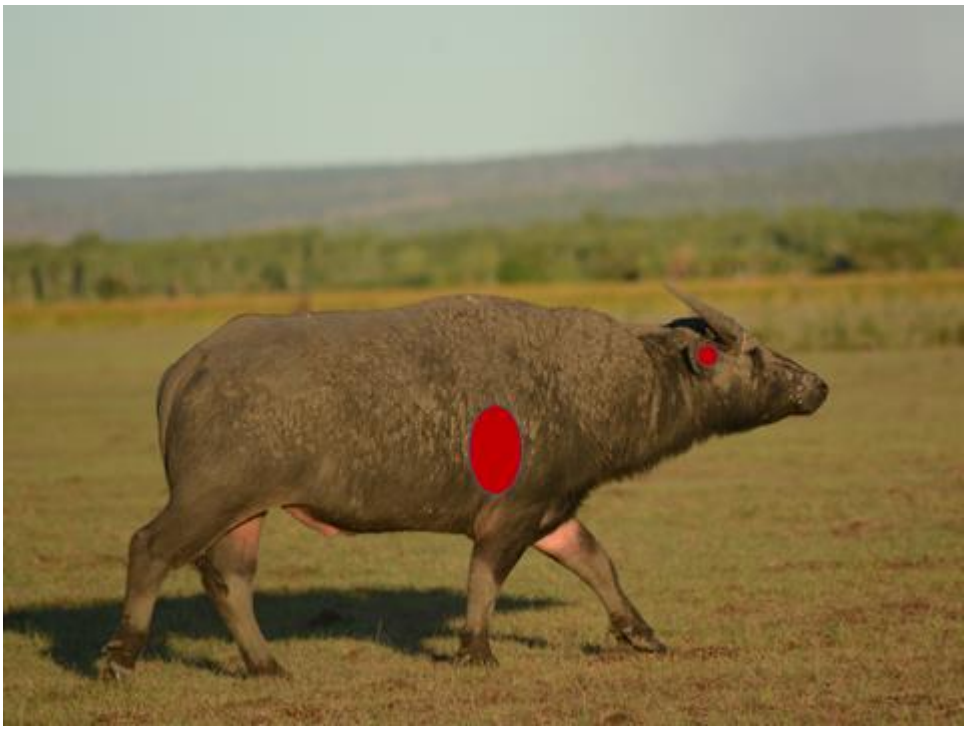
Recommended Kill Zones for Feral Donkeys

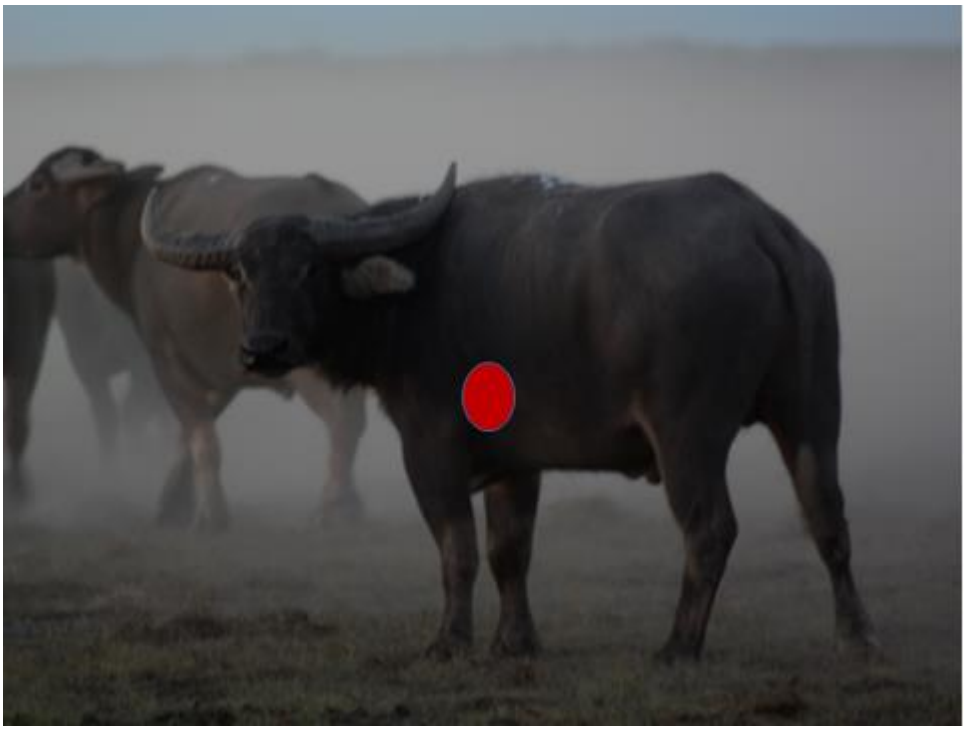
Recommended Kill Zones for Feral Horses

Recommended Kill Zones for Feral Camels

Recommended Kill Zones for Feral Pigs

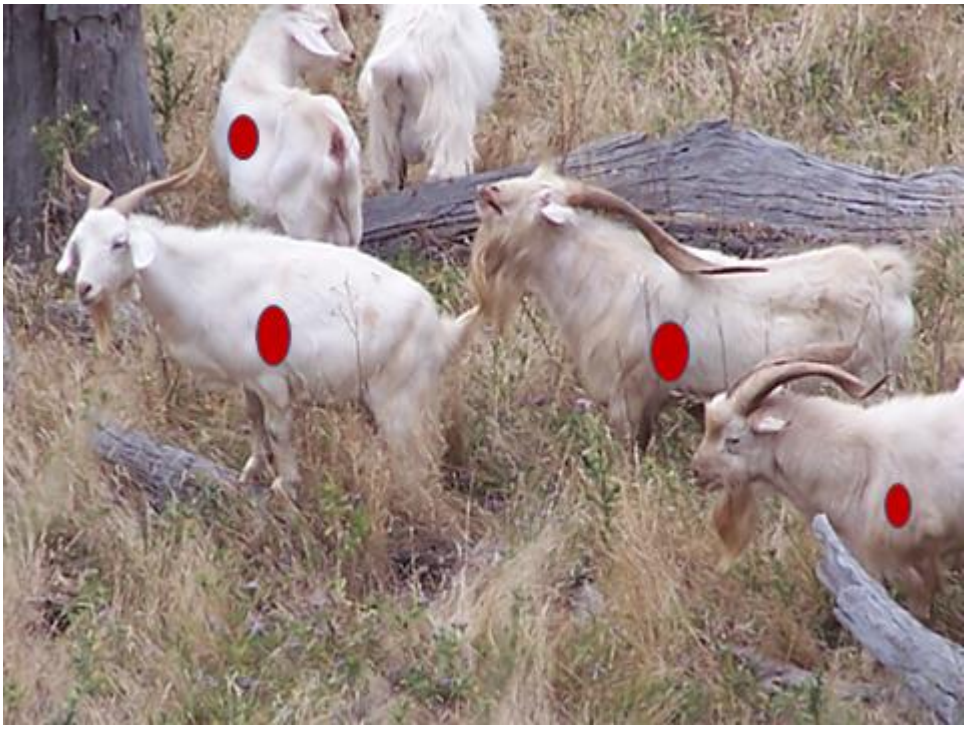
Recommended Kill Zones for Asian Water Buffalo



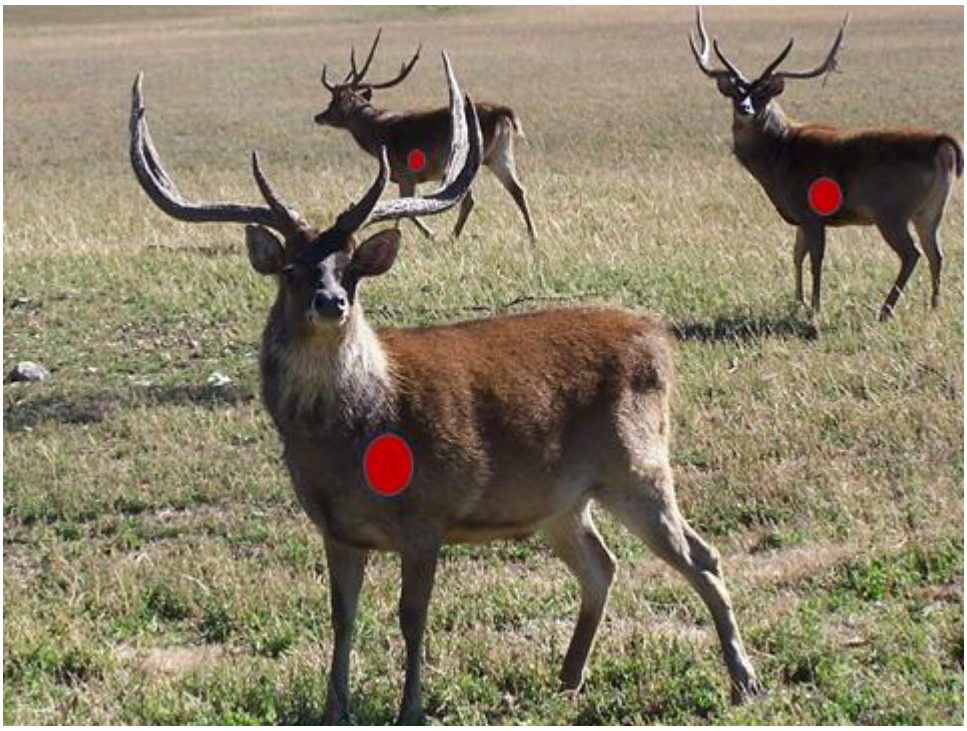


Recommended Kill Zones for feral clean-skin cattle

Recommended Kill Zones for Feral Goats



Recommended Kill Zones for Deer



2.9 EXAMPLE ASSESSMENT QUESTIONS

Example Question 1

True or False?: The Code of Practice incorporated in the NT BCH Accreditation Course sets mandatory ethical behaviour for hunters while engaged in Back Country Hunting.

List three requirements of the Code of Practice.

1.

2.

3.

Example Question 2

True or False? People exploit animals in a variety of ways and kill both domestic and wild animals. The question with hunting is not if we should hunt but rather the welfare principles we apply to the way we hunt.

List four things that you can do to minimise pain and suffering in the animals that you hunt.

1.

2.

3.

4.

2.10 REFERENCES FOR FURTHER READING AND LEARNING

1. Harvey, N. 1995 *Handbook for Hunters and Shooters*. Australian Print Group.
2. Harrison, M, and Slee, K. 1995. *The Australian Deerhunter's Handbook.* Australian Deer Research Foundation Ltd, Croydon, Vic.pp. 25, 43-44.
3. Hopwood, P.R. 2001 A*nimal DeLiberations*, Adelaide: SSAA.
4. Smith, G.1992. *A Guide to Hunting and Shooting in Australia*. Sporting Shooters Association of Australia Publications, Unley, SA. pp 101-104.
5. Webster, J. 1994 A*nimal Welfare: A Cool Eye Towards Eden.* Oxford: Blackwell.

2.11 SELF-ASSESSMENT CHECKLIST		True	False
1.	You don't need to know where to shoot an animal to ensure a quick and humane kill.		
2.	It is acceptable hunting practice to capture young game animals and release them elsewhere for future hunting.		
3.	The question with hunting is not if we should hunt, but rather the welfare principles we need to apply to the way in which we hunt.		
4.	The successful shot is one single shot that drops your animal instantaneously on, or within a few seconds of projectile impact.		
5.	You are hunting on foot in the Top End. It is hot and you are breathing heavily under the weight of your daypack. You have a sporting rifle with a 4X telescopic sight, a safe trigger pressure and factory load ammunition. You come across animals that are 120 metres off and you cannot stalk any closer without them taking flight. You should attempt a head shot using an improvised bush rest.		
6.	If an animal is wounded and escapes out of rifle range, you should run after it as quickly as you can to try and catch it.		
7.	It is easy to mistakenly think that you have missed an animal. Always check out "clean misses".		
8.	Dogs may only be used to assist hunters provided that this use is in accordance with the Animal Welfare legislation and with permission of the Parks and Wildlife Commission.		
9.	Firearms and ammunition must be used that can be reasonably expected to kill the target species quickly and humanely.		
10.	The head kill zone includes the spinal cord in the upper neck and the chest kill zone includes the lungs and great vessels of the heart such as the vena cava and aorta.		

3. SAFE HUNTING PRACTICES

PART 3 LIST OF CONTENTS

3.1 INTRODUCTION

Safety is very much a matter of planning ahead and thinking through the consequences of your actions. People who recognise the importance of safety will ask themselves the "what if" questions, and then take the necessary steps to prevent trouble. This unit of study will build on the information contained in the "Before You Shoot" booklet provided by the NT Police at the point of applying for an NT Firearms Licence.

Hunting poses risks other than those directly related to firearms. This unit of study will encourage the applicant to think through a range of safety issues.

3.2 LEARNING OBJECTIVES

On the completion of this unit of study you will:

- Have re-read the various handbooks on firearms safety.
- Have compiled a hazard analysis for the particular hunting situations you wish to engage in.
- Have written up a safety habit protocol for when you are hunting.
- Have identified a range of hunting safety precautions.

This unit of study assumes that you are thoroughly familiar with the firearm safety rules set out in the "Before You Shoot" booklet and the various other handbooks on firearms safety.

3.3 HAZARD ANALYSIS

In many situations, both in industry and commerce, HACCP (hazard analysis critical control paths) principles are employed to improve safety and productivity. These principles can also be applied to make your own hunting experience safer.

Think about your next hunting trip. Analyse the potential hazards to yourself, to your equipment and to the community. Write them down. Hazards can occur in transit, in camp, and while hunting. In transit and in your hunting camp your firearms are more vulnerable than in the home gun safe. They may be damaged, stolen or be accessible to children or others.

Exercise 1: Identify hazards

Take pen and paper and write a list of all the things that you normally do to get to a hunting area and set-up the hunting camp. Now add in the hazards for each activity.

We know that safety manuals list all sorts of oddball dangers. Make this exercise real. Think about those dangers that are most likely to apply to your particular hunting circumstances. Then for each hazard you identify, list a sensible, practical safety precaution. A lot can go wrong before you even begin hunting. You are now on the way to constructing your personal safety hunting protocol!

Examples:

- Is the drive to your hunting area too far to safely do in one day? Driver fatigue may be a much more serious hazard than any hunting danger.
- If you travel with the family, is it possible that your children could gain access to your firearms while in transit?
- A practical safety precaution may be to apply a trigger lock to your firearm and pack the bolt and ammunition separately. You may decide to do this as a general safety precaution. Your firearms may be more secure if you travel with them in locked, strong, padded gun cases.

You know the firearm safety rules but while hunting your concentration on firearm safety will be distracted by many things; the excitement of a stalk, finding a snake under foot, animals suddenly taking flight, fatigue at the end of a tough hunting day.

To prevent accidents you need to develop a safety routine that ensures that you are failsafe, even when distracted.

Exercise 2: Safety Checks
Take pen and paper and write down the things that may distract you when hunting. These are the predictable and likely dangers. For each instance think out and write down a safety habit that will overcome the distraction.

Example
A good boar spooked just before you fired. Your safety habit routine prompts you to uncock your firearm when not immediately taking a shot. Then you race after the pig on the chance of a parting shot. In this situation, without safe habits, it would be easy to find yourself running through bush with a cocked rifle. What happens then if you slip, fall and a firearm accident follows.

Exercise 3: Good hunting habits
Take a pen and paper and write down your intended hunting habits.

Examples

- Do you intend to carry your firearm with ammunition in the magazine, with a round in the chamber, and cocked with the safety catch on? If so write it down. Think carefully on this example!
- In thick scrub, will you tape the muzzle of your rifle to prevent muck getting down the barrel?
- Will you check regularly to see if you have left your firearm cocked?
- Will you require your hunting mate to regularly check to see if their firearm has been left cocked?
- Will you unload your firearm at obstacles such as fences?
- Will you only take the shot when you know that the projectile is going to land in a safe spot or have a safe background?
- Do you intend to hunt in camouflage clothing in an area where there are other hunters?
- *Will you assume any shape, colour, movement or sound is a **human** until **proven** otherwise?*

Your full list will be much longer than these few examples.

3.4 FENCE CROSSING PROCEDURES

Most shooting texts will include a discussion of crossing fences or obstacles, since it is a common cause of hunting accidents world-wide.

Procedure for two hunters: Both rifles are cleared for empty chamber. The first hunter goes through the fence while the other holds both rifles. The rifles are then handed over the fence one at a time, following which the second hunter then climbs through the fence.

For a single hunter, the rifle is cleared of cartridges and placed on the ground while the hunter climbs through the fence. The hunter then reaches back through the fence to pick up his rifle.

Exercise 4: Group feedback
Set up a meeting to discuss your list of intended hunting habits with several friends. This way you can check if what you intend to do is really safe. You can work out if there are even better ways of going about it.

Examples
If you wrote down that you intended to hunt relying on your rifle safety catch to prevent an accidental discharge your friends would not be impressed. They would tell you that it is too easy to mistake the on/off position of your safety catch, or that the safety catch may fail to operate properly if the rifle is bumped. They would tell you that it is against the firearm safety rules that clearly require you not to load and cock your rifle except immediately before you take a shot.

This exercise is important, as it will help you and your friends develop safer hunting practices. Most people are happy to plan a future hunt together, to talk about what and where but are often reluctant to talk about each other's safety habits. The emphasis should be on helping your mate to do it more safely.
All responsible hunters know that once they press the trigger a projectile cannot be called back. They apply two basic rules.

- A shot is never taken unless the animal is identified beyond doubt.
- A shot is never taken unless the projectile will land in a safe background. That is, they can see the general area of impact to be clear of stock, farm equipment, hard surfaces and other people.

Would you be tempted?

You come across a trophy stag only 30 metres away. The stag is on a skyline and unaware of your presence. You surely cannot miss at this range. Possibly true, but you do not know where the projectile will finish up. It may pass through the animal and carry on to end the life of the person innocently bushwalking on the other side of the ridge. There are no exceptions, trophy stag or otherwise. Back off, move around and take the shot from a position where you know the projectile will come to earth safely. Better to lose the stag than risk a tragedy.

3.5 ROUTINE SAFE HUNTING PRACTICES

A case study
Two mates have hunted together for many years and have developed a safety protocol that puts trust in each other but not themselves. During a hunt, each reports to the other on the state of readiness of their firearm. For example, the routine may include: "my rifle has 3 in the magazine, chamber is clear, and the bolt up". A reply might be "3 in the mag, chamber clear, breech open".

The routine starts on leaving the vehicle and is repeated at obstacles such as fences, creek crossings, rocky ridges etc, and always after any hunting action where a round may have been chambered. The final routine, on return to the vehicle, involves confirming with each other that the firearm is clear of ammunition in both chamber and magazine.

The two hunters always discuss the plan for each walk, stay just in sight of each other as the area is traversed and stay in communication by means of light UHF radios. The radios ensure that both hunters always know what the other is doing and allow the hunt plan to be quickly altered without risk of separation.

The camouflage clothing worn by both ensures more productive hunts but requires more care and frequent radio communication for each of them to know exactly where their buddy is, especially before taking a shot. They also choose to wear blaze orange caps to supplement this safety routine.

3.6 SAFE HUNTING ETIQUETTE

There is more to hunting than being safe. The general public needs to feel safe when hunters are about. There are a number of simple things you need to do. For example:

- You meet a party of bushwalkers in some sort of trouble. Help them out. Tell them you are a hunter.
- You meet a party of bushwalkers who have just left a scent trail through your best hunting patch. It may be their right to be there as much as yours. Be friendly, courteous and helpful. Ask where they are headed and assure them that you will not hunt near them.

- Always unload and sling your rifle during chance meetings in the bush. Tell people you meet that your rifle is unloaded and make it clear that you are not actively hunting near them. Ask them where they are going and hunt elsewhere.
- Do not display firearms around the public.
- Do not use the telescopic sight on your rifle as binoculars to watch people or look at infrastructure where people might be. You know that your rifle is unloaded but the people watching you through their binoculars don't. All they see is a rifle being aimed at them!

ALWAYS POINT YOUR FIREARM IN A SAFE DIRECTION – LOADED OR UNLOADED.

3.7 EXAMPLE ASSESSMENT QUESTIONS

Example Question 1

True or False? Safety is very much a matter of planning ahead and thinking through the consequences of your actions. A safe person will ask themselves "what if" questions and then take the necessary steps to prevent trouble.

List four steps you would take to make your hunting safer.

1.
2.
3.
4.

Example Question 2

True or False? Game and feral animals must not be fired at unless they can be clearly seen and identified and the shot when taken poses no appreciable risk of injury to any person or significant damage to any property.

List at least four things you need to do to take a safe shot.

1.
2.
3.
4.

3.8 REFERENCES FOR FURTHER READING AND LEARNING

1. Smith, G.1992. *Guide to Hunting and Shooting in Australia*. Sporting Shooters Association of Australia Publications, Unley S.A.
2. *The Australian Deerhunter's Handbook.* Harrison, M. and Slee, K. Aust. Deer Research Foundation, Croydon Vic Second Edition 1995.
3. *Firearms Safety Code.* Victorian Firearms Consultative Committee. Victoria Police Unit

3.9 SELF-ASSESSMENT CHECKLIST		True	False
1.	Safety is very much a matter of planning ahead and thinking through the consequences of your actions. A safe person will ask themselves “what if” questions, and then take the necessary steps to prevent trouble.		
2.	Once you press the trigger a projectile cannot be called back.		
3.	A trophy stag is on a skyline but so close that you think it is impossible to miss. Therefore, it is safe to take the shot.		
4.	It is safe to fire at movement of bushes in thick scrub.		
5.	You can search for your hunting mates using your rifle’s telescopic sight.		
6.	No animal is worth the risk of carrying a loaded, cocked rifle.		
7.	Safe hunting etiquette requires that you not only be safe but are seen to be safe.		
8.	Wearing bright colours, like blaze orange, when hunting game and feral animals is a good safety practice.		
9.	Hazard analysis and discussion of critical safety habits with your hunting mates will make your hunting safer.		
10.	Hunting is a risk-free sport.		

4. ETHICS AND CONSERVATION

PART 4 LIST OF CONTENTS

4.1 LEARNING OBJECTIVES

On completion of this Unit you will:

- Understand your moral and ethical responsibilities to the animals that you hunt;
- Know of several references for further reading to broaden your knowledge.

4.2 INTRODUCTION

Today's hunter needs to develop personal hunting practice, rules and ethics to maintain community support for this recreational activity. It means setting boundaries and restrictions as to how hunters are prepared to hunt within the framework of existing laws. Experience shows that good ethics develop and grow from an understanding of basic conservation principles, respect and compassion for the quarry animals, and from past practices.

Through the BCH Accreditation Course - which brings a high level of accountability to hunting on public land in the Territory - the vision of the NTFC is to promote these core hunting values to all members of the hunting fraternity and the wider community. A major objective of the BCH initiative is to provide for the effective management of introduced animal species, while promoting responsible and ethical hunting practices.

All hunters have an obligation to do the right thing in the way they hunt an animal, respect land managers' wishes and interact with the wider community. It is a hunter's behaviour that ultimately shapes community attitudes and perceptions about hunting in the NT and Australia wide.

4.3 HUNTING ETHICS

Every hunter develops personal ethical standards which in fact constitutes a personal code of practice that determines how a hunter approaches his or her hunting activities. What standard of personal ethics or code should it be? How do hunting situations determine how a hunter conducts the hunt?

It is fair to say that hunting practices that are legal in some jurisdictions may not be so in others. Even within current legal boundaries there may exist some hunting practices that may be considered unethical when measured against one's own personal code of practice. This diversity of opinions and ethics should be recognised and respected.

Many hunters are quite specific in their hunting practices, and may engage in only one form of hunting. The context of a hunt may also affect how a hunter applies a personal hunting ethic. For example:

- Is the hunt for pest control or for meat?
- Are the hunted animals abundant or sparse?
- Is the hunt on private or public land?
- Is the hunt a commercially guided hunt or a weekend outing with friends?

In the NT the minimum ethical standard and code of practice of all hunters is based on a very sound and proven value – ***RESPECT***. If we respect a person or a policy, we hold it in

esteem. We may aspire to support it, promote it and be responsible hunters.

1. RESPECT for the Law

Ethical Hunters:

- Are role models who obey and promote compliance to all laws including game hunting and firearm laws;
- Ensure they have permission or a current permit before entering any land;
- Obey all legal requirements of the land owner or manager;
- Obey fire bans and ensure they adhere to fire danger ratings;
- Offer to report to the landowner, ranger or police all unusual or suspicious behaviour or illegal incidents.

2. RESPECT for the Landowner and Joint Management Partners

Ethical Hunters:

- Understand that when entering property with permission or a permit, they are a guest of the landowner or manager and must treat the property with respect;
- Obey all reasonable requests and directions of the landowner or manager;
- Ensure they gain a clear understanding of property boundaries and the areas they have been given permission or are permitted to access;
- Look for opportunities to assist land managers for the hunting privileges afforded to them.
- Treat all other people's opinions and property with respect;
- Learn about the likelihood or presence of any indigenous sites of significance and do not, under any circumstances, disturb any aspect.

3. RESPECT for the Environment

Ethical Hunters:

- Are guardians of the environment;
- Dispose of all litter/rubbish and empty shell cases properly;
- Stay on formed access roads or tracks and do not drive where the vehicle will cause environmental damage;
- Work to preserve the environment and support the existence and sustainability of non-game and endangered species;
- Take the necessary precautions and safety measures relating to camp fires.

4. RESPECT for the Animals

Ethical Hunters:

- Learn to shoot accurately, safely and always with the intention of ensuring a humane kill;
- Learn everything they can about the game they hunt, its habitat, habits and life cycle;
- Are skilled in the use of the tools that they use for hunting;
- Transport their quarry in a respectful manner;
- Learn to fully utilise the animals they harvest.

Any hunter breaching one of the ***'4 Rs'*** disgraces themselves, places a blight on their fellow hunters and most importantly on the activity of hunting. Furthermore, post trip reporting of any issues by subsequent hunters to the area may result in suspension of the BCH accreditation and no future access.

Remember, the ***'4 Rs'*** require more than just legal compliance, they require you – the hunter – to actively promote the principles of responsible and ethical hunting. As 'best practice' this means that you should discuss the Code with your hunting buddies and determine how best to implement it on any particular hunt.

As responsible, ethical hunters we should not ever compromise the ***'4 Rs'*** of hunting.

4.4 CONSERVATION HUNTING

The concept and practice of conservation hunting has always been close to the hearts of responsible hunters. Hunting is an important and legitimate tool in nature conservation management, particularly as it relates to over-population of introduced species.

Until relatively recently the Territory Government had not taken full advantage of the capabilities of private hunters in an organised, regulated way.

By controlling animal populations, public and private landholders will have a greater opportunity to conserve the environment and minimise economic impacts with the help of structured conservation hunting activities.

Feral animal control
Hunting is an important tool in feral animal control. Pest animal managers have tried every known way from trapping, poisoning, and exclusion by fencing and shooting to eradicate growing populations of introduced species. Unfortunately, this has not been successful and feral and pest animals are as numerous and as widespread as they have ever been.

It is now widely recognised that the complete eradication of these species is almost physically and certainly economically impossible. The role of the responsible hunter in conservation therefore becomes increasingly important.

A 2004 Report for the Rural Industries Research & Development Corporation (RIRDC) noted the important role of responsible hunters and is evidenced by estimations that feral pigs cost Australia's agricultural industries $106.5 million a year in lost production, mostly in NSW and Queensland. It has been estimated that hunters kill 15-20% of the feral pig population in accessible country.

4.5 LAWS PROTECTING ABORIGINAL CULTURE AND HERITAGE

Our rich Aboriginal cultural heritage is something to be treasured and respected. As you traverse the landscape it is likely you will come across evidence of occupation. Just as you ask your fellow Australian to respect your hunting heritage, Aboriginal people ask that you respect their cultural sites and heritage. Aboriginal people still retain their rights of traditional hunting on their lands and Aboriginal heritage sites are protected by law.

The following are examples of Aboriginal heritage that are protected are under the current NT Heritage Act:

- Scarred trees – Where bark has been removed for canoes, shield or carry baskets;
- Rock painting – Markings or etching;
- Foot holes cut into trees, usually to gather honey;
- Grinding grooves – Holes worked on bedrock to grind grain and other materials;
- Stone arrangements, nature does not lay stones in a straight line or circle;
- Middens – mounds of shells, bones or other evidence of camp;
- Hand tools – Sharpe edge tools or hammers. Usually a fine grained rock not of local origin;
- Camping areas – some of which are still used today.

The above items are not to be damaged, removed or altered in any way.

4.6 SELF-LEARNING EXERCISE

List below the four articles of ***Respec***t when hunting in the NT.

1.
2.
3.
4.

4.7 EXAMPLE ASSESSMENT QUESTION

The balance of sustaining both native wildlife populations and agricultural production poses many challenges for landholders and hunters. List one example of how hunters and farmers can benefit from conservation hunting.

4.8 REFERENCES FOR FURTHER READING AND LEARNING

1. Harrison, M. and Slee, K. 1995. *The Australian Deerhunter's Handbook.* Australian Deer Research Foundation Ltd. Croydon, Vic.
2. Moore, G and Mayze, R. 1990. *The Hog Deer.* Australian Deer Research Foundation Ltd. Croydon. Vic.
3. Smith, G. 1992. *A Guide to Hunting and Shooting in Australia*. Sporting Shooters Association of Australia Publications. Unley S.A.

4.9 ADDITIONAL READING

1. King, M. 1995 *Sustainable Use: a Hunter's Concept in Conservation Through Sustainable Use of Wildlife* Ed G. Grigg, P. Hale and D. Lunney pp282-287 University of Queensland Press.
2. King, M. 1997 *Hunting, Sustainable Use and Conservation. In Sustainable Use of Wildlife: Utopian Dream or Unrealistic Nightmare"* Ed B. Diekman pp 103-113. Nature Conservation Council of NSW.
3. Leopold. A. 1948. *A Sand County Almanac*. Oxford University Press, Oxford, London, New York.
4. Leopold. A. 1933. *Game Management.* The Wisconsin University Press. Wisconsin USA.

4.10 SELF-ASSESSMENT CHECKLIST		True	False
1.	It is our sense of doing the right thing that lends the greatest satisfaction to our hunting.		
2.	How we, as hunters, conduct ourselves in dealing with the way we approach or manage our hunting practices is really nobody's business.		
3.	It is fair to say that hunting practices that are legal in other countries are legal everywhere.		
4.	Ethical hunters understand that when they enter upon a property with permission, they are a guest of the landowner.		
5.	Hunters must take reasonable care to ensure that no hunted animal suffers unnecessary pain.		
6.	It is now widely recognised that it is physically and economically impossible to eradicate pest animal species.		
7.	Understanding that there is a likelihood of encountering traditional owner's sites while hunting is an important consideration of any planned hunt.		

5. HUNTING WITH RIFLES

PART 5 LIST OF CONTENTS

5.1 INTRODUCTION

As an accredited hunter, the applicant is personally responsible for the quick and humane dispatch of the target animal. To do this, it is safer to be over-gunned than under-gunned. The Tables in this unit will assist you in selecting the right firearm.

It is in the selection of the correct firearm and ammunition combination and the distance over which you shoot that will ensure a satisfactory animal welfare outcome.

The Tables given in this unit recommend minimum calibres, cartridges and projectile weights for each animal species. You will notice that different authorities may give different recommendations. This is because you can effectively use a more or less powerful firearm/ammunition combination under different hunting conditions. For example, less powerful firearm/ammunition combinations may be effective in a pest control situation during a drought where the animals are weak from hunger, congregate near a water hole and are being shot at close range.

5.2 LEARNING OBJECTIVES

On completion of this unit you will:

- Be able to be tested on Hunting with Rifles for Back Country Hunting accreditation;
- Know what minimum calibres and projectile weights are generally recommended for hunting each specie;
- Understand the effect of projectile construction, weights and velocities on the performance of the rifle.
- Be able to select projectiles for different purposes;
- Know how to sight in a rifle and tune it for accuracy;
- Understand the importance of rifle fit for quick shooting;
- Have knowledge about common rifle malfunctions and the actions required for their correction.

5.3 RECOMMENDED MINIMUM RIFLE CALIBRES FOR GAME

All AHOs recommend the following principles in the selection of firearm ammunition combinations:

A. The firearm/ammunition combination must allow for accurate shot placement over the distance at which the animal is to be shot.
B. The firearm/ammunition combination must provide sufficient killing power to quickly and humanely kill the animal.

Killing power is a function of the interaction between the animal and the projectile. In relation

to the projectile, the killing power varies with calibre, weight, construction and velocity.

In relation to the animal, the killing power of the projectile varies with the toughness of the hide, functional importance to life of the targeted organ and depth of penetration required to reach such organs.

Opinions vary on the minimum cartridges you should use on various game animals. Tables published in the recommended texts give recommendations from various reputable sources for general hunting conditions.

It needs to be emphasised that cartridges that are adequate for general hunting conditions may be inadequate under special circumstances.

One should always remember that there is no substitute for proper shot placement and even the heaviest calibres must hit in the right place to kill cleanly and humanely. Only dedicated practice will ensure that you can do this. The range at which the animal is to be taken is an important variable that should be taken into account when selecting a minimum calibre for any particular species.

5.4 SIGHTS AND SIGHTING IN

The proper sighting in of rifles is not a thing that can be rushed, but requires meticulous attention to detail. This is best done at an official rifle range. It cannot be done well for example, over a car bonnet and by lining up on a tin can. The recommended texts explain sighting-in methodologies for iron sights, aperture or peep sights, and telescopic sights.

The target will be sharper and more easily centred through a telescopic sight than with iron sights, however the scope must be focused for the individual using the screw adjustment on the lens nearest to the eye.

Variations in rifle scope reticles (cross-hairs), magnifications, and specific purpose for different types of shooting are discussed in the recommended texts. Preferably, rifle scopes should be fitted by a qualified person who will set up the initial alignment by adjusting the scope mounts with reticle adjustment at dead-centre. Final adjustments are then made using the adjustment turret screws built onto the scope tube. Minimizing the amount of adjustment necessary with the turret screws will reduce parallax error to a minimum.

5.5 SHOOTING TECHNIQUE

You can do a number of simple things to improve your shooting.

Firstly, look to support the rifle if at all possible. Off-hand shooting from the shoulder is the least stable shooting position, while shooting prone with the rifle fully supported is the most stable position for a shooter of average build. When hunting you will need to look for a compromise shooting position, for example, resting your rifle against a tree, over a stump, or often you may need to just sit on the ground using your knees for a rest. Remember that if you rest your rifle on a hard surface it may recoil away from that hard surface and shoot high, so make sure you pad the fore end with your hat or daypack. You may consider using a bipod or shooting sticks to steady your aim.

Secondly, focus on your target and if recoil allows, try to actually see the projectile strike. With hard kicking rifles this is easier said than done. Loud rifles or rifles fitted with muzzle breaks are prone to inducing a flinch in anticipation of the noise, so discipline yourself to ignore the muzzle-blast and recoil setback on discharge. Range practice is the key to overcoming any tendency to flinch and to developing a rock-steady shooting technique.

Finally, control of your breathing during trigger release will help eliminate the fall and rise of your sights so that you are on target without undue muscle tension. Take in a couple of controlled deep breaths, and halfway through exhaling the second, hold and stop exhaling and gently squeeze off the shot, Again, the firing range is the proper place for developing good technique, not in the hunting field on game.

5.6 SHOOTING POSITIONS

Most of the recommended texts show the usual field positions for safe, accurate shooting. They include:

Free standing, off-hand position with no support. This is the least stable of the shooting positions. A sling strap will help steady the rifle.

Seated with the rifle supported by bracing both arms and knees. Where no supports are available this position is recommended.

Prone position. The rifle is supported with the arms and elbows. The body is angled away from the line of the target and the legs are slightly spread.

Kneeling, using a shooting stick or bipod. The rifle may be further supported by bracing the right arm on the knee.

Kneeling with the rifle supported by a fallen tree. A day pack may be used to cushion the rifle which must not contact the hard support.

Sitting, using a tree for support. The rifle must not be in contact with the tree and is best cushioned with the hand.

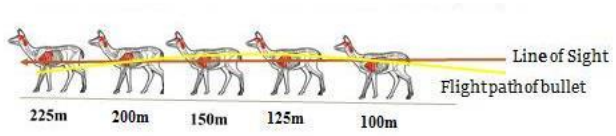
5.7 BULLET TRAJECTORY

A good understanding of trajectory is paramount to making the shot count at longer ranges. Trajectory tables are given in the various reloading manuals published by major bullet manufacturers, or through specialist websites on line. The hunter should learn the fundamentals of sectional density, ballistic coefficient, twist rate, and muzzle velocity as they relate to the trajectory of the chosen hunting cartridge. Only then can shots be taken at longer ranges that exceed the “point blank” distance for the rifle/bullet combination.

Point Blank Range

The “point blank” range is that within which the projectile will always strike inside the kill-zone with the cross-wires aligned on the centre of the target area. Typically, a sighting of an inch or two high at 100 metres would only be a few inches low at 200 metres for a spitzer bullet at high velocity, so the point blank distance is probably just over 200 metres for a pig-sized quarry.

Remember too that at very close range, such as a head-shot finisher, the projectile will strike about 40mm below the aiming point. The reason is that most scopes are mounted about this height above the barrel. This is worth remembering when firing from a rest or prone, as the rifle scope may show a clear field of fire even when the rifle bore is pointed at the top of a rock or branch just in front of the muzzle.



A responsible hunter will familiarize himself with the trajectory of his rifle/cartridge combination before taking to the field. The firing range with marked distances is the proper place to work this out, and the use of calibrated scope turrets and/or range-finders may provide an advantage where shots are necessarily long.

Exercise 1: Point Blank Range

Calculate the point blank range of your hunting rifle/ammunition combination for animals with kill zones of 100mm, 150mm and 200mm in diameter. To do this you will need to use a chronograph to find out the velocity of the projectiles you are firing and then consult the ballistic tables available in reloading manuals.

Understanding the trajectory of your projectile is only part of the problem. Although you now know the distance at which you can be sure that your projectile will remain within a given diameter target zone, you still have the problem of accurately estimating distance to the target.

Exercise 2: Estimating distances

Practice estimating distances in the bush. You will need to work out your stride length so that you can accurately pace out distances. This can be done by going to a sporting field and pacing out a known distance. In the bush, estimate the distance to a tree or other feature and then pace

it out. Practice doing this until you are confident that you can get within 25 metres. Many people tend to over-estimate distances less than 200m.

5.8 RIFLE ACCURACY TUNING

Assuming that your rifle barrel is in good condition and not worn or damaged, there are a number of ways of improving the accuracy of your rifle.

Trigger Adjustment
The crispness of the trigger release and the pressure required to release the trigger during the shot can significantly affect shot accuracy.

The task of trigger adjustment should be entrusted to a qualified professional gunsmith, although various gunsmithing texts and some firearm manuals discuss the methodologies for adjusting trigger pressure to provide a crisp break with minimum backlash or over-travel.

Around 1.5 kg is usually recommended for safe accurate shots in the hunting field. Some European rifles have a set trigger to provide an extremely light let-off when set. Such triggers should only be set when the shot is imminent, and should be immediately un-set if the shot is not taken for some reason.

Action bedding and free floating
The breech section or action is the part of the rifle that attaches the barrel to the stock and if properly mounted or bedded, will minimise barrel movement during recoil and firing. It can also be done in such a way that the barrel is free floating, and no longer touches the rest of the fore end of the stock. The tension exerted on the screws fastening the action to the stock is important. If either screw is too loose or too tight this incorrect tension can be detrimental to accuracy.

Again, properly bedding and fixing the action to the stock is a job for a professional gunsmith or gun stock maker, however most gunsmithing texts discuss the relevant techniques for the hobby gunsmith.

Tuning and handloading your own ammunition
There exists a plethora of reloading manuals and specialist websites dealing with the intricacies of hand-loading ammunition for sporting purposes.

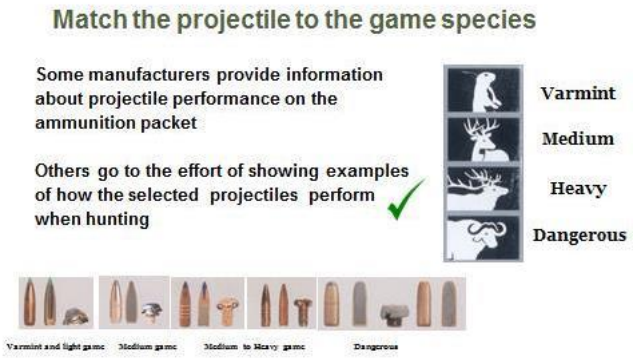
Most shooters are able to hand load ammunition, once they are properly equipped and this can open up a fascinating world of ballistics. This in turn can give a greater understanding of sporting firearms, their function and capabilities. All powder loads, primers and projectiles should only be used strictly according to the manufacturer's directions.

5.9 PROJECTILES FOR HUNTING

Projectile construction and weight
Most lead projectiles for high-powered centre fire rifles are jacketed with copper to improve ballistic performance. Others are of solid copper or have a copper alloy construction. All are constructed to perform in a particular manner for a specific purpose.

Military style full metal jacketed (FMJ) projectiles have very specialised uses and are not suitable for hunting Australian game. These projectiles deform very little as they pass through the animal. Without significant tissue damage they may not deliver an instant kill. FMJ projectiles are also prone to tumble or ricochet. Hollow point, or soft nosed projectiles by contrast expand on impact, maximising tissue damage and thus ensuring a quick, humane kill.

Today a wide range of premium hunting bullets is available that includes bonded core, internal partitions, hollow-point monometal construction, ballistic tips, and composite density cores. The responsible hunter should always select the best bullet he can afford, and be prepared to critically assess its terminal performance on game at every opportunity.



Special non-military FMJ projectiles may be required when hunting dangerous game where maximum penetration and bone damage has to occur e.g. buffalo or scrub bulls. Today, homogenous solids with driving bands, hydrostatically stabilized cup points or other specialist designs are available for the largest game.

Exercise 3: The phone book target
This exercise is a good one to do with some friends as you can share the work in setting up the trial and pool the results. Take a long cardboard box and pack it with six or more thick old telephone books placed side by side. Fix a target to the front end of the carton. Make sure that you have arranged the telephone books so that a projectile has to pass through all of them before it can exit from the back of the cardboard box. First soaking the phone books in water takes time but produces a more realistic ballistic medium. Approval may need to be obtained from the Range Officer to use the cardboard box target on the range.

After firing a number of different rounds for comparison, remove the telephone books from the cardboard box and open them up to recover the projectiles. Penetration and expansion of the different projectile types is easily compared. Also, weigh the recovered projectiles and check on the percentage weight retention. The massed layers of paper in the phone books reasonably simulate animal tissue. This exercise will tell you a lot about which projectile to use on particular game animals.

Do this with every calibre rifle you own, testing as many different projectile types as possible. The use of different projectile types can make your rifle incredibly versatile.

The ideal projectile delivers ALL of its energy into the animal and comes to rest just under the skin on the opposite side to its entry point. This is a big ask, given the variables we encounter in every day hunting.

What would you expect to find with your FMJ and SP projectiles? The FMJ projectiles should penetrate further into the phone books and retain more weight. The SP projectiles should pulp the paper more but not penetrate so far and should also retain much less of their weight. That is, the SP projectiles should expand and fragment more.

Conclusion: Match the projectile (weight, hardness and velocity) to the size and toughness of the particular animal that you hunt remembering that you want to leave the energy of the projectile in the animal.

Projectile velocity
The energy or knock down power of a projectile depends on its weight or mass and its velocity. Energy can be calculated and equals the projectile weight multiplied by velocity and multiplied by velocity again and then divided by two. Velocity therefore contributes much more to projectile energy than projectile weight.

Heavier projectiles cannot be fired as fast as lighter ones in any one particular calibre, but do retain their momentum better. They lose less speed over distance and therefore lose less energy. They would thus appear to be the best choice were it not for the fact that they drop more with distance than lighter projectiles of the same calibre. That is, they are not as flat shooting.

High velocity ammunition theoretically is more accurate as it is flatter shooting. However, it is not this simple as most fast or “hot” rounds sacrifice penetration, and sometimes stability and accuracy, for this extra speed.

The compromise is to use the powder loads that give the best velocities without sacrificing accuracy.
Load the projectile that gives the accuracy, penetration and expansion required for the particular game to be hunted. The final word will be the observed performance on the game that

you actually hunt. Examine the wound tracts and entry and exit points and compare the visible knock down results.

5.10 GUN FIT AND HUNTING

Firearm fit is about being able to quickly shoulder your rifle to find yourself correctly looking along the sight plane of the firearm ready to shoot without further adjustment of your head or sights. This makes for rapid target acquisition. Often we find ourselves with only a few seconds to take the shot before an animal takes to its heels, so it can make the difference between success and failure after hours of hard stalking.

People come in all shapes and sizes. Stock makers usually cater for the average shooter, if there is such a person. It would be rare to purchase a firearm off the shelf and have it fit perfectly. Customizing a stock may be expensive so it may be easier to try several makes of rifle and pick one that suits you.

When using scoped rifles, the final adjustment for gun fit is on scope eye relief. This is the distance between your eye and the back lens when you can clearly see the entire sight picture. Remember that high powered rifles require scopes built with a long eye relief otherwise the recoil of the shot will cause contact with the rim of the scope and will result in a nasty cut to the eyebrow.

5.11 COMMON FIREARM MALFUNCTIONS

Malfunctions in firearms can be life threatening. It is safest not to attempt to repair, adjust or alter firearms. Call on your local gunsmith.

Hang fire
You have pulled the trigger on a live round and heard the click of the firing pin striking the primer but the round fails to discharge.

Action: stay still and continue to point the firearm in a safe direction. Do nothing but wait several minutes before ejecting the round. Some faulty primers have been known to smoulder before eventually flaring and igniting the powder charge. The danger with a hang fire is that it can explode as you eject the cartridge. Discard faulty rounds.

Faulty safety catch
If you intend to use a safety catch then from time to time you should test its function under controlled conditions. This is done WITHOUT having ammunition in the chamber.

It is safer not to rely on safety catches at all by having the firearm loaded only immediately before you intend to shoot and by having it unloaded at all other times. Many safety catches immobilize only the trigger and cannot stop the trigger seer from slipping off the cocked firing pin. Only safety catches that immobilize the cocked firing pin will prevent discharge if the firearm is dropped.

Exercise 4: The safety catch

Make a list of the firearms that you own and determine for each firearm the exact nature of the safety catch mechanism.

Step 1. Confirm each firearm is empty by bore sighting the firearm from the back end with the bolt out, and emptying and/or removing the magazine.

Step 2. Replace the bolt, closing it on the empty chamber and apply the safety catch. Allow the butt to drop from 30cm onto a hard surface and listen for the firing pin click. Did the catch fail?

If not go to **Step 3.** Repeat the test three times by cycling the bolt and applying the safety catch each time.

Step 4. Sharply tap the back of the bolt with a small hammer with the firing pin cocked and safety on. Uncock and repeat this exercise another two times listening for the click of a falling firing pin.

Live round stuck in breech behind a closed cocked bolt
You have attempted to eject a live round from the breech but the bolt is stuck and refuses to lift. Remember that the firing pin is cocked and this is an extremely dangerous situation. The firearm is permanently loaded. Any attempts to lever or tap the bolt up can result in an uncontrolled

discharge if the trigger seer slips. Engage the safety catch immediately. If possible, now carefully find a safe target like an earth bank and from a safe distance discharge the firearm into it.

Live round in breech, bolt out after extraction fails

A live round is stuck in the chamber. This is because the extractor disengaged from, or failed to engage on the case extractor rim. Remove the bolt from the rifle. Do not *repel the round with a cleaning rod as this can* cause the powder to ignite. If on a public rifle range, seek the advice of the Range Officer on the correct procedures for dealing with this problem. Also, have your firearm serviced/repaired by a qualified gunsmith.

Projectile stuck in the lands after extracting the live case

This is a particular danger when spotlight shooting. A round of ammunition with a loose case neck or with the projectile seated out too far may result in the projectile sticking in the rifle lands (barrel). In daylight, the problem is immediately apparent, because gunpowder pours out of the case when it is extracted from the chamber. When spotlighting you may not see that you have left the projectile stuck in the barrel because of lack of light. If you chamber another round and try to fire it your gun has a barrel blockage and will explode. The stuck projectile can usually easily be pushed out with a standard cleaning rod passed from the muzzle end.

Problems with lever and pump action rifles

The scenarios above are resolved in the same way for pump and lever action rifles. These two rifles however, due to their construction and function, do present peculiar problems with bore sighting checks. For this a dental mirror is recommended which can be inserted into the action from the side, as bore sighting from the muzzle end is an unsafe practice and must not be done. For lever and pump models with tube magazines it should be noted that only flat nosed projectiles should be used since the point of each projectile is in contact with the primer of the one in front of it. Sharp ammunition can, on recoil, detonate the round in front of it in such tube magazines.

5.12 LEARNING EXERCISE

Exercise
Have your firearms inspected/serviced by a gunsmith annually.

5.13 EXAMPLE ASSESSMENT QUESTIONS

Question 1: True or False?
Firearm/ammunition combinations must provide accurate shot placement and adequate killing power over the distance at which game is to be taken.

List four variables that affect projectile killing power.

1.
2.
3.
4.

Question 2: True or False?
Rifles, like people show individual likes and dislikes. The type of ammunition you use in your rifle will affect accuracy. A rifle may be very accurate with one brand of ammunition and lose accuracy with another. Certain projectile shapes, weights, lengths and powders and ammunition velocity differences can give improvements in accuracy for particular rifles.

List four things that can be done to tune a rifle to give its best accuracy.
1.
2.
3.
4.

5.14 REFERENCES FOR FURTHER READING AND LEARNING

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2. Harrison, M and Slee, K. 1995. *The Australian Deerhunter's Handbook*. ADRF, Croydon, Vic. pp. 43-44.
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6. Miller, M. 1978 *The Collectors Illustrated Guide to Firearms,* London: Barrie & Jenkins.
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8. Chase, K.W. (2003) *Firearms: a global history to 1700,* Cambridge University Press.

5.15 SELF-ASSESSMENT CHECKLIST		True	False
1.	Firearm/ammunition combinations must allow accurate shot placement.		
2.	Firearm/ammunition combination must provide sufficient killing power to humanely kill the animal.		
3.	Good hunters shoot animals at long distances.		
4.	Good hunters stalk as close as possible without disturbing animals before taking a shot.		
5.	You are personally responsible to kill game animals quickly and humanely.		
6.	A .222 Rem rifle is adequate for hunting sambar deer.		
7.	Full metal jacket projectiles penetrate further than soft point projectiles and thus are better hunting projectiles.		
8.	The killing power of a projectile varies with calibre, weight, construction and velocity.		
9.	The effective killing power of the projectile varies with the toughness of the hide, functional importance to life of the targeted organ and depth of penetration required to reach such organs.		
10.	It is safer not to rely on safety catches at all.		

6. HUNTING WITH SHOTGUNS

PART 6 LIST OF CONTENTS

6.1 INTRODUCTION

Shotguns are designed to hit moving targets at relatively close ranges. The art of shotgunning is very different to rifle shooting. Shotguns fire a pattern of projectiles (shot) where the aim is to cover the game within the pattern. This unit of study will provide basic information on hunting with a shotgun.

6.2 LEARNING OBJECTIVES

On completion of this unit you will:

- Be able to be tested on Hunting with a shotgun for Back Country Hunting accreditation;
- Understand various shotgun types and design;
- Understand basic shotgun shooting techniques;
- Understand how to hunt safely with a shotgun;
- Be able to select appropriate shot cartridges for various classes of game;
- Understand the importance of shotgun fit.

6.3 SHOTGUNS AND CARTRIDGES

Shotgun gauge

To cover the range of game available, shotguns are manufactured with different bore diameters. The term used to distinguish between each size is the ‘gauge’. Guns may have an internal bore diameter ranging from .410 to the larger 28 gauge, 20 gauge, 16 gauge, 12 gauge, and 10 gauge. The huge 8, 6 and 4 gauge guns are now obsolete.

The most commonly used shotgun today is 12 gauge. The 12 gauge shotgun can be used for game bird hunting, target shooting and large game hunting.

Shotgun chamber length

Cartridges for shotguns come in different lengths for different powered charges. For example, a 12 gauge gun may be chambered to accept a 2.5 inch cartridge (65mm), a 2.75 inch cartridge (70mm), a 3 inch magnum cartridge (75mm) or a 3.5 inch (90mm) magnum cartridge. While the smaller charges may be fired in the larger chamber lengths, the reverse is not recommended and may be highly dangerous.

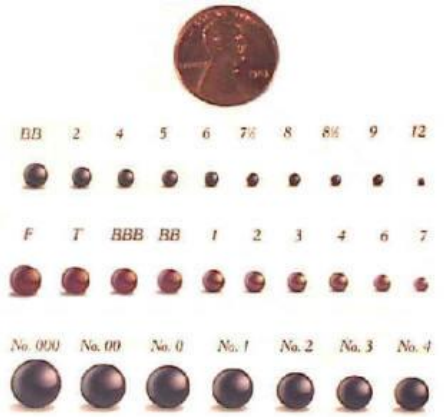
Guns with different chamber lengths are available in each of the gauges, so this issue becomes quite complex. The chamber length for a given gun is printed on the barrel, or action flats, with the proof marks.

Shotgun cartridge shot loads

Each of the different cartridge lengths for a given gauge gun have different weight shot charges available. Thus, a 12 gauge 2.5 inch (65mm) cartridge shotgun can fire either one ounce or one and one eighth ounce loads. A 2.75 inch cartridge is available in loads ranging from .75 of an ounce up to one and one half ounce mini-magnums. A 3 and 3.5 inch cartridges are available in loads ranging from 1.5 to 2 ounces.

A gun should never fire a shot charge heavier than the one it was designed for and proofed for. The weight of the charge the gun was designed for is found among the proof marks on the barrel flats. A gunsmith will be able to help you if you cannot find them,

Shotgun cartridge shot size
Because shotguns are used to kill a variety of game animals, the size of the shot must also be different if a clean kill is to be obtained. The shot sizes are sequentially numbered. The smallest sized shot available is size 12, or dust shot. As the pellet size increases the pellet size number decreases. Also, the number of pellets found in a single weight charge diminishes.



The largest size shot is called letter shot or buckshot and ranges from BB, AAA, SSG to SG. For example, a 12gauge 1.25 ounce SSG load contains 16 x 7mm balls. An SG load of the same weight contains 9 x 9mm balls. Synonyms are sometimes used to name the shot size, for example buckshot. These powerful loads are designed for harvesting pig sized animals to about 30 metres range. Modern shotgun shot is made from lead, bismuth, tin, steel, or a combination of alloys, metals and plastic compounds.

Shotgun cartridges with solid slugs
To improve shotgun versatility and achieve greater penetration on larger game animals, all of the currently manufactured gauges are available in a single slug load. These fire a rifled, or unrifled slug that generally weighs 1 ounce in 12 gauge. These are commonly used on pig sized animals or deer, at close range (to 50 metres) and can be fired through a standard shotgun, even if the gun is choked.

Firing slugs through choked guns generally reduces accuracy. To overcome this problem, some shotgun manufacturers provide special rifled barrels, or slug barrels, which may have either open sights, or telescopic sights. These provide good accuracy up to 100 metres.

For larger game such as feral cattle and equines, only the very best solid slugs from magnum cartridges of 12 or 10 gauge at close range should be considered however the practice is not recommended.

Types of shotgun
A large variety of shotguns are available to the hunter. These may vary in action type; barrel configuration; barrel length; stock style or patination. The most significant of these characteristics is action type:

***Break action guns*:** The action is hinged and the gun is opened to load or unload by dropping the barrels down below the action at the hinge point. Single shotguns can be opened by a side lever, top lever or under lever. Double-barrelled shotguns may have a horizontal side-by-side barrel configuration, or an over and under vertical form. They too, can be opened by a top, side, or under lever. They may have ejectors that pop out the fired shells when the gun is opened, or have hand extractors. They may have a single trigger, or double triggers to fire the gun. Multiple barrelled shotgun-rifle combinations involving up to four barrels of different calibre, or gauge, can be purchased.

One piece shotguns: These shotguns rely on the mechanism in the action to load, fire and eject the fired round, thus allowing the barrel and action to remain in one piece. These are available in single shot or repeater configurations. The latter are popular for hunting non-avian game and include a box magazine to hold the cartridges, or an integral tube magazine.

Action types for these include bolt action and lever action shotguns. *Pump action shotguns, or gas operated semi-automatic shotguns, are currently illegal for general hunting in the Northern Territory*.

Shotgun choke
To improve the concentration of the shot charge at the target at a given range, the end of the shotgun barrel is constricted to a smaller diameter than the bore diameter during manufacture. This is called choke. A number of choke sizes are available to the gun buyer and these are selected depending on the type of

game, or the range, at which the target will be shot.

Chokes may be completely open or cylinder bore for very close range shooting. The next slightly tighter choke is improved cylinder, then in sequence, quarter, half, three quarter, full or extra full choke for very long range shooting. Some gun owners use special guns with different choke combinations between the barrels for different types of shooting. To improve versatility for a particular gun, some owners buy shotguns with additional sets of differently choked barrels.

Some shotguns are available with hand adjustable chokes. Many modern guns are available with sets of screw in choke tubes, so that the one gun can cover all needs.

6.4 RECOMMENDED SHOT SIZES

Most shooting texts will specify suitable shot sizes for different sized small game. In the NT, only SG Buckshot or Solid Slugs such as the Brenneke are recommended for feral pigs and deer, however SSG may be effective on smaller specimens and shot sizes down to BB may be suitable for feral cats and wild dogs.

Shot sizes for NT waterfowl are specified each year in the conditions of the Waterfowl Permit.

6.5 BASIC SHOTGUN TECHNIQUE

There are three main points to understand.

1. The aim is not to shoot at a moving target where it is, but to aim to hit it where it is going to be when the shot arrives.
2. Shotguns are normally aimed with both eyes open. Much the same could be said about purchasing a shotgun. *The gun must fit the shooter.* That is, when the stock is mounted to the shoulder in a ready to fire position, the stock should fit firmly into the shooters cheek and the eyes should be looking straight down the barrel rib to the fore sight, without having to move the head to do so. Poor gun fit will ensure that the shot goes wide of the target.
3. When shooting at a moving target, the shooter must swing the gun through the target, squeezing the trigger as the target is passed and then follow through, thus providing an automatic lead to the target.

To become proficient at shotgunning one needs to practice, practice and practice. Practice on clay targets is essential to hone your skill with a shotgun.

Exercise 1: Gun mount and fit
Sight in your shotgun for gun mount and fit. For a target, use a board holding a large sheet of butcher's paper, marked centrally with a heavy cross or large dot. Most shotguns are fitted only with a bead front sight. The rear sight is where your eye is placed when you hold the gun in the mounted position on the shoulder with cheek resting lightly and comfortably positioned on the comb of the stock. Use a new sheet of paper for each test shot.

Test firings will reveal how good the gun fit is and how consistent your gun mounting is. Find the centre of the pattern of shot pellet holes and compare this to the point of aim. If the centre of your shot pattern is so far away from the aim point that you are dissatisfied with it, ask a capable shot gunner to check how you mount your gun. You may need to change your gun mounting technique or to consult your gunsmith about stock modifications.

Hint: Try not to flinch when shooting at stationary targets and fire at least ten shots from any barrel to give an accurate indication of where the gun is actually shooting.

Exercise 2: Killing power

Take a cardboard carton and fill it with telephone books. At a distance of 20 metres and using a 32gram load of Number 4 lead shot, fire one or two cartridges into the cardboard carton. Check the telephone books to see what depth of penetration you achieved with the No. 4 shot. Next, take a 28 gram solid lead slug and fire it into the cardboard carton. Again, check the depth of penetration.

Now imagine that the cardboard carton was a feral pig. Would you expect the No 4 shot to do anything more than lodge under the skin lightly wounding the pig?

How accurate were you with the solid lead slug? Would you expect to be accurate at say 50 metres?

Remember always use an appropriate firearm/ammunition combination fired over an effective distance!

6.6 SHOTGUN SAFETY

A novice shotgun shooter should attend or join, a gun club and learn how to safely handle and shoot a shotgun at clay targets before attempting to hunt game.

- Before setting out for a shoot, the hunter must make sure that the cartridges are the right gauge for the shotgun being used; that the cartridges are the right length for that shotguns chamber and that the charge of shot to be used is within the proofed load for that shotgun.
- A break-open shotgun should always be kept in the open position and unloaded until the hunt commences. Similarly, a single piece shotgun should have the action open and be unloaded.
- When walking with a shotgun, the barrels should always be pointed to the ground, or kept pointing into the air in a vertical position and never pointed towards a person.
- When crossing a fence, the unloaded and broken or opened action gun should be passed to a person on the other side of the fence, or laid on the ground beneath the fence and not picked up by the hunter until he or she is through the fence.

6.7 EXAMPLE ASSESSMENT QUESTION

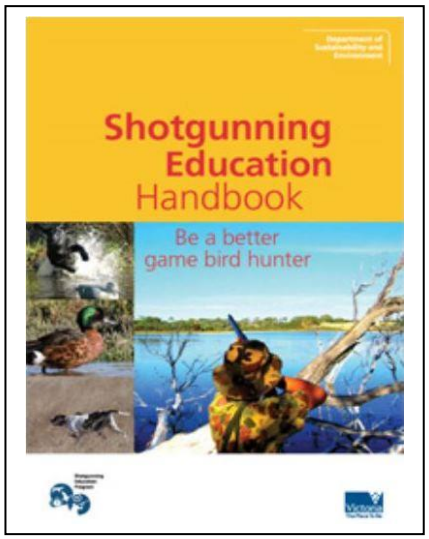
Example question: **True or False?**
Shotguns can be used to kill a variety of game animals. Shot size should be selected depending upon the particular game being hunted.

List one species of game animal that may be humanely taken with each of the following shot sizes:

Shot size	***Game species***
SG	
BB	
Number 2	
Number 4	

6.8 REFERENCES FOR FURTHER READING AND LEARNING

1. Smith, G. 1992. *A Guide to Hunting and Shooting in Australia*, pp. 29-50, Sporting Shooters Association of Australia Publications, Unley SA.



Victorian Shotgunning Education Program

The Shotgunning Education Program (SEP) aims to improve game bird hunting practices in Victoria by educating hunters on how to be more efficient and effective in the field.

This program has been developed by the Victorian Government with support from the two major duck hunting organisations, the Sporting Shooters' Association of Australia (SSAA-Victoria) and Field and Game Australia Inc (FGA).

The Shotgunning Education Program's practical and theoretical training builds the capabilities of hunters to understand their equipment, their shooting skill level and hunting methods. It also has lethality tables for steel shot to guide hunters for appropriate shot size for waterfowl in Australia

The SEP is available on-line at:
http://www.gma.vic.gov.au/education/shotgunning-education

6.9 SELF-ASSESSMENT CHECKLIST		True	False
1.	Best shot size for a feral pig is BB		
2.	Firearm/ammunition combination must provide sufficient killing power to humanely kill the animal.		
3.	Good hunters stalk as close as possible without disturbing animals before taking a shot.		
4.	A 12 gauge shotgun can be used for game bird hunting.		
5.	The aim is to shoot at the moving target.		
6.	The killing power of a projectile varies with the size of the shot.		
7.	The effective killing power of a shot load varies with the toughness of the hide and the species targeted.		
8.	It is safer not to rely on safety catches at all.		
9.	Tight chokes extend the killing range of the shot pattern.		
10.	Gun fit and mount are not important.		

7. DISEASE SURVEILLANCE

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7.1 INTRODUCTION

Hunters need to be aware of diseases in wildlife for several reasons. Firstly, the game taken for food must be disease-free if it is going to be safe to eat. Even if you don't intend to take game for food, there are still diseases that can transfer from animals to humans, whether you're culling as part of a feral animal control program or preparing a trophy mount.

Apart from the hunter's own safety, alerting land managers to the presence of diseases which may have serious impact on native animals or agisted and neighbouring domestic stock will ensure good rapport with rangers and pastoralists in the area.

Also, hunters need to act in the Australian national interest. There are a number of zoonotic and exotic diseases which, if they were to become established in Australia, could threaten human health or cause much pain and suffering to our domestic livestock. They may also seriously damage Australian trade in primary produce. To control outbreaks of exotic disease, it is essential that our government has an early warning network to identify an outbreak before it has time to spread widely.

Who is better placed than hunters to detect and report on exotic disease outbreaks in wild or feral animals? If you come across a significant mortality in feral animals where the cause is not apparent, it is appropriate to report the details to the National Emergency Disease Watch Hotline on 1800 675 888.

Finally, there are diseases which can have serious impacts on our native wildlife. From a conservation viewpoint, outbreaks of disease in our wildlife need to be promptly identified and reported so they can be contained. Where you come across an outbreak of disease in native wildlife, contact the NT P&W immediately.

7.2 LEARNING OBJECTIVES

This unit of study will assist you to:

- Extend your understanding of animal disease;
- Improve your ability to recognise particular animal diseases;
- Carry out basic autopsy procedures;

- Recognise the differences between normal and diseased tissue;
- Collect specimens for laboratory analysis;
- Protect yourself from infection from animal-borne diseases;
- Accurately report diseases to the relevant authorities.

7.3 HUNTING INFORMATION

Information regarding animal disease is available from the Department of Agriculture, Fisheries and Forestry (www.affa.gov.au), and Animal Health Australia (www.aha.org).

Information regarding disease in native and feral animals is available through the Australian Wildlife Health Network (AWHN), a national initiative of the Commonwealth Government managed under the Wildlife Exotic Disease Preparedness Program (Australian Department of Agriculture, Fisheries and Forestry). AWHN's mission is to promote and facilitate collaborative links in the investigation and management of wildlife health in support of human and animal health, biodiversity and trade. The AWHN website contains animal health information relevant to hunters (www.wildlifehealth.org) or the AWHN can be contacted directly on 02 9978 4788.

The following information is drawn from the Wildlife Health Investigation Manual, published by the Australian Registry of Wildlife Health at Taronga Zoo. If you wish to obtain a copy of the manual, order forms can be downloaded from the Registry website at www.ARWH.org.

7.4 DISEASE OUTBREAK: THE SIGNS

Exotic diseases are those that occur overseas, but have not occurred in Australia. The impacts of introducing an exotic disease into Australian wildlife populations are unknown, since we don't necessarily know what one of these diseases may do to a local native animal population. Australian fauna is diverse.

Our species and ecosystems are different from those overseas, thus, the effects of an introduced disease are uncertain. Exotic diseases may present themselves differently in Australian fauna than in animals overseas. So you must not hesitate to report ANY unusual or unexpected wildlife health events.

Endemic diseases are those that are already a part of an Australian ecosystem. These diseases may have always been present in Australia, or may have been introduced at some time in the past. Endemic diseases can be of concern when they occur in species or places where they have not previously been known to exist.

ALL exotic diseases as well as some endemic diseases are notifiable by law. A full list of notifiable diseases is available from the websites listed in 7.3 above. Such diseases, if detected, must be notified to the Territory Government by either the owner of the stock or the person in charge of the land on which they are found.

7.5 FINDING SICK OR DEAD ANIMALS (MASS MORTALITIES)

Many dead or dying wildlife can be an indication of a significant infectious disease, exposure to a poison or events such as extreme weather conditions. If you were to come across a group of dead animals where there is no obvious cause for their death, you should report the event to your state AWHN coordinator.

A large number of deaths within a single species may indicate the presence of an unusual infectious agent. When a variety of species are found dead there might be an environmental problem or exposure to poisons.

When faced with a mass mortality in wildlife, samples must be collected as soon as possible in order to diagnosis the cause. Animal tissues decompose very quickly and the cause of the deaths may disappear just as rapidly. Thus, it is important to report a mass mortality to the appropriate agency as soon as possible

7.6 ANIMALS BEHAVING UNUSUALLY

Each species has its own range of natural behaviours and activities. Detecting abnormal behaviour requires a considerable knowledge of the species in question. If you are uncertain

whether or not an animal's behaviour is unusual, contact a local naturalist or NT P&W ranger.

Changes in behaviour of an animal may relate to altered environments or food sources. Behavioural changes may be the result of altered brain function (neurological dysfunction) resulting from exposure to infectious agents, parasites or toxins.

We need to be aware of animals with altered behaviour since many exotic diseases affect animal behaviour.

Examples of the types of unusual behaviour to look out for include:

- Head tilt;
- Circling;
- Abnormal locomotion-staggering, wandering;
- Apparent blindness;
- Aggression in a species that is normally timid;
- Altered diurnal patterns. For example, a nocturnal species active in the daytime.

7.7 DRESSING GAME ANIMALS: FINDING LUMPS IN ORGANS

Abnormal lumps within tissues could be a cancer, soft abscess, parasite, or granuloma. A granuloma is a yellow or white nodular mass that has a firm, cheesy centre. Tissues or organs containing abnormal lumps should not be used for human consumption, nor should they be fed to dogs. Ideally, they should be disposed of by deep burial.

7.8 FINDING ANIMALS WITH SORE FEET AND MOUTHS

Animals with sore feet and mouths caused by blisters (vesicle), could be infected with foot and mouth disease. *An outbreak of foot and mouth disease is a National Emergency.*

A vesicle is a fluid filled blister usually found on the skin. The vesicle can become infected, forming a pustule, or the skin covering a vesicle can tear away, leaving an ulcer which may appear as a raw surface or be covered by a scab.

If you find any vesicle or ulcer in a cloven hoofed animal, particularly if the lesion is in the mouth, on the feet, nose or genital region, it should be immediately reported to the national Emergency Disease Watch Hotline on 1800 675 888. *Prompt action when detected could be a major contributor to containing the spread of this disease and save millions of stock and feral animals from destruction, as well as the livelihoods of thousands of families in rural and regional Australia*

7.9 PROTECTING YOURSELF

The following information should protect you from infective disease if you are asked to collect samples in the field for researchers, wildlife health surveillance projects, or to obtain a diagnosis for unusual disease events.

Do not collect specimens until you have obtained specific instructions from the person asking you to collect samples. Always obtain specific instructions from the person asking you to collect samples.

Some diseases are very dangerous because they can easily cause human illness (such as anthrax or rabies), or they can so readily spread from one location to another (foot and mouth disease). Hunters need to be aware that the following zoonoses may occur in the Northern Territory (NT):

- Australian bat lyssavirus
- cat-scratch disease
- cryptosporidiosis
- giardiasis
- Hendra virus
- hydatids
- leptospirosis
- listeriosis
- melioidosis
- psittacosis
- Q Fever
- ringworm
- salmonellosis
- scrub typhus
- spargonosis
- toxoplasmosis.

For information about specific diseases, go to the Centre for Disease Control publications page at the Department of Health website (see also section 7.18 for table with further information).

In the case of unusual disease events or sudden death in animals, it may be best for you to lead a veterinarian to where you found the animal rather than to collect specimens yourself. Observing, recognising and reporting (including taking photographs) unusual disease events in wild animals are primary roles for hunters.

7.10 PERSONAL SAFETY

Dead animals can contain germs that are potentially harmful to you or your family.

- Never dress the carcass of a sick animal for human consumption;
- Wear gloves when handling dead animals - vinyl, latex or dish-washing gloves and carefully dispose of used gloves ;
- Wash your hands and equipment very well after handling dead animals (carry a small bottle of alcohol-based hand wash);
- Change your clothes before you contact live animals, food, or your children;
- Do not handle bats, They may infect you with DANGEROUS viruses;
- Don't collect samples from animals that have suddenly died in areas where anthrax is known to occur.

7.11 COLLECTING SAMPLES

Fresh and preserved tissue samples may need to be taken and forwarded for veterinary pathological examination. If requested to collect specimens, there are things that you need to know.

Tissue fixatives like formalin and ethanol are poisonous if swallowed or inhaled, and they can cause serious skin and eye irritation on contact. These chemicals can be flammable and caustic.

- Be careful when handling, pouring, and transporting these chemicals and wash off any skin spillage immediately with water.
- Ask for advice from your laboratory prior to using these chemicals.
- Sharp knives and hypodermic needles can be dangerous in the field.
- Always carry a hard plastic container to dispose of your sharp objects.
- When using knives always cut away from your body.
- Never have more than one person cutting on a carcass at one time.
- When not in use, put your knife onto a cutting board or in a container. Do not leave it on the carcass or on the ground.

7.12 LABELS

Samples are useless and a waste of time if they are not properly labelled.

- Label your samples in pencil or indelible pen before you start, while your hands are still clean. Include:
  - Date
  - Species
  - Identification number
- Sample type - skin, blood, organ

7.13 INFORMATION COLLECTION

Whenever you are faced with an unusual disease event in wildlife, such as those listed above, please try to collect as much of the following information as possible to provide to the district veterinarian. Take several photos of the animals and their surroundings.

When you have been asked to collect samples for wildlife health surveillance projects or researchers, please label the sample and also collect the following information in your notebook:

- Assign each animal a separate identification number;
- Only select one identification number per animal, even if you are collecting several samples from the animal;
- Species;
- Tissue types collected;
- Location;
- Time since death.;
- Age/sex/reproductive status;
- Body condition or fat deposits;
- Take photos of the animal and the affected organs.

Ensure that your identification number on the sample and paperwork are the same.

7.14 SAMPLE STORAGE AND TRANSPORT

- If possible, place the labelled sample vials into a plastic bag and then in a disposable styrofoam cool box containing ice or ice packs. The bag will stop the sample labels from rubbing off.
- Keep the samples cool and out of the sun. Do not freeze the samples, unless asked to do so.
- Keep the paperwork somewhere dry, on the outside of the cool box.
- Get the samples to the lab as soon as possible, or ring the lab to see how they want the samples stored and shipped.

7.15 LEARNING EXERCISES

1. The websites of the Australian Wildlife Health Network (www.wildlifehealth.org) and the Department of Agriculture, Fisheries and Forestry (www.affa.gov.au) contain information on how to deal with an outbreak of disease. Download one animal disease fact sheet from each website.
2. Conduct an autopsy on a dead bird such as a domestic fowl and a mammal, ie small feral pig. Consult the Wildlife Health Investigation Manual for instructions, or the website Australian Registry of Wildlife Health (www.ARWH.org). Practice making notes and taking photographs of different organs. What are the differences between an autopsy carried out for disease diagnosis purposes and an inspection for disease while dressing a carcass for food consumption?
3. Enter the contact numbers for the National Emergency Disease Watch Hotline and AWHN state co-ordinator in your hunting diary so that you can notify them in the event of a disease outbreak.
4. List the precautions you would take to prevent becoming infected by a communicable disease while handling game animals.

7.16 SAMPLE EXAMINATION QUESTION

True or False?: You should report all unusual animal behaviour and deaths you observe to the manager of the land on which you hunt. Suspected exotic diseases should also be reported to the National Emergency Disease Watch Hotline.

7.17 REFERENCES FOR FURTHER READING AND LEARNING

Rose, K. (2005) Wildlife Health Investigation Manual
Tisdale, C.A. (1982) Wild Pigs: Environmental Pest or Economic Resource? Pergamon Press

7.18 FURTHER INFORMATION ON ZOONOSES AND DISEASES

The following table lists some zoonoses that have occurred or could occur in the NT and the animals that are likely to pass the diseases to humans and the method of transmission

Disease	Animals affected	How the disease spreads
Diseases of wild and feral animals		
Australian bat lyssavirus	Fruit bats and insectivorous bats	No people are known to have been infected with this in the NT, but the virus is present in several species of bats. It can cause a fatal disease in humans, similar to rabies. People should avoid handling bats and should seek advice immediately if bitten or scratched.
Hendra virus infection	Bats and horses	The virus is carried by bats but can cause severe, fatal disease in horses, which can then be passed on to humans handling the horse. Any horse that has a sudden onset of disease with fever and respiratory or neurological signs should be checked as soon as possible by a vet. Owners should use personal protection when in contact with the sick horse. See web links below for more information.
Q fever (*Coxiella burnetii*)	Cattle and goats	This is a serious flu-like illness. It is transmitted by handling tissues and fluids of infected animals, especially pregnant animals.
Scrub typhus (*Orientia tsutsugamushi*)	Native rats and mites	Mites usually spread this infection to native rats. Humans can get infected if bitten by an infected mite. People have been infected with this disease in Litchfield Park.
Sparganosis (*Spirometra erinacei*)	Snakes, lizards, fish, birds and wild pigs	This disease is caused by a type of tapeworm cyst in undercooked meat. The cysts can be found in tissues of many species of animals.

Diseases spread through water and other indirect contacts		
Crypto-sporidiosis	Many different animals and people	A parasite in faeces, which is spread by direct contact or through water. It causes diarrhoea in humans.
Giardia	Dogs, birds and other animals	This is another parasite that causes diarrhoea. It is most commonly spread directly between people; however it can also spread through water infected by animal droppings.
Leptospirosis	Cattle, rats, dogs and pigs	This is a serious bacterial disease that spreads through urine and water. It commonly occurs naturally in rats. Native rats in areas such as Fogg Dam carry the infection.
Melioidosis (*Burkholderia pseudomallei*)	Pigs, goats, sheep and other animals	This is a bacterial disease, usually picked up from the soil, rather than from animals, especially in the wet season. It affects both animals and humans, causing serious disease.

7.19 SELF-ASSESSMENT CHECKLIST		True	False
1.	When hunting game animals for meat, if you have any doubt about the health of any particular animal, or if you see any discharges from its body, or any abnormal of its tissues, or if it has any wounds or lumps, it would be humane to kill the animal but do not take it for food. If the problem is detected during dressing then the carcass should be discarded.		
2.	You should autopsy every dead animal that you find.		
3.	If you see a cloven-hoofed animal with vesicles on its mouth or feet you may be dealing with a national emergency disease. You should suspend your hunt and immediately contact the national emergency disease watch hotline.		
4.	Tissues or organs containing abnormal lumps are OK to feed to dogs.		
5.	A pandemic disease occurs when an occasional animal becomes sick.		
6.	It is normal for you to be able to closely approach a healthy wild animal.		
7.	You should always wash your hands and equipment well after handling dead animals.		
8.	The lungs of the rabbit and the domestic fowl look the same.		
9.	Samples from suspect diseased wildlife or game animals should only be collected as specifically advised by the disease surveillance authority.		
10.	It is not important if your sample label is smeared with blood, faeces, and mud.		

8. GAME UTILISATION

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8.1 INTRODUCTION

Many hunters when challenged with the question: *Why do you hunt?* simply reply that they enjoy hunting. Non-hunters often fail to understand the intrinsic pleasure of being out in natural surroundings, together with the sense of self-sufficiency gained from a successful hunt. You may choose to hunt to provide a service to others in the form of pest or vermin control. Or alternatively, you may hunt to obtain meat, a trophy, or skins, or all of these. Ultimately you hunt because you enjoy hunting.

Another approach that may help the non-hunter to understand the value of hunting is to point to the price of meat in the butcher shops. It is not uncommon to bring home 50kg or more of dressed and packaged game meat for your freezer. A successful hunt in the NT may see beef or buffalo rump and back-straps, or even sambar venison on the menu.

If you ask a non-hunter what they think of game meat you will find most commonly, that they have never eaten it. When you point out the meat is from a free-ranging animal, is low in fat and organically grown without the aid of any agricultural chemicals, together with the fact that the cost of game meat is simply a round of ammunition and the skill to back it up, hunting makes a lot of sense. Game meats can be prepared into many gourmet dishes. A wide range of smallgoods such as sausages, terrines, pates, and smoked ham and bacon are prepared using a variety of traditional and cultural recipes.

8.2 LEARNING OBJECTIVES

On completion of this unit of study you will:

- Understand the principles of game meat hygiene and handling;
- Understand how to use these principles to dress field-shot game animals;
- Have constructed your checklist of the basic equipment you need to process game meat;
- Know how to prepare hides for tanning;
- Know how to cape out a trophy and prepare the cape for taxidermy;
- Know how to prepare skull cap trophy antlers, horns, and full skulls.

8.3 GAME MEAT HYGIENE AND HANDLING: PRINCIPLES

There are five simple principles for game meat hygiene and handling.

1. Minimise damage to the meat when you kill the animal

The best meat comes from an animal shot while quietly feeding. Meat may be less tender if taken from an animal that has been stressed by a chase.

Your hunting skills, whether stalking or still hunting, are very important as they allow you to get close enough for accurate shot placement. You must keep your shot in the heart/lung kill zone to avoid damaging the prime cuts of meat located along the spine and hindquarters. Meat in the region of projectile impact is unsightly as it contains blood clots, hair, dirt and impacted skin germs. Also, it may be unsafe to eat due to

projectile residue. This area of the carcass must be completely trimmed away.

2. Only take meat from normal, healthy animals

Animals may carry diseases that can affect people. If you eat meat from an animal carrying such a disease you may become sick. You must never take an animal for food that looks sick, walks or carries its head in an unusual way, or has bloody or pussy discharges from eyes, nostrils, mouth, anus, genitals, or has body wounds or carries any unusual external or internal growths or fluid filled lumps.

Once you have shot your animal you need to check to see that it was healthy. To do this it is not necessary to know about all the possible diseases. All you need to know is what a normal healthy animal's body parts look like. Then you follow a simple rule; if on inspection an animal is not normal, you discard the carcass. You do not need to know what the abnormality is, you only need to know if the animal is normal or abnormal.

A key threat to Australia's livestock industries is the possibility of serious exotic diseases becoming established in feral animal populations. Hunters need to be aware of this threat and report diseased game to the appropriate Disease Surveillance authority. Make detailed notes of any diseased or abnormal animals that you shoot.

Example 1: In feral cattle or buffalo, an examination of the lymph nodes in the neck is necessary to determine the possible presence of bovine tuberculosis. If the sliced nodes are light grey and healthy looking the animal is probably TB free. If the sectioned nodes are cheesy or appear discoloured or unhealthy, the animal may be infected with TB.

Example 2: As you gut the animal, you inspect the intestines. If their normal light pinkish grey colour has changed to brick red or purple, you discard the carcass. You do not need to know that this is an enteritis and possibly dangerous to humans. You do know that it is abnormal. So, you discard the carcass as unfit for human consumption.

Example 3: As you skin the animal you find a large lump in its leg. You do not need to know if the lump is an abscess, cyst or cancer. You know that it is abnormal. So, you err on the side of safety and discard the carcass as unfit for human consumption. Such rejected meat is generally safe for dog meat provided it is well cooked.

The fundamental principle is: "If in doubt – chuck it out!", or contact your local vet.

3. Do not contaminate the meat as you dress and butcher the carcass

The meat in a healthy animal is usually free of dangerous microorganisms or germs that can cause illness. Unfortunately, many dangerous and meat-spoiling organisms are present in the gut and on the skins of healthy animals as well as in the dust of the ground.

As you dress and butcher a game carcass, the trick is not to smear these invisible microbes onto the meat. Keeping the meat clean while dressing a carcass in the bush takes time to learn. To obtain a clean carcass you should hang the animal off the ground while skinning it where possible. You should be careful not to handle the meat during skinning as muck from the hide (which is full of microbes) sticks to your hands and transfers to the meat. You must take great care to avoid cutting into or tearing the intestines or stomach, or spilling the gut contents (again full of germs) over the carcass. Contaminated meat must be trimmed away and discarded.

Hint: Washing a carcass with water will not remove contaminating germs; it will only serve to spread them.

Hint: You will do a much cleaner job if you wear gloves – light disposable latex gloves are adequate. Carcasses and joints should be placed in clean calico game bags to keep flies and dust off. Cotton pillow cases are a good substitute. Plastic coverings will cause meat to sweat, promoting spoilage and this should be avoided where possible.

4. Wrap the meat to prevent contamination in transport

Again calico or linen game bags are ideal for this.

5. Chill the meat where possible to increase shelf life and prevent spoilage.
Microbes do not multiply as fast when meat is kept cool. After the meat has had time to hang and age in the game bag, it should be butchered into your favourite cuts, then wrapped in plastic or vacuum-bagged, labelled and frozen in meal size portions. This can be done in the field if you have access to a freezer, or the meat can be brought home in the game bags, butchered at home and placed straight into your freezer.

Hints: Heavy plastic tubs as well as eskies are useful for game meat transport. Use wads of newspaper or paper towel to absorb any fluid dripping from the calico game bags.

8.4 DRESSING GAME

Birds
There are two basic approaches to dressing game birds.

Pluck and gut: This is the traditional method and has been used by hunters for many years. The advantages are that it gives a slightly higher yield of meat and leaves you with a whole carcass for roasting with better taste.

Skin and cut away meat or carcass parts: This method is quick and clean. Dress the birds as soon as they enter rigor. Magpie geese and some species of ducks can be skinned and breasted, followed by removal of the legs, neck, and giblets if desired. The Waterfowl Hunting DVD produced by the NT Firearms Council for P&W shows this process in detail.

Note: Shot pellets may rupture the gut. If you see brownish yellow or green gut spillage stains, avoid the affected part. Most commonly, a thigh may be contaminated. Blood-shot breast meat is common and the blood is easily removed by washing with cold water (and drying with paper towel!) prior to bagging for refrigeration.

When handling any species of game bird it is essential to ensure a hygienic carcass and safe food. Bacteria migrate into the meat from the gut after death and shot pellets passing through the abdomen may rupture intestines spreading potential contaminants. This may be difficult to detect with the traditional plucking/gutting method unless the body cavity is carefully inspected for contamination. If you choose to pluck and gut you should do so as soon as possible after shooting the bird.

Goats, pigs, deer

Hint: Young animals make better eating. Think about this before you shoot the biggest animal in a group.

To dress larger game involves hard work. Work steadily and methodically. The first step is to hang the animal by a hind leg from a rope thrown over a tree limb if this is possible. Pick a nice shady spot to work. Avoid dressing game on the ground if possible. (Another way of gutting and skinning is done by hanging the game by the head and working from the neck down.)

Hint: Knife safety is very important. Blunt knives are dangerous, as you need to use too much force. Remember to bring a small sharpening stone or diamond steel in your daypack. Never cut towards your body. Concentrate on where the point of the knife is and where your other hand is holding the carcass!

Hint: If the animal is too heavy to hoist remove the guts while it is on the ground and then hoist it up. For larger deer, you may need to half hoist the animal to a convenient working height for skinning the hindquarters and then fully hoist it to clear the ground while you are working on the forelegs and head. (Very large deer can be quartered and carried out in chunks with the skin on, but cut surface contamination will be inevitable and will need to be trimmed later.)

It may be convenient to cut off both hind legs just below the ankle (hock) and discard the hocks while the carcass is still on the ground. Wear disposable latex gloves. Pull the skin away from one ankle, attach the hoist rope shackle between the ankle bone and the Achilles tendon and raise the carcass to a convenient work height. Run a cut just through the skin from the inside of one ankle to the inside of the opposite ankle.

Commence removing the skin from both hind legs. In male animals, you will need to remove and discard the sheath, penis and scrotum. Make a circular cut through the skin around the anus.

Work the skin from around the rump area and pull it off the body towards the head. Run a cut through the skin along the mid-line of the belly. This cut should go all the way from the anus to the head. Cut off both forelegs at the knee. Run a cut just through the skin of the foreleg, from the inside of one knee to the inside of the opposite knee. Remove the skin from the chest, forelegs and neck.

Hints: Avoid touching the meat as you remove the skin. Grip the skin and let the carcass hang free. You do not want to transfer dirt and hair from the skin to the meat.

Use your knife to free up strong tissue attachments between the skin and carcass but punch the skin to break the thinner attachments. Cut off the head from the neck and discard. It is easier to skin a hot carcass. Where possible dress the animal as soon as it is shot.

Free up the anus and rectum and draw them away from the carcass with the intestine trailing after them. Sever the rectum from the intestine and knot the intestine on itself. The reason for the knot is to stop gut contents getting into the belly cavity. Drop the knotted intestine back inside the pelvic hole.

Make a small cut through the belly wall in the midline. Be very careful not to cut into the underlying guts. Push two fingers into the cut and use these fingers to keep the intestine away from the belly wall as you extend the cut the full extent of the belly. Allow the guts to fall out of the belly. Carefully cut away any attachments until all of the belly contents (stomach, intestines, liver, spleen, kidneys, bladder and uterus are removed).

Note: If you tear the guts and spill the contents on the meat you will have to trim all the contaminated areas. With a bad spillage, you may have to discard the carcass. It pays to be careful. Washing with water will not remove spillage contamination, but only serves to spread it.

You may wish to cut away the belly flaps parallel to the muscle of the backbone and discard them as they often get contaminated, but clean flaps can make good mince. Use a pair of heavy snips to cut through the brisket to one side of the breast bone to open the chest. Discard the lower part of the ribs with the breast bone. Pull the wind pipe, lungs and heart out of the chest cavity and discard.

Note: Offal can make good eating. Hearts and kidneys may be recovered relatively hygienically. It is not recommended that you attempt to recover intestines for sausage casings due to hygiene problems. It is wise to check livers for cysts or other disease. Novice hunters may best avoid collecting offal unless sure of your game dressing hygiene.

Finally, trim the carcass of any damaged or contaminated meat. Blood clots can be removed with disposable paper towel.

Buffalo and feral cattle are usually too heavy to be hung for dressing. Back-straps, rumps and legs can be removed from the carcass while on the ground without risk of contamination if care is taken and a helper is willing to lift the meat away as it is being removed. If it is desirable to completely bone out the carcass, a useful method is to cut along the spine and skin the upper side of the carcass from the spine down to the belly without detaching it. The hide is then stretched hair-down onto the ground between the legs and used as a drop-sheet onto which the various cuts can be tossed as they are removed. When one side is completed, the cuts are packed away and the carcass is then rolled onto the hide, and the process repeated from the other side.

Hanging game

Place a calico game bag over the carcass to discourage the flies. Let the carcass hang till aged. Freshly shot meat may be tough. The game bag should be hung in a shaded area out of direct sunlight. The time required for aging varies from a day in warm weather to several days in cold weather. Butcher into cuts and wrap in meal size portions.

8.5 TROPHY SKULLS, CAPING OUT, PREPARING HIDES

The art of preparing a trophy is usually best left to a taxidermist. It is your job to present the taxidermist with good quality capes or skins, as hair that is slipping due to improper preservation cannot be fixed, nor can a good mount be made out of a cape that has been incorrectly skinned or damaged. The taxidermist should not be blamed for your failings!

Trophy skulls

These can be mounted whole after boiling with washing powder and cleaning, or sawed off the skull at a suitable cross section that takes your fancy. Conventional skull cap sections transect the eye sockets and so leave a skull cap attached to the horns or antlers. These are usually screwed onto a wooden board or shield but are also the standard presentation for later taxidermy. The skull mount is the least expensive method of presenting a trophy and can be done at home by the average hunter.

Trophy heads for taxidermy

Each taxidermist has his or her own special requirements so it is wise to inquire in advance with your taxidermist. Select your taxidermist by seeing examples of their work or by referral by a friend. Some taxidermists specialise in particular species. Price alone should not entirely dominate your decision. Quality mounts cost more but are more likely to last and look better longer. Generally, you will get what you pay for. Never drag an animal whose cape or skin is to be retained, as there will be irreversible damage done to the hair coat. Never cut the throat of a trophy to bleed it, such damage is difficult to repair.

Do not carry trophy heads out of the bush in a way that other hunters could mistake you for a game animal. For deer, reverse the antlers but be careful not to spike yourself if you were to slip and fall. Better still, wrap a bit of blue poly tarp around the antlers or horns to make double sure

Full shoulder mounts are usually the most common. For these the first cuts are midway around the chest, well behind the forequarters, and around each fore leg just above the knee. A further long cut is made along the TOP of the neck towards the head. Always make these cuts from the inside of the skin and outwards to avoid cutting the hair. Proceed to skin out the shoulders, lower neck and brisket and go down the forelegs so these are sleeved out rather than cut.

Extend the long neck cut to the back of the head, then make a Y shaped cut from here to the back of each horn or antler. Free enough skin over the back of the head so that the head itself can be cut off at the neck. Salt the free skin heavily, wrapping the lot in a Hessian bag remembering to keep it cool during transport. You can leave it at that point if you intend to deliver the cape and head to a taxidermist without delay.

If you are unable to deliver the cape within 12 hours then further skinning and salting of the head and cape will be required, including the eyes, nostrils, ears and lips. The ears and lips also need to be “turned”. This rather specialised job can easily be ruined and requires a lot of further knowledge, which is available from your taxidermist, through hunting literature or DVD including YouTube. It is worthwhile learning more about this if you intend to be a trophy hunter.

Always dispose of your game waste thoughtfully; leaving it lying about (especially near a campsite or a vehicle track) may offend others. Do not throw it into streams or creeks. Burial is the neatest disposal method.

Preparing hides for tanning

Once the hide is removed lay it out and remove as much adhering flesh as possible, then apply a heavy layer of salt to the entire flesh side and roll it up with the salt inside. Leave it to sit for 12 hours then shake off the wet salt and repeat with new applications until salt remains dry. Roll up and store in a hessian bag in a cool place till ready to be tanned.

8.6 EXAMPLE ASSESSMENT QUESTION

Example question 1: True or False?
Five principles of game meat harvesting require that you minimise carcass damage when you shoot the animal; only harvest normal healthy animals; do not contaminate the meat during carcass dressing; wrap the meat to prevent future contamination; and cool the meat to prevent spoilage and increase shelf life.

List four things that you would do to recover quality game meat.

1.
2.
3.
4.

8.7 REFERENCES FOR FURTHER READING AND LEARNING

1. Allison, C. 1979 *The Trophy Hunters: Action Packed Tales of Hunting Big Game Trophies Around the World – 1860 to Today.* Sydney: Murray.
2. Smith, G. *A Guide to Hunting and Shooting in Australia.* Sporting Shooters Association of Australia Publications, Unley S.A.
3. Harrison, M. and Slee, K. Aust. *The Australian Deerhunter's Handbook.* Deer Research Foundation, Croydon Vic Second Edition 1995.
4. Andriessen, EH. 1987 *Meat Inspection and Veterinary Public Health in Sydney*. Rigby.
5. Matt's Sport Safari 1998 Caping and Field Preparation of Trophies. VHS Video and DVD.

8.8 SELF-ASSESSMENT CHECKLIST		True	False
1.	You should minimise damage to the meat when you shoot an animal with a rifle by only shooting into the brain or heart kill zones.		
2.	You should only take game meat from normal, healthy animals.		
3.	You should not spread dangerous contaminants and microbes onto the meat as you dress a carcass. These germs are most commonly found in the gut and on the hide.		
4.	You should wrap meat to prevent contamination in transport.		
5.	Chilling meat increases its shelf life.		
6.	Game meat should be frozen as soon as practicable.		
7.	Game meat should be hung in a cloth bag to tenderise.		
8.	Gloves (rubber or latex) should be worn when dressing game animals.		
9.	Game should be dressed off the ground where possible.		
10.	Never drag an animal whose cape or skin is to be kept, as there will be irreversible damage done to the hair coat.		

9. HUNTING EQUIPMENT

PART 9 LIST OF CONTENTS

9.1 INTRODUCTION

In today's busy world, it can be difficult to find the time to go hunting. Getting away means reorganizing schedules, putting matters on hold and then catching up on our return. All the more reason to plan our hunting trips carefully and to make the most from them. It is no fun to come home from a hunting trip sunburnt because we forgot our hat, a welter of sand fly bites because we forgot our repellent and with blistered feet because our hunting boots didn't fit properly.

9.2 LEARNING OBJECTIVES

This unit of study will help you:

- Become familiar with the range of equipment available to hunters;
- Construct your own "must have" hunting equipment list;
- Become flexible and adaptable in preparing equipment for specific hunts.

9.3 KEY HUNTING PRINCIPLES

Weather

The climate where you intend to hunt may be very different from where you live. For example, a stroll along the esplanade of a coastal city to enjoy the afternoon sea breeze will not prepare the hunter for a long walk amongst the laterite ridges of the Hardmann Basin in the shimmering late-October heat. Likewise, an unexpected downpour followed by a gusty southerly in July could mean a great deal more than simple discomfort. Always keep the possibility of changing weather conditions in mind and address the need to take appropriate clothing.

Attention to detail

A hunting trip is not a competition to prove that you can live in the bush Tarzan-style. It is true that while you are in the bush you will not have 5 star accommodation but you can make yourself surprisingly comfortable with simple equipment. After each hunting trip, ask yourself what simple things you could have prepared beforehand to make the trip more comfortable. For example, a billy-lifter saves you from accidentally getting burnt fingers, or worse, a painful scald. If you pay attention to all of the little details then you will end up having a great time.

Checklists

Your vehicle is packed and you are a hundred kilometres or so out from home and you start to ask yourself some overdue questions: did I pack this or that bit of gear, have I got my GPS? It is much more reliable to use a checklist as you prepare your hunting packs and pack your vehicle. Try to keep your hunting gear together and ready to go. Rather than do last minute repairs and replacements before a trip, do them when you return home from a trip. Remember, it is a long way from your hunting camp to the corner shop.

Packing crates

Plastic tubs with lids, eskies, canvas and hessian bags, and milk crates are not only useful to pack your gear into for transport, they can double-up to protect your stores from pilfering wildlife such as quolls, possums and rats, and scavenging birds including crows.

9.4 THE BASICS OF YOUR CHECKLIST

Licences, Permits, permissions, notifications, maps

From time to time you may be asked to show your firearms licence, a waterfowl hunting permit, or your BCH permit. Forms are a way of life and you need to plastic-pack your documents, including paper maps that delineate the allocated hunting area.

Clothing

The basic message with clothing is warm and dry or cool and comfortable. A wide-brimmed bush hat is recommended and far more useful in the tropics than a peaked cap. If hunting in thick brush, soft cotton clothing will cut down on noise. Bushes rubbing past nylon parkas can be extremely noisy and will tip off game animals that you are there. Camouflage clothing will allow you to stalk much closer to animals. However, if you are sharing the allocated area with other hunters wearing camo will make it harder for them to keep track or see you.

In such cases blaze orange bush shirts or hi-vis work shirts are a consideration. Pigs, buffalo and deer do not see colours as we do so wearing hi-vis clothing should not affect your visibility when closing in on buffalo and deer. It is movement and contrast with your background that these animals see. However, birds do see and some do react to hi-vis clothing, so be aware of this when planning your final stalk.

Break-up or camo clothing is a good aid for hunting waterfowl. The colour of clothing or pattern should be matched to the vegetation you are hunting in.

Many hunters prefer to wear a double pair of woollen socks inside quality, soft leather, hunting boots. Always pack at least one complete change of clothes together with wet weather gear. A separate hunting belt for your sheath knife, ammo pouches, GPS and camera will save you from the need to hitch and unhitch your trouser belt.

Sleeping bags and camp beds

Getting a good night's sleep is important if you expect to hunt hard the following day. Being warm (or cool!), dry, and free from mozzie attack needs a bit of thought. The final decision on the type of sleeping gear to pack will depend on whether you will be vehicle based or intend back packing away from base-camp. Buy the best sleeping bag you can afford, preferably a good down one and invest in a Gortex cover bag to keep it dry.

Cotton sleeping-bag liners are useful to add a layer if cold, or to sleep in atop the sleeping bag if the nights are balmy. Camp stretchers and airbeds can be cold unless insulated with a thick under blanket or similar. Thermarest mattresses are brilliant but any airbed can get punctured and it is not nice to wake up lying on the hard ground. Swags are waterproof but bulky and condensation can make them damp inside. Test the different choices to determine which suits you best.

Hint: A roll of foam of your preferred size, thickness and density is bulky, but a cheap reliable alternative.

Boots

Always take at least two pairs, of different design and swap them daily on extended hunts as this will give your feet a chance to rest. Also, if one pair packs it in, or begins hurting your feet you are still covered. Today there is a huge choice of boots of various weights and stiffness, with a variety of sole patterns. Try to find boots that have a well-gripping sole such as Vibram. Generally the more you pay the longer they last, if not abused.

A good pair of boots can seem expensive but it can end up being the cheapest buy over their lifetime. The type of boot you choose will depend on the country you are hunting. For example, in steep rocky ground you should wear a boot that has a thick firm sole and one that gives good ankle support. Stalking on dry crackly flats will require a thin soled boot with good foot "feel". Synthetic boots will dry quicker and will drain water better, thereby putting a stop to the squelching noises that will betray you to game. To prevent toe blisters it is best to lace up your boots with your foot firmly against the back of the boot because this will take pressure off your toes.

Any boot should feel TOTALLY comfortable when new and wearing two pairs of socks. Wear them around the place, wet them and walk them dry at home to completely form them to your feet before you go. When backpacking, your feet will swell from your pack's weight and those boots that fitted very snugly with a single pair of light socks will become torture devices.

Food
Take plenty of it. Plan your supplies on a per-person, per-meal, per-day basis. Carry at least three extra day's food in non-perishable form such as cans, dry rice, pasta, cuppa-soup packets, etc, in case of emergency. Remember that you will be spending much of your time eating out of your daypack so be sure it contains snack foods such as dried fruits, nuts, chocolate, eggs (hard boiled in shell) muesli bars, damper, or pre-boiled rice.

For your daypack it is best to avoid fruit that will bruise or make a sticky leaking mess and overweight thermos flasks will feel 10 times as heavy once you start walking out. Several small popper packs of fruit drinks can be convenient.

Vehicles
Only take fully serviced reliable vehicles into the bush. Where possible organise the hunt so that you have access to two vehicles in case of mechanical breakdowns. Take as much fuel as you need, leaving yourself with a comfortable safety margin. Your most common problems will be getting bogged in mud or sand, staking tyres, and flat batteries. Simple solutions are to stay off wet boggy areas and to stay on the tracks. Make sure you are fully equipped with the necessary recovery gear and spares and be sure to know how to use it all safely.

When stuck, don't rush the recovery. Stop, think out a plan and hasten slowly. Check that nothing has been left behind when finished. Pack your recovery kit into an easily accessible place in the vehicle so that you do not have to unload everything else to get at it. Four wheel driving can be dangerous and attending a course on four-wheel driving and vehicle recovery may one day save your life.

Note: The Parks and Wildlife Commission and local Rangers are not a recovery service and should not be relied on. You need to be aware that there may be a cost recovery for P&W recovering your vehicle in a Permitted area.

Camp equipment
If a camp under canvas is preferred to hike-tents or mozzie-domes, then a small trailer will give you space to take all the gear necessary for a comfortable base camp. Remember to allow half a day to set up a camp under canvas and a bit less to break camp. Plan your arrival so that you can select a safe site and set up your camp in daylight.

Avoid camping under large gums, trees that are dead or have dead limbs, or where fire hazards exist. Avoid dry creek beds for your camp because it might not be dry by morning if there is an overnight storm in the catchment. Tents pitched beneath a poly tarp guarantees your bedding will stay dry. A tent should be chosen that has good cross ventilation options, and the ability to withstand strong wind gusts. It should be simple to erect, with strong poles and upgraded pegs. A spade or trowel, peg hammer, axe and chainsaw, tripod and barbie plate, gas camp stove, a kitchen box with pots, pans, oven, plates, cutlery etc, as well as a table, folding chairs, washing dish, bucket and water jerry and some form of lighting completes the base-camp gear. Or you can live more spartan if you wish.

9.5 HUNTING EQUIPMENT

Firearms and associated equipment
You may choose to take more than one firearm into the field. Commonly a shotgun and a centre-fire rifle may be included. These will need to be secured while in the base camp and this can be achieved by the use of trigger locks plus storage in a locked vehicle or fully enclosed lockable trailer. Always secure your ammunition in a separate lockable container. ***Do not, under any circumstances leave unattended firearms in camp.*** Permanently fitting an approved gun-safe to the vehicle is an option exercised by many keen hunters.

Hunting packs
These are a personal choice as to type and size and what you carry in them. Canvas or nylon packs can make quite a bit of noise in scrubby

areas, so quieter materials should be considered. Remember that all the stuff you carry rapidly adds up in terms of total kilos, especially when carried all day and up and down hills.

Your hunting pack will carry your survival kit, food and drink, knife, spare ammo, camera, binoculars, torch, and don't forget the toilet paper. Meat and trophy recovery gear may also need to be carried, and usually includes several additional knives, a meat or bone saw, and possibly even a hatchet. Calico bags are necessary to keep flies off meat while cooling on the backpack. Salt may be needed for recovering a cape. It quickly adds up!

Many hunters add a bum bag or kit belt. Check out what others use, test the various options and learn to vary and limit what you carry according to the circumstances and where and how you are hunting. Always err on the side of safety when deciding what not to take.

First Aid

Take time out to do a First Aid course. Avoid the token First Aid kits. For example, what do you do when hunting in thick brush and a bush springs back and lodges debris in your eye? This is painful and needs attention using the eyewash cup and mirror from your well-equipped First Aid Kit. Take the time to put together a functional kit with quality components, and don't forget to add any personal meds that may be required from time to time.

9.6 HUNTING EQUIPMENT

Construct your own hunting equipment checklist.

The hard way is to do it from scratch. Much better to refer to checklists available in reliable hunting textbooks and to modify those lists to your own particular hunting needs. Remember the list will be different on different hunts! You will need more than one list. It is recommended that you consult the text "*A guide to Hunting and Shooting in Australia. pp. 113-114"* as the starting point for your own customised equipment check list. *The Australian Deerhunter's Handbook* is another good reference text. Work back through this unit making notes of the equipment you wish to include in your own checklist.

Enjoy past memories and future dreams as you make up your list. The enjoyment of all things is as much in the anticipation and preparation as it is in the actual doing. Also, remember to take a camera so that you can record your new adventures for future review. To avoid losing your checklist, keep it in a plastic jacket in your Hunting Projects folder and have a copy, perhaps in your gun cabinet. Tick off each item as you pack them. When finished, rub out the ticks and it can be recycled for the next trip's preparation.

9.7 EXAMPLE ASSESSMENT QUESTION

True or False?: A hunting equipment checklist includes licences/permissions/BCH Permit/maps, clothing, boots, sleeping bags, vehicles, food, camping equipment, guns, packs, meat and hide recovery gear, and first aid items.

In preparing for a hunt, list four important steps to take.

1.
2.
3.
4.

9.8 REFERENCES FOR FURTHER READING AND LEARNING

1. Absalom. J. 1992 *Safe Outback Travel*, The Five Mile Press, Balwyn, Vic.
2. *Australian Bowhunters Association National Bowhunter Education Manual*. ABA. 3RD Edition.
3. Harrison, M and Slee, K 1995 *The Australian Deerhunter's Handbook,* Donprint:ADRF Croydon Vic.
4. Smith, G 1992. *A Guide to Hunting and Shooting in Australia*: Sporting Shooters Association of Australia Publications Unley. SA.
5. *Electronic Journal: The Shooting Industry on-line.* ProQuest Information and Learning Company: San Diego (Note: This is an electronic data base for firearms retailers and access is restricted to subscribers)

9.9 SELF-ASSESSMENT CHECKLIST		True	False
1.	It is much more reliable to use a checklist from which to pack your vehicle.		
2.	When hunting in thick heavy brush, scrubbed soft cotton, woollen or polar fleece clothing will cut down on noise.		
3.	Wear a double pair of woollen socks inside quality, soft leather, hunting boots.		
4.	Firmly lace your feet into the toes of your hunting boots.		
5.	Food. Take plenty of it.		
6.	Where possible, organise the hunt so that you have access to two vehicles in case of mechanical breakdowns.		
7.	Plan your arrival so that you can select a safe site and set up your camp in daylight.		
8.	Hide unattended firearms in your tent.		
9.	Experienced hunters are skilled craftsmen.		
10.	A guide to Hunting and Shooting in Australia. pp. 113-114 is a good starting point from which to develop your own customized equipment checklist.		

10. BUSHCRAFT AND SURVIVAL SKILLS

PART 10 LIST OF CONTENTS

10.1 INTRODUCTION

Bushcraft and survival skills cannot be developed in the short period of an education or accreditation course, neither can they be learnt solely out of a book. It takes time, practice, and trial and error. This unit will provide you with important basic facts on bushcraft and a starting point from which to develop your bushcraft skills.

You may wish to undertake the St. John's Ambulance first aid course, which will train you to deal with medical emergencies.

Every time you are in the bush, you should take every opportunity to increase or hone your bushcraft skills. Your life could depend on them.

10.2 LEARNING OBJECTIVES

On completion of this Unit you will:

- Know about the common bush hazards and how to deal with them;
- Have the basic knowledge to deal with hunting related medical emergencies;
- Know what to do if you get lost;
- Be able to improvise shelter and fire;
- Know the basics of emergency signalling;
- Have knowledge of map reading and compass navigation and know how to develop good location observation skills;
- Be able to assemble a survival kit to suit your needs.

10.3 COMMON BUSH HAZARDS

Bushfires

The most dangerous situations in the eucalypt forests of southern Australia are high winds and bushfires during summer. Although crown fires are rare to non-existent in the NT, grassfires are a feature of the dry season and constitute an obvious hazard. **Always park vehicles and pitch camp in areas that would be unaffected by a fast-moving grass fire passing through the area**.

By the time you see smoke and hurry back to camp, your shelter and food, and means of transportation back to civilization may be nothing but ash. With your food and water gone, a lack of transportation could quickly become life-threatening, especially if someone is injured.

If caught out in savannah or grassland with a wind-driven fire approaching, the best course of action is to immediately light a fire of your own, and step into the burnt area as that fire moves away from you. Always carry matches or a lighter handy for the purpose, and act quickly so that the fire you light has burnt well away from you before the threat arrives.

Flooded streams and rivers
Rivers and streams must always be crossed with caution, as drowning is a serious risk and a major killer. Flooding streams can rise rapidly so a return trip is not always as safe as when you first crossed. The formation of pressure-waves on the upstream side of tree-trunks or boulders is an indication that the flow rate is extremely dangerous and most likely impassable.

If you cannot determine the depth then you should only cross with a strong staff to probe the bottom and use a safety rope, always putting the staff into the water upstream and to your side. The water pressure will then keep the end down.

Never cross in the dark or barefoot, always leave your boots on. Linking arms with one or two companions and moving one at a time, caterpillar style will allow the person(s) not moving to support the one that is moving until a stable footing is gained.

Sending one person across tied to a safety rope held by the rest of the party is another good practice. Cross where the water is widest as the current here is usually at its' slowest. Backpacks should have the waist belt undone and be carried ready to slip off when crossing. Firearms must always be carried unloaded when crossing. If in doubt, **DO NOT CROSS.** Go elsewhere or wait for the waters to drop.

Other hazards
The camping tools we use can present hazards if not used with care. Chainsaws, axes, knives, and power winches all have inherent dangers that must be recognised and avoided. Any vehicle recovery exercise should be done slowly and cautiously and members of the group not directly involved should keep well clear of the vehicles being recovered.

When hunting, avoid rock faces as the rocks can be wet and slippery and a fall may be life threatening. Hunting or hiking through bush after dark is best avoided. Do not camp under hollow or dead trees or limbs, as they can randomly drop or break even in the absence of wind. Check your camp area for nests or sheltering places of potentially dangerous spiders and snakes.

Clear away debris and rocks before pitching your tent. To prevent your fire from escaping you should remove all flammable materials within 3 meters of your fireplace or fire pit. Make sure your fire is OUT when leaving camp. This means you can put your hand on it – ***Cool to touch means it is safe to leave***. It is a good idea to cover your fireplace with soil when departing permanently.

Becoming lost
Plan your hunt and hunt your plan. Getting lost is a possibility, so always tell someone where you are going and when you expect to return, preferably in writing, and do not deviate from this plan. This is the first rule of survival. Travel plans can be left with a relative or with the nearest Police Station. Remember to notify them when you return.

Medical emergencies
The most common medical emergencies are caused by cold and exposure, heat stress, burns, lack of water, cuts, falls and sprains.

Snake bite is a serious consideration but relatively low risk. Most snake bites occur when people molest or attempt to kill snakes, so leave them alone. If bitten, use the latest recommended first aid techniques.

Hypothermia is not a common risk in the Northern Territory but can be life threatening. It is most common in winter if clothing is too light or becomes wet when there is a cold wind blowing. Speech becomes slurred, vision becomes tunnelled and thought processes become deranged and confused. Excessive fatigue, shivering and drowsiness are common symptoms. Victims often deny that there is a problem.

Action: Provide shelter from rain and wind, and wet ground. Wrap victim in a warm sleeping bag, or foil space blanket and get another person inside it with them, in warm dry clothes, to *SLOWLY* rewarm them. Give small quantities of warm drinks if the victim is conscious but never give alcohol. Seek medical aid promptly if recovery is not quick and remain with the victim until such help arrives. It is critical that a repeat episode does not occur within 7 days.

The opposite condition, hyperthermia, occurs with over-exertion in hot weather or where sweating is ineffective in high humidity. If not controlled heat exhaustion can become irreversible and heat stroke can be fatal. Symptoms are headache, flushed features, faintness, and absence of sweating after initially being profuse, mental disturbance, collapse and convulsions. Act early and quickly. Find shade, remove clothing, create air movement and apply cold water or preferably ice in towels. Immerse in a river if possible. Arrange for medical help and evacuation to a medical facility.

Dehydration will kill within one to three days and is discussed in further detail below.

Gunshot wounds, because of the nature of the soft pointed ammunition and shot shell loads used and their muzzle velocities, will cause massive wounds that are often immediately fatal. Such massive trauma can only be given minimal treatment as first aid. Immediate priorities are pressure dressings to reduce blood loss, treating shock by keeping the victim warm, positive reassurance to reduce fear.

The urgent mission is to evacuate the victim to a high-grade hospital facility ASAP. Helicopter transport, if rapidly available is first choice, otherwise by car, but don't endanger yourself and the patient by driving too fast and risking an auto accident.

(Sprains, fractures, and wounds are dealt with using standard first aid measures described in the St Johns Ambulance first aid course.)

10.4 CROCODILES AND CrocWise

The waters of the NT are home to many saltwater crocodiles. Never dive or jump into waterholes or rivers.

Some of the ways to stay safe in areas that may have saltwater crocodiles include:

- Never swim in water where crocodiles may live even if there is no warning sign. Only swim in designated safe swimming areas.
- Obey all crocodile warning signs — they are there for your safety and protection.
- Always keep a watch for crocodiles. They will see you before you see them.
- Never provoke, harass or interfere with crocodiles, even small ones.
- Never feed crocodiles — it is illegal and dangerous.
- Be extra vigilant around water at night and during the breeding season from September to April.
- Avoid approaching the edge of the water and don't paddle or wade at the edge of the water.
- Stay well back from any crocodile slide marks. Crocodiles may be close by and may approach people and boats.
- The smaller the boat, the greater the risk.

Always stand a minimum of five metres from the water's edge when fishing.

- Be especially vigilant when launching or retrieving your boat in saltwater crocodile habitat.
- Do not lean over the edge of a boat or stand on logs overhanging water.
- Never dangle your arms or legs over the side of a boat. If you fall out of a boat, get out of the water as quickly as possible.
- Camp at least 2 metres above the high water mark and at least 50 metres from the water's edge. Avoid places where native animals and domestic stock drink.
- Avoid returning regularly to the same spot at the water's edge to fill your bucket.
- Dispose of food scraps, fish offal and other waste properly and away from your campsite.
- Never leave food scraps, fish frames or bait at your campsite. Always check that previous campers have not left these behind.
- Never prepare food, wash dishes or pursue any other activities near the water's edge or adjacent sloping banks. Instead, fill up your bucket and move away from the edge of the water before you start any tasks.

Remember: it is never safe to swim in areas that crocodiles inhabit in the Northern Territory, even in the cooler months. While crocodiles may be more active during the warmer months (Wet season), when the air and water temperatures are higher, it should never be assumed that it is safe to enter the water at any time of the year

10.5 STEPS TO BE TAKEN IF YOU BECOME LOST

Don't panic. Stop where you are and think about your likely location and what to do next. Don't rush about, as you will only exhaust yourself. Stay put, rest, think and wait awhile. If you explore along the way you have previously walked, mark your path with pieces of toilet paper or bits of hot pink plastic tape tied to bushes at regular intervals, each one being in sight of the next. If you do not regain your bearings and are still lost after this initial exploration then you will need shelter, warmth (in winter), water, and food - in that order. If you have only the first three then you can live for many days without food. You should always carry a knife and a gas lighter as essential survival tools.

Shelter
Strips or pieces of bark, shrubs, palm leaves or grass can thatch a frame shelter tied with vines, strips of bark, bootlaces or other sources. Or you can find a rock overhang, a hollow tree or a log to keep off rain or wind. A lightweight silvered space blanket, emergency poncho or two large plastic garbage liners can keep you dry and can act as a windbreak. Pack all three in your survival kit. Check them from time to time for deterioration or worn parts.

Fire
Fire can be started using a butane lighter, matches, magnifying glass or flint and steel using dry leaves, grass or teased bark. Tinder may need to be collected from inside a hollow tree or under layers of stripped stringy bark or paperbark if raining, as the inner layers usually remain dry. A candle stub, grease paper or inner tube rubber strip is a good fire starter. Pick small fine dead twigs from standing bushes for the early fuel, as these are usually the driest. Later use thicker ones, then any old wood, wet or dry once it develops enough heat.

Wet matches can be dried by placing them in your hair under a hat or beanie. Build your fire within the protection of your chosen shelter against a larger back log to reflect heat. Fire and smoke is also a signal device (more on signalling later). Fire can be carried by collecting dry Banksia 'candles' that will smoulder for some time like a lit cigarette, and can be "chain-smoked" on the move to your next camping spot. Practice your fire making skills under adverse conditions before it becomes a survival necessity. This is a skill you want to have mastered before it is really needed.

Water
Death from thirst may occur in one to three days depending on temperatures. Try to locate a stream, soak, or rock hole. Birds can lead you to them at dawn or dusk. Water can be obtained with a plastic sheet and a hole in the ground by distilling picked foliage with the sun's heat. Transpiration bags are also effective in some situations, collecting water transpired from the foliage of trees. Learn how to do this. If you don't have much water, then you will need to minimise water loss through exertion, so you should stay in the shade and rest.

Certain plant roots can be dug up which hold water and the liquid can be drained of sucked from the roots, and insect galls on bloodwood trees may contain a 'sac' of moisture. Again, learn how to do this and recognize the safe species. Car radiator water usually contains corrosion inhibitors that are toxic so should not be drunk. It can be distilled as above.

Carrying a "Life Straw" as part of your survival kit is highly recommended. They are relatively inexpensive and can provide up to 1000 litres of safe drinking water from stagnant pools or fouled animal wallows.

Food – *Survival situations*
Your rifle can provide food with a little care, or you can make a spear, snares or traps. There are many so-called survival handbooks that contain diagrams of snares and traps, but many will not work in your local area and few will work well enough to entrust with your own survival. It

is recommended that you practice making snares and traps using local resources to determine their effectiveness *before* getting into a survival situation.

A length of fishing line with a hook can be used as a hand-line or set line to catch fish or turtles (Note: *turtles can only be taken in an emergency or survival situation*) if suitable waterways are present. Include basic fishing gear in your survival kit, and have some prior knowledge of the fish species in the area so as to determine likely natural bait and how to go about acquiring it.

Learn to identify “bush tucker” plants, fruits and berries as valuable survival foods, and make certain you can readily identify those fruits, seeds etc that are poisonous to humans. Understanding “bush tucker” adds another dimension to your back country experience and your Berry-picking may come in handy one day.

10.6 DISTRESS SIGNALS

The universal signal of three rifle shots or other sounds spaced evenly fifteen seconds apart means ‘come to me’, and these are answered with two shots of the same time interval to confirm contact. Always carry sufficient ammunition for a series of distress signals. A whistle is useful in some situations. Smoke from green branches on a hot fire can be a good signal for aircraft, as are mirror flashes, flames, or a torch in the dark.

The SOS distress signal in Morse code is three dots (or short signals), three dashes (or longer signals) followed by three further dots. It can also be written in sand or made with rows of stones.

Personal Locator Beacons (PLBs) can be carried, and when set off they transmit your position to a rescue agency via satellite. You may be charged for the cost of an aerial search and rescue even if the PLB is set off accidentally. You may also have to pay a $10,000 dollar fine for using a PLB in non-life threatening situations, so be careful with the device.

Some PLBs allow a limited range of coded messages to be sent to help authorities interpret your situation and structure the response. In any case, a delay is to be expected before any ground party arrives. In remote areas, a satellite telephone gives more reliable communication. An attachable sleeve may be used to convert any smart-phone into a sat-phone but they are still an expensive option.

There are also SPOT Trackers**. A SPOT Tracker** is a GPS tracking device that uses the Globalstar satellite network to provide text messaging and GPS tracking (depending on the subscription type purchased), they also have an emergency/SOS message function that will alert authorities to an emergency situation. It has a coverage area that includes a large portion of the planet. SPOT is simplex and cannot receive user data.

10.7 MAP READING AND GROUND NAVIGATION

Good maps are essential for exploring new hunting territory. Get the smallest scale (1:25000, that is, a scale of 250 meters of distance per centimetre of map, or smaller) and learn to interpret contour lines and vegetation types. The maps usually show height levels at 10 or 20 metre intervals with darker contour lines at every 100 metres. Rivers, creeks and dry water courses are also marked. The more closely packed the contour lines, the steeper the terrain. Joined contour lines indicate a sheer cliff.

Choose your route via the easier gradients to avoid problems.

To find your location on the map, place your compass on it and rotate the map to align your map’s magnetic north (marked MN as distinct from the true north. Both are always shown) with the free-swinging compass needle. The map is now orientated with your surroundings. Next, locate two high points around you and find them on the map. By drawing a line on your map bearing from each high point, your exact location is to be found at the point where these two lines intersect on your map. The distance from this point to a proposed destination can now be measured using a stick or other substitute ruler and then making a calculation using the scale on the side of your map.

It is always wise to carry a smaller spare compass in case the main one malfunctions or breaks. A magnetic compass is essential on flat areas without landmarks and in places where thick mist occurs, but you need to take home base bearings in advance. Locate the direction of your camp visually or with the map aligned as before and read off how many degrees on either side of magnetic north this direction is and write it down. If your landmarks become obscured, then try to travel in line with the predetermined bearing. Small deviations will upset your course, and here you will need to add corrections by dead reckoning.

GPS units are another way of navigating. They are relatively inexpensive and reliable, provided you know how to use them and do not run out of battery power. Remember that thick overhead tree cover interferes with satellite location signals to some degree. GPS units can be heavy on battery power if left on continuously so always carry a spare set of heavy-duty batteries. Repeatedly compare your location with a compass and map-to-ground estimate to ensure that you have a backup should your GPS fail. Do not risk becoming completely dependent on the GPS for your location and your direction of travel. You can run into a problem if you discover that you forgot to mark the position of the camp or vehicle before you left, or if the unit is damaged in a fall.

Make a camp and wait if it gets dark, unless you have a torch by which to read your map. It is wise to wait until morning to continue or you risk becoming utterly lost.

A satellite phone in remote areas can also provide reliable emergency communications provided you have a spare battery or means of recharging it if necessary.

10.8 OBSERVATION SKILLS

Learn to orientate yourself to your surroundings and take note of the sun's position at various times of the day as this can be related easily to north. Guess where north lies as you move about and check this against your compass or GPS. Look for landmarks such as hills or other features. Look behind you regularly to check what your back trail and horizon looks like. That's what you will see on your return journey so it pays to be familiar with it before turning for base camp.

Once in the bush, all trees, logs, stumps, and rocks will appear to look the same but they are not. Each is unique and some are more unusual than others with big knots, lumps, peculiar twisted limbs, etc. These oddities can be useful landmarks to particular parts of the track or to gulley entrances and should be noted for future reference. Clumps of odd coloured scrub and rock formations can also be good landmarks. Practice these observations because continual practice will improve your bush craft skills.

Learn to feel comfortable and to be at home in the bush. Stay alert to your surroundings. It is when you don't feel familiar and at ease with the bush that you can become lost. When you stop hearing the small birds twittering it is a sign that your observation and hunting alertness is flagging. Take a rest and recover this concentration before continuing. Use all your senses. We under utilise our sense of sight, smell and hearing. Alarm calls from birds tell you and the game what is going on. The passing of a feral animal such as a boar or brumby can leave a scent in the air scent that will alert you to their presence, or possible direction of travel. Rub marks on trees, particularly mud rubs on paperbarks and logs near wallows can indicate height of the quarry, whether buffalo or boar, and how recently they departed.

Find and follow the game trails in whatever area you are hunting. They will often lead you to where the animals graze or water, and usually the game trail will be the easiest route through the country that you are hunting. These game trails will lead you up or down seemingly impassable rocky ridges, through or around thick patches of scrub, and around tangles of dead and fallen trees, thus sparing you from battling through many difficult places. When you see tracks of a particular animal in an area, follow them, but also ask yourself, what is this one doing here, and why. The answers can often be your key to future hunting success.

Look also at the small things around you. The sight of seed-eating birds such as pigeons or doves can indicate that water is nearby. Your

hunt can become a whole new exercise in detective work that informs you about all manner of subtleties in your hunting area. The more often you visit, the more you will see. Your designated area is like an open book with a new chapter to be read each time you visit.

A better understanding of the natural environment will allow you to walk ***IN*** the bush and become part of it, rather than just walking ***THROUGH*** it as a visitor.

10.9 SURVIVAL KITS

Survival kits are very personal things. Each hunter will have his or her own variation. The few simple objects in it have a myriad of uses limited only by your powers of lateral thinking and improvisation skills.

Recommended essential items are as follows:

- Folding knife, or box-cutter with spare blades;
- A disposable gas cigarette lighter wrapped in glad wrap;
- A plastic magnifying glass;
- Small magnetic compass;
- Plastic whistle and lanyard;
- A candle stub and three strips of inner tube rubber wrapped in grease paper and placed in a snap seal bag. These items can be used to light fires;
- Several lengths of stout cord and two small coils of light copper wire. These can be used to repair bootlaces, rifle sling, belt etc;
- A small torch, plus a set of spare heavy-duty batteries;
- Small plastic or metal signalling mirror;
- A roll of hot pink, orange, or neon blue plastic non-adhesive flag tape for marking trails;
- Two large plastic garbage bags for shelter;
- A compact polythene emergency poncho;
- Light weight space (silver) blanket;
- Ten spare rounds of ammunition, in a snap seal bag;
- Length of fishing line and hooks;
- Light weight, basic First Aid kit;
- One water bottle of adequate volume;
- One “Life Straw” water filtering system;

Optional items:

- Rifle pull-through.
- Roll of red electrical tape;
- Game carry strap for large, medium or small game;
- A 30 metre coil of light pliable rope.

10.10 EMERGENCY BASIC FIRST AID KIT: MINIMUM CONTENTS

- Triangular calico bandage for wounds and fractures.
- Bundle of bandaids.
- Headache tablets.
- Antacid tablets.
- Water purification tablets, these can be used as a disinfectant wash also.
- 10cm wide elastic bandage 2 meters in length. Can be used for snake bandage and sprains or wounds.
- Clean handkerchief.
- Half toilet roll. A multipurpose item that can be used for wound dressing on top of a clean handkerchief, trail marking and the obvious.

With a little juggling, it is possible to put all of this together for a total weight of around 500 to 600 grams.

10.11 LEARNING EXERCISE

Assemble your personal survival kit.

Hint: What you need in your kit will vary with the country you are hunting, the remoteness of your location and the number of people you are hunting with.

Exercise

Make a list of dual purposes and alternative purposes for each item in your personal survival kit. You may wish to save on weight by not duplicating items.

10.12 EXAMPLE ASSESSMENT QUESTION

True or False?: Bush hazards include wild fires, flooded streams, and crocodiles, becoming lost and medical emergencies.

List four reasonable precautions you would take when going bush.
1.
2.
3.
4.

10.13 REFERENCES FOR FURTHER READING AND LEARNING

1. Absalom, J. 1992 *Safe Outback Travel*, The Five Mile Press, Balwyn, Vic.
2. *Australian Deer Association Hunter Education Program*. 10th Edition. A manual. ADA Victorian State Executive. Warragul Vic.
3. Harrison, M and Slee, K. 1995. *The Australian Deerhunter's Handbook*. ADRF, Croydon, Vic.
4. Smith, G. 1992. *A Guide to Hunting and Shooting in Australia*, Shooters Association of Australia Publications, Unley SA.

10.13 SELF-ASSESSMENT CHECKLIST		True	False
1.	You should take shelter from high winds under trees.		
2.	Water swirling high over large boulders or the sound of submerged rocks rolling along the bottom indicates that the water is extremely dangerous and impassable.		
3.	Leave your boots on when crossing a flooded creek.		
4.	Avoid rock faces, as rocks are often wet and slippery and a fall can be life threatening.		
5.	Always tell someone where you are going and when you expect to return.		
6.	The most common medical emergencies are caused by cold and exposure, heat stress, burns, lack of water, cuts, falls and sprains.		
7.	With gunshot wounds, the urgent mission is to evacuate the victim to a hospital facility ASAP.		
8.	If you become lost, stop where you are and think about what to do next.		
9.	If short of water conserve it by staying in shade, and resting. Exertion increases water loss.		
10.	When you stop hearing the small birds twittering it is a sign that your observation and hunting alertness is flagging. Take a rest and recover this concentration before continuing.		


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