Australian Deer Association

AUSTRALIAN DEER ASSOCIATION
DEER MANAGEMENT PROGRAM (DMP)

ACCREDITATION COURSE WORKBOOK

JUNE 2020

Amendment History

Date	Ver	Author	Detail of amendments	Approved By
1/10/2005	1.0	Bob Gough	Original Release	ADA VIC DMC
27/9/2013	1.2	Steve Garlick	Updated to reflect changes to DMP distance education and practical testing requirements	
21/10/2013	2.0	Steve Garlick	As approved by VIC State Executive	VIC SE
27/02/2020	3.0	Bob Gough	Updated and competencies mapped to AHCPMG304 and AMPG306.	Brian Boyle, Director Deer Management

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About this Workbook

The Australian Deer Association (ADA) Director of Deer Management manages the Deer Management Program (DMP) accreditation process through State DMP Managers, Assistant State DMP Managers and DMP Regional Ground Operations Managers for all ADA members nationally.

This Workbook is designed to allow you to complete the ADA Deer Management Program Accreditation Course (DMPAC) by distance education, where you, the participant, undertake to read the information provided and to answer practice questions in preparation for the DMP theory examination.

When you have studied the contents of the workbook and have answered the practice questions, you should attempt the DMP theory examination online. Your access to the DMPAC Theory Workbook, and to the DMPAC Theory examination are registered to your ADA member login.

Each time you attempt the online DMPAC theory examination your results are sent to your State DMP management team. When you achieve the required 100% pass you will be contacted by your state DMP management team with details of marksmanship testing dates and locations.

Participants are to email a clear jpeg image of their Firearms Licence and proof of current ADA membership with their examination. You will not be accredited until you provide this documentation, and it is your ongoing requirement to keep your Firearms Licence and ADA membership current. Your information will be managed securely and only used as required. Your firearms licence will be used to verify that you may legally carry and use a firearm when you participate in DMP. Your ADA membership will be used to verify that you are covered by the ADA Public Liability Insurance policy when you participate in DMP.

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1. Introduction

ADA has developed the Deer Management Initiative (DMI) to foster the better management of wild deer in Australia. The ADA will engage (partner) with Commonwealth, State and local government agencies, Conservation NGO's and private landholders and land managers to develop and resource cooperative and effective volunteer deer management activities through collaborative DMP's. The DMPAC has been developed by ADA for members who wish to participate in DMP's.

2. Aim of the DMPAC

The aim of the DMPAC is to train and develop the skills of ADA members to the equivalent of the Australian Industry Standard for Professional Hunters (currently: AHCPMG304 "Use firearms to humanely destroy animals" and AMPG306 "Use firearms to harvest wild game)" so that they can hunt deer safely, responsibly, ethically and effectively as part of a DMP. The ADA DMP Accreditation Course is taught to Competency Level Two "perform and administer the process".

It is noted that while the ADA is not a Registered Training Organisation (RTO) it will strive to conduct the training to the same standard and conditions as an RTO. ADA members accept that the accreditation is only valid within the ADA DMP.

3. Wildlife Management Plans, legislation and associated documents

3.1 Reason for learning

A sound knowledge of the Wildlife Management Plan, legislation and associated administrative documents will give operators a good understanding of the reason for the program, and the safety, administrative and authorisation requirements for the use of firearms in your State.

3.2 Points covered

1. Understanding Wildlife Management Plans and other DMP documents including WHS documents, Risk Assessments, Safe Work Method Statements (SWMS), Standard Operating Procedures (SOP), procedures for firearm use, licence requirements and authorisation to discharge firearms, specific legislation and codes of practice for firearm use and animal welfare.
2. Relevant legislation for Australian States and Territories, and how to locate and access legislation.

3.3 Understanding Wildlife Management Plans and other DMP documents

Wildlife Management Plans (WMP) are used by Commonwealth, State and local government agencies, Conservation NGO's, Traditional Owners, Timber Plantation companies and private landholders to define how wildlife will be managed on an area of land with defined boundaries, such as a property or group of properties or a section of timber plantation. WMP and other management documents are written collaboratively with land managers, managed corporately by the ADA, and are communicated to DMP participants in a range of documents and site briefs.

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The WMP is a partnership arrangement between the landowner / managers and the ADA. The WMP belongs to the landowner, so the landowner can cancel the WMP at any time. In this way, the landowner stays in control at all times.

3.3.1 Key elements of WMP's

The key elements of a WMP are:

1. A map showing the property boundaries and any "no-go" areas.
2. A description of the wildlife species present in the management area and their classification under State and Territory legislation.
3. A detailed description of the social, economic and environmental impacts relevant to the target species, how impacts are monitored and measured, and any population monitoring and data collection.
4. The detail of all management options to be used, and where ground shooting fits in the program.
5. The responsibilities of all stakeholders (landowners, hunters, other persons living, working or accessing the management area); and any permits, authorisations or approvals required under State or Territory law.
6. The property rules and WHS arrangements.

3.4 WHS documents

DMP Operators must have a good understanding of, and comply with the WHS aspects of the WMP, such Risk Assessments, Safe Work Method Statements (SWMS) and the Fatigue Management Plan. These aspects are managed corporately by the ADA, and are communicated to DMP participants in a range of documents and site briefs.

3.5 Standard Operating Procedures (SOP)

In most situations, SOP will be used to incorporate SWMS and other Tactics, Techniques and Procedures (TTP) into daily DMP Operations, to enable DMP Operators to respond to commonly encountered situations in an agreed manner that accords with safe practice. SOP's are written collaboratively, managed corporately by the ADA. and communicated to DMP participants in a range of documents and site briefs.

3.6 Authorisation to carry and discharge firearms.

Depending on the Landholder, DMP volunteers may be issued with an authorisation to carry and discharge firearms in the management area (e.g. Parks Victoria issue an authority under Section 37 of the Victoria National Parks Act 1975). You will be required to comply with all instructions on the Authorisation, and must carry this with you on DMP operations.

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4. Firearms and wildlife legislation and Codes of Practice for Australian States and Territories, and how to locate and access legislation

The ADA DMP must comply with the relevant State and Territory legislation and Codes of Practice. The main references used for humane destruction of wildlife are:

1. A model for assessing the relative humaneness of pest animal control methods. Second edition 2011, ISBN: 978-1-921575-26-6; and the various State and Territory legislation.
2. Legislation relating to the animal welfare and the prevention of cruelty to Animals within the Australian State or Territory that the DMP is operating within.
3. ADA Protocol for the Ground Shooting of Deer in Control Operations

4.1 Accessing legislation for your State

State and Territory legislation is readily available on the internet. Simply search for the following keywords using your favourite search engine. Keywords <insert relevant State or Territory> firearms laws and regulations, Code of Practice for hunting, Code of Practice for Pest management etc.

A table showing relevant legislation, guides and Codes of Practice by State and Territory is presented below.

Relevant Legislation, Codes of Practice and guidelines by State and Territory	
National	Pest Smart SOP's
	DEE001: Ground shooting of feral deer.
	DOG003: Ground shooting of wild dogs.
	CAT001: Ground shooting of feral cats.
	CAM001: Ground shooting of camels.
	DON001: Ground shooting of feral donkeys.
	RAB009: Ground shooting of rabbits.
	PIG003: Ground shooting of feral pigs.
	GOA001: Ground shooting of feral goats.
VIC	Firearms Act 1996 and Firearms Regulations 2018
	Prevention of Cruelty to Animals Act 1986
	Wildlife (Game) Regulations 2012 and the Wildlife Act 1975
	Code of Practice for the Welfare of Animals in Hunting (revision no. 1)
TAS	Firearms Act 1996 and Firearms Amendment Regulations 2017
	Code of Practice for the Hunting of Wild Fallow Deer in Tasmania April 2012
	Animal Welfare Act 1993
SA	Firearms Act 2015 and Firearms Regulations 2017
	Modern Hunting in South Australia A guide for responsible and sustainable hunting.
WA	Firearms Act 1973 and the Firearms Regulations 1974
NT	Firearms Act 1997 and Regulations 1997
	NT Hunters Code of Practice

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Relevant Legislation, Codes of Practice and guidelines by State and Territory Cont.	
QLD	Weapons Act 1990 and Weapons Legislation Amendment Regulation 2019
	The Australian 'Model code of practice for the destruction or capture, handling and marketing of feral livestock animals'
	Animal Care and Protection Act 2001
NSW	Firearms Act 1996 and Firearms Regulation 2017.
	Game and Feral Animal Control Act 2002 and the Game and Feral Animal Control Regulation 2012
	Hunters' Code of Practice
ACT	ACT Firearms Act 1996 and ACT Firearms Regulation 2008
	ACT Pest Animal Strategy 2012-2022

4.2 ADA Protocol for ground shooting deer in control operations.

The ADA promotes ethical hunting and compliance of members with relevant Codes of Practice for humane conduct of ground shooting operations. The ADA protocol for ground shooting deer in control operations should be regarded as the minimum requirement.

4.3 Animal welfare considerations

High-powered centre-fire rifles fitted with a telescopic sight must be used for the greatest combination of accuracy and effectiveness. Deer legal shotguns are permitted in some States under certain circumstances.

The calibre of the rifle and projectile weight will depend on the species of deer:

1. **Hog and fallow deer.** The minimum calibre is .243 and a 100 grain projectile.
2. **Sambar, chital, red and rusa deer.** The minimum calibre is .270 and a 130 grain projectile.

4.4 Dependant young

Ideally, operations should be programmed to avoid the risk of orphaning dependant young. This may be achieved by targeting females in the period 3 months after the main birth period until a month prior to the main birth period. Participants will be briefed on the breeding cycles of the deer species in the program location, and should there be a management imperative to shoot female deer during the main birth period, dependant young should be targeted first, before targeting the female.

4.4 Taking the shot

Every effort must be made to fire at the closest range practicable in order to reduce the risk of wounding. A shot should only be taken:

1. **Stalking (with or without a gundog).** When the deer can be clearly identified (the shooter has identified the head, neck and shoulders of the animal, and has a clear point of aim.
2. **Hunting with scent trailing hounds.** When the deer can be clearly identified (the shooter has identified the head, neck and shoulders of the animal, and has a clear point of aim, and hounds and other hunters are well clear of the firing line.
3. **All situations.** Regardless of whether the deer is within the effective range of the shooter, the prevailing conditions are suitable and a humane kill is probable; if the firer is in any doubt that the shot is unsafe, or that the bullet will not stay within the property boundary, **DO NOT** shoot.

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Practice Questions

Q1. List 5 key elements of a WMP:

1.

2.

3.

4.

5.

Q2. DMP Operators must have a good understanding of, and comply with the WHS aspects of the WMP, such as:

R _ _ _ A _ _ _ _ _ _ _ _ _ _, S _ _ _ W _ _ _ _ M _ _ _ _ _ Statements, and the F _ t _ _ u _ Management Plan.

Q3. In your own words, explain why the DMP uses SOP's:

Q4. ADA's DMPs must comply with state and territory law. List the three main references used by ADA for humane destruction of wildlife:

1.

2.

3.

Q5. State and Territory legislation is readily available on the internet. List the relevant legislation for your state or territory for firearms use (ACT members please cite ACT and NSW Legislation):

Q6. List any relevant Codes of Practice for hunting or wildlife management for your state or territory (ACT members please cite NSW Legislation):

Q7. The ADA Protocol for the Ground Shooting of Deer in Control Operations uses what Code of Practice?

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Q8. What are the minimum calibres and projectile weights specified for deer in the ADA Protocol for ground Shooting?

(1) For Hog and Fallow deer:

(2) For Sambar, Chital, Red and Rusa deer:

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5. Biosecurity and Environmental Awareness

5.1 Reason for learning

The main reason for conducting wildlife management programs is to address economic and environmental impacts caused by overabundant wildlife. DMP operations must be conducted in a manner that enhances biosecurity and has minimal impact on the environment.

5.2 Points covered

1. Our operating environment and the damage we can do to it;
2. Factors involved in environmental damage;
3. DMP environment guidelines; and
4. Carcase handling and disposal of animal carcases to minimise biosecurity or public safety and health risks.

5.3 Our operating environment and the damage we can do to it

The purpose of the ADA DMP is to manage wildlife – but we do not want to do more damage than the animals we are managing! Australia has highly diverse ecosystems, so we need to be aware of the environment and our impact upon it. e.g. ecosystems are dependent on a ground cover of vegetation and leaf litter to prevent soil erosion. Once that ground cover is damaged and erosion commences it is very difficult for vegetation to re-establish.

5.3.1 Human activities that can damage the environment

Human activities have the potential to impact the environment and ecosystems for example:

1. Camp-fires leave scars;
2. Uncontrolled fires cause erosion and modify ecosystems;
3. Foot and vehicular traffic can damage ground cover and lead to soil erosion e.g. High use sites such as fords and campsites are particularly vulnerable;
4. People, vehicles and animals transport pest plants, insect pests and diseases into new areas; and
5. Dumping rubbish or human waste can introduce pests and diseases, damage ground cover and pollute water supplies.

DMP operations are planned to be minimum impact. The factors involved in environmental damage include:

1. the frequency, intensity and duration of the activity;
2. the level of climatic stress on the biological community; and
3. the vulnerability of the community e.g. alpine ground cover plants can be damaged if two or three people simply step on them in quick succession.

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5.4 DMP environmental guidelines

The following guidelines apply to all DMP activities:

1. Campsites will be selected in consultation with the managing agency;
2. Fires will only be lit in existing fireplaces with approval of the manager;
3. Fires will comply with safety rules e.g. no larger than 1m, cleared for 3m;
4. All rubbish, including food scraps will be taken out (rubbish runs);
5. Camps will either be sited near existing toilets or the waste disposal requirements will be agreed with the manager;
6. Faecal waste should be buried no less than 150mm deep and 100m away from water sources;
7. Vehicles are to use formed tracks, and are not to deviate from formed tracks;
8. Boggy or eroded tracks should not be used;
9. Road and track closures are to be respected; and
10. Vehicles, boots and equipment should be cleaned of soil and plant material to prevent transfer of seeds and diseases.

5.5 Carcase Handling and Disposal

The unused carcase sections of any animals that are harvested for food or required for scientific samples are to be disposed of as stipulated in the DMP, so as to minimise biosecurity or public safety and health risks.

Practice Questions

Q9. When undertaking a DMP, why do we need to be aware of our environment?

Q10. List 4 human activities that may damage the environment.

1.

2.

3.

4.

Q11. When undertaking a DMP, what are some of the factors that may cause environmental damage?

Frequency, intensity, d _ _ _ _ _ _ _, climatic s _ _ _ _ _ and v _ l _ _ _ _ b _ _ _ _ _ of the community.

Q12. The unused carcase sections of any animals that are harvested for food, or required for scientific samples, are to be disposed of as stipulated in the WMP in order to minimise biosecurity or public safety and health risks.

True False

6. Deer behaviour and physiology

6.1 Reason for learning

An understanding of deer behaviour and physiology will allow the hunter to use the best combination of hunting techniques (e.g. stalking, shooting from a hide or high seat, spotlighting); and will ensure the humane killing of the animal.

6.2 Points covered

1. Common deer behaviour.
2. Deer physiology and the most effective way to kill a deer.
3. Behaviour of wounded deer.
4. Determining death of a shot animal.

6.3 Factors affecting common deer behaviour

6.3.1 Weather

Local weather and the seasonal influence have a direct impact on the behaviour of deer. Changes in temperature, rain, humidity, wind and sunlight can, through heat, cold, wind, rain and snow directly impact on the animal's well-being, and will cause deer to react in predictable ways. The hunter needs to have a good understanding of the area being hunted in order to identify the most likely sites to find a deer in given weather conditions. Whether feeding or resting, deer will seek a comfortable location. For example, on frosty mornings consider what locations would catch the first warm rays of sunshine.

Weather also influences deer behaviour by creating strong wind patterns. Wind is the deer's enemy as it interferes with the senses of hearing and smell that normally provide important information for a deer's defence system. During heavy wind deer will often be found in quiet places in the lee of the wind.

6.3.2 Air movement

Katabatic and anabatic wind movement or "Thermals" are air currents set in motion by temperature changes. Under stable weather conditions, cold air currents travel down slopes, creeks, and valleys from late evening until early morning. The reverse occurs when the sun warms the hills and warm air currents move up slopes and valleys.

The rule of thumb is that the change from night-time down-slope air-flow to day-time up-slope air-flow occurs approximately two hours after sunrise but is very dependent on location, with areas in shadow responding later than areas in full sun. The reverse situation can occur anytime just before sunset to sometime after sunset. Thermals are separate to any prevailing winds, and strong winds may over-ride any thermal effect.

Understanding the way wind affects hunting is the key to hunting success. Air flows like water in a stream, with eddies and rapids caused by local objects. Campfire smoke also shows how air currents twist and move around obstacles and change direction in accordance with thermal or prevailing winds.

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6.3.3 Temperature

Spring and autumn can be seasons of significant daily temperature change, but can also provide periods of moderate weather. Deer will normally respond to cold weather by increasing movement – they need to eat more to cope with the cold and will also travel to find suitable warm bedding cover. Mid-summer can be another period of significant temperature change, between night temperature and the intense heat of day. Deer will feed for longer periods at night and travel sometimes for long distances to make use of good thermal cover during the heat of the day. There are fewer dark hours during summer, which means deer can often be found out in evening twilight in low pressure areas as they last ate at dawn, have rested and ruminated and need to eat and drink.

6.3.4 Scent detection by deer

Scent is processed on the deer's moist nose, so moist humid air provides an excellent medium for the carriage of scent. Heavy rain greatly reduces the carriage of scent and even heavy fog or mist/light rain means that a deer struggles to scent effectively. Similarly, strong direct sunlight will reduce scent over time.

6.3.5 Rain

Heavy rain and wind will generally drive deer and other wildlife to cover. Light rain has little effect on deer, but is very handy for hunters as it makes the bush damp and quiet, and reduces scent carriage. Deer are uncomfortable in moderate rain because the background noise of falling rain and large drops hitting them from overhanging limbs. Under these circumstances, they will often just walk around feeding and regularly shaking the water from their coats. This shaking is a blessing to hunters as the noise and movement, and the distraction caused to the deer are a giveaway.

6.3.6 Feeding

The availability, palatability and nutritional value of particular foods will vary throughout the year due to seasonal and climatic conditions and aspect. As a result, animals will switch between preferred species of plants depending on their availability and condition.

Deer have evolved as prey animals and prefer to spend their time in cover or where they feel secure. With a large rumen they can ingest large quantities of bulky plant food then return to safe areas to lie down (bed) and ruminate (chew the cud). For most species this means that when undisturbed they tend to feed and bed on a 2-4 hourly cycle. In general though, the majority of movement will be at dawn and dusk and sometimes at night. Deer graze and browse, that is, taking ground-level plants, as well as food from higher shrubby plants and trees. Each species has its own preferences which may vary according to habitat, some are especially selective in their feeding habits.

Some feeding areas will be very important to the local deer population and once identified can provide a strategic advantage if used wisely. Crops and pastures feature highly in the list of important areas for deer in fringe country. Access trails to such feeding areas can also be an important piece of the jig-saw puzzle, as there may be times when the deer do not venture onto the feeding area until after dark. It may be more productive to sit over an access trail which may provide a target before light fades too much or look for "staging areas" areas. Staging areas can be small areas of grazing or browse away from the main feed areas. Deer may visit and feed here till dark before proceeding to more open feeding areas

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6.3.7 Resting

Observations taken by Ian Moore in the ADA Bunyip Sambar Enclosure during 1987-1989 showed the following pattern: "..the deer are more likely to be found resting during the day in summer than during winter, and are more likely to be found resting during the middle of the day than in the morning and afternoon." Even taking these observations into account resting or hiding in cover during the day depends on the level of disturbance, the quality of feed available and the temperature at the time.

Don't think deer don't move during the day. They do. Also, deer don't lay down from dawn to dusk. They get up to feed, they get up to drink, they get up to relieve themselves. However, when mature deer do feed during the day, it's generally within a close proximity of cover or their bedding area.

6.3.8 Response to threats

All deer prefer minimal human disturbance. If deer are able to live in an area free of human scent, sound and appearance they tend to frequent more open feeding areas in day-light. As the incidence of human disturbance increase, they respond by reducing their exposure, and will become nocturnal if subjected to high level of human disturbance. Budget's theory is that human scent will be 'burnt-off' if exposed to five hours of bright sunshine and thus will not be present to alarm deer after that period, however this theory has its limitations, and strong human scent such as sweat, urine or cigarettes will linger for days, and will have an electrifying effect on deer. This can be put to advantage by marking areas with strong scent to canalise deer into pre prepared ambush sites.

6.3.9 Movement

Movement and home range varies between species. Radio collared Red deer in Queensland indicated stags had a home range of 13.2 km^2 and hinds of 3.5 km^2, the research also indicated size of home range may be linked to seasonal conditions. Hog deer may live in small, overlapping home ranges of 0.11-2.23 km^2 (averaging ~0.7 km^2), with the majority of activity concentrated in a core area of only 0.056-0.358 km^2. Daily movements in areas where there is good feed and minimal disturbance may be as little as 400 m.

The herding deer may have "core areas" sometimes several kilometres apart (as seen in the Queensland Red deer study), using these at various times of year, but rarely being seen on the intervening land. It may sometimes be possible to identify the home range of a herd, group or individual by sightings and the signs that they leave behind.

6.3.10 Social behaviour and breeding strategies

Depending on the species deer may form herds (e.g. Red, Fallow, Rusa, Chital) or act in a more solitary- small family group manner (Sambar and Hog deer) according to age and sex. Solitary deer tend to be territorial, especially the males.

Herding animals are more inclined to form groups, members of a herd may often be closely related. Within the herds there are often family and closely related clan groups which remain close together and may not be tolerant of other non-related herd members in close proximity.

Most deer have an annual mating period ("rut") which varies in timing with species. Red, Fallow and Rusa deer have ruts – concentrated periods of mating activity (March April for Red and Fallow deer and July-August for Rusa) and while there are peak breeding times for Sambar, Hog deer and Chital in Australia they can breed all year round.

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Stags from these later 3 Asian species can be in hard antler or velvet at any time of the year and the stags from these species have been observed to mate when in velvet. Mating activity for these species is dictated by condition of the hinds, and hinds being in oestrous rather than seasonality or photoperiod (day length).

Around the rut males become more aggressive (sometimes also less timid towards people) and tend to move more outside of their normal range making them unpredictable and more susceptible to hunting. Chital, Red, Rusa, Fallow and some extent Hog deer stags all vocalise during the rut/peak breeding times. Sambar do "bell" and vocalise when in rut or a stag is in attendance of a hind in oestrus – but this is rarely heard in Australia. Red, and Fallow deer and to a lesser extent Rusa and Sambar, will all respond to calling in rut as well as to hind/doe and calf calls.

Females of herding species often leave the herd to have their young, returning only when the young are strong enough to run with the herd. For the first few days of life young deer are often left hidden in cover for hours, during which time their mother feeds, then returns to suckle them.

The "solitary" deer (Sambar and Hog deer) are sometimes seen in numbers/aggregations on feed areas. These groups are not herds, if disturbed or when returning to resting or cover areas the deer disperse to their own home range areas as individuals or small family units (e.g. a hind, and her fawn and possibly yearling) not as a herd.

Practice Questions

Q13. Name four things that effect deer behaviour:

1.

2.

3.

4.

Q14. In your own words, give one reason why a hunter should study animal behaviour:

Q15. Does local weather have an impact on the behaviour of deer?

Yes No

Q16. Does a hunter need to have a good understanding of the hunting area?

Yes No

Q17. What is a "thermal"?

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Q18. Cold air flows uphill.
True False

Q19. Which of the following allows deer to maximise their scent detection?
Moist humid air Hot dry air

Q20. Do deer like heavy rain and wind?
Yes No

Suggested Reading Material

Alsheimer, Charles, 2006. Strategies for Whitetails Krause Publications Iola Wisconsin USA.

Downes, Max. 1983. The Forest Deer Project 1982. A Report to the Forest Commission Victoria. A.D.R.F., Melbourne.

Harrison, Mike. et al. 2006. Observations on the reproductive behaviour of sambar deer (Cervus unicolor unicolor) in a bush enclosure in Victoria, Australia. A.D.R.F., Melbourne.

Herndon, Brad, 2003. Mapping Trophy Bucks, Krause Publications Iola Wisconsin USA.

Moore, Ian. 1994. Habitat Use and Activity Patterns of Sambar (Cervus unicolor) in the Bunyip Sambar Enclosure.

Shea, Stephen. et al. 1990. Social Behaviour, Movement Ecology and Food Habits in Ecology of Sambar Deer on St. Vincent National Wildlife Refuge, Florida, Bulletin of Tall Timbers Research Station, Tallahassee, Florida.

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7. Deer physiology and humane shot placement

7.1 Points covered

1. Deer physiology and the most effective way to kill a deer.
2. Behaviour of wounded deer.
3. Determining death of a shot animal.

7.2 Deer physiology

Deer depend on a complex central nervous system (CNS) (brain and spinal cord) that allow them to respond to widely and rapidly varying conditions. Sustaining the CNS requires an effective circulatory and respiratory system (heart & lungs) to provide a continuous supply of oxygen and energy.

The ethical objective of hunting is to destroy the CNS or the blood supplied to it by the heart and lungs with a ballistically capable calibre and projectile in the most rapid and humane manner possible. A sound knowledge of the ADA protocol, deer behaviour and physiology will ensure good animal welfare outcomes.

7.3 Best practice bullet placement for deer and other species

A model for assessing the relative humaneness of pest animal control methods. Second edition 2011, ISBN: 978-1-921575-26-6 notes that the "Chest Kill Zone", comprising the heart, lungs and base of the spine, is effective for ground shooting operations. ADA Protocols require the shot to be directed to the Chest Kill Zone, with the Brain Kill Zone reserved for close range follow-up shot if the chest shot does not immediately incapacitate the animal.

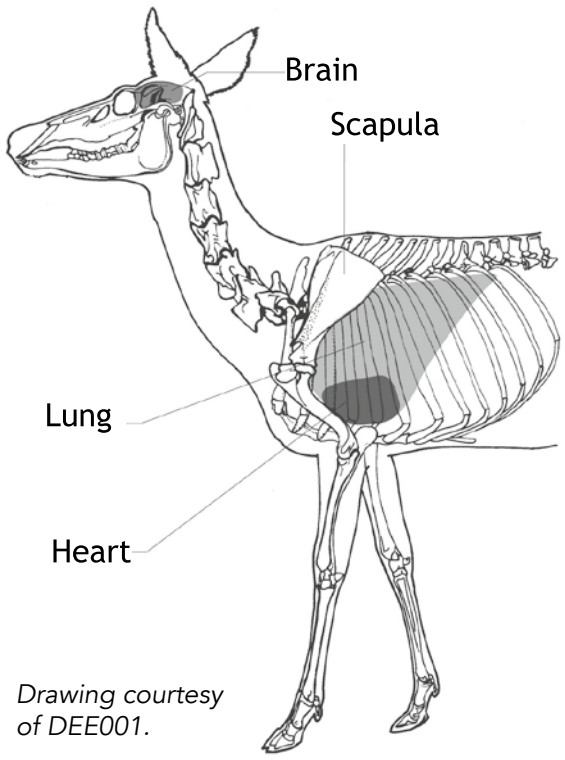
7.4 The Chest Kill Zone

7.4.1 Broadside presentation

This is the recommended shot. It presents the largest target area involving the heart, lungs and other vital structures in the chest.

7.4.2 Frontal presentation

Although there is an approximately triangular area on the front of the chest where well-placed bullets will result in rapid death, this type of shot is best avoided as the bullet may penetrate right through the rumen (and possibly the haunch) and lead to wounding. Note: Frontal shots should only be taken when there is an unobstructed view of the chest.



Drawing courtesy of DEE001.

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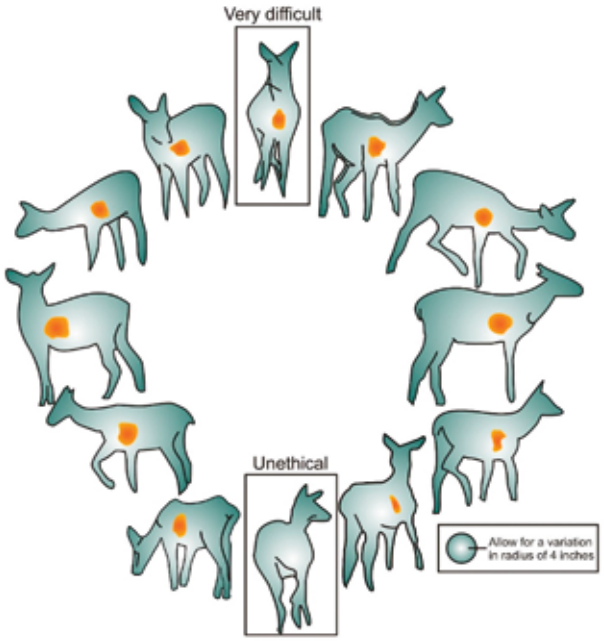
7.4.3 Frontal oblique presentations.

The 'deer clock' illustrates various oblique positions and demonstrates the variable size of the target area depending on the angle at which the deer is presented to the marksman. The target area decreases as the deer moves away from the broadside position. There is no substantial difference in right or left frontal oblique shots.



7.4.4 Posterior (rear) oblique presentations

Left and right posterior oblique shots are not identical. The rumen occupies a large area on the left side of the abdomen and this influences the angle at which the target area in the chest can be approached. For terminal ballistic and carcass contamination reasons it is recommended that the left rear oblique shots should be angled (not more than 45° from a line drawn perpendicular to the side) to avoid the rumen. Right rear oblique shots may pass through the liver before entering the chest. This causes substantial liver damage and extensive haemorrhage.

7.4.5 The Head and Neck Kill Zones

Head shots, or more correctly brain shots are considered a high wounding risk and are not supported in ADA Programs. The head of a deer is likely to move when the shot is being taken and the brain is a very small target, the size of a tennis ball in red deer, so a shot that is only slightly misplaced can result in serious unnecessary suffering for the deer. Neck shots are also generally discouraged. Hunters should be aware that a neck-shot deer may be paralysed but fully conscious.

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7.5 Body size variation between species

It might be assumed that 'best practice' for Sambar or Red deer would apply equally to Fallow deer. Unfortunately, the disparity in size between large and small deer has a significant influence on shot placement. In general, in the smaller deer (either species or calf/fawn) the angle of oblique shots needs to be reduced if the heart, lungs and large blood vessels in the chest are to be hit consistently.

7.6 Behaviour of wounded deer

Wounded deer must be located and killed as quickly and humanely as possible with a second shot to a vital area as above. Time to death should be no longer than 5 minutes. Due to field variables, every deer will react differently to being shot. Some animals may show no visible reaction to the shot, and may stand or run off as if not hit. Deer shot in the spine or nerve bolus of the high chest will usually collapse on the spot, but if the shot is slightly off the deer will collapse then jump up and run away, heart and lung shot deer may run as if not hit, a gut shot deer will hunch up and walk away, a heart shot deer will often "rear up" then run, sometimes for hundreds of metres.

The key is shot placement and noting the behaviour of the deer before and after the shot. It is important not to chase a wounded deer, give it time to lay down without harassment and it will often succumb to wounds. Hunter ethics and the ADA protocol require hunters to always follow-up on all shots fired unless there is convincing evidence of a complete miss. Remember too that wounded deer do not always leave a clear blood trail.

7.7 Determining death of a shot animal

Shot animals must be checked to ensure they are dead. Always approach the animal from the dorsal (spinal) side to prevent injury from the involuntary kicking legs. Death of shot animals can be confirmed by observing the following:

1. Absence of rhythmic, respiratory movements;
2. Absence of eye protection (blink) reflex;
3. A fixed, glazed expression in the eyes; and
4. Loss of colour in mucous membranes.

If death cannot be verified, a second shot to the head from a safe distance (to prevent 'splash back' to the shooter from bone or rock fragments from the muzzle blast) should be taken immediately.

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Practice Questions

Q21. Do deer always show a reaction when shot?

Yes No

Q22. Every effort must be made to stalk as close as practicable to reduce the risk of wounding.

True False

Q23. Sustaining the CNS requires an effective circulatory and respiratory system to provide a continuous supply of oxygen and energy.

The circulatory and respiratory system is made up of the h _ _ _ _ and l _ _ _ _._

Q24. List four methods for confirming the death of a shot animal:

1.

2.

3.

4.

8. Firearm safety, proficiency and ballistic selection

8.1 Reason for learning

Firearm Safety is paramount and every precaution must be made to protect those involved in operations and the general public. Shooting proficiency and a sound knowledge of hunting firearms and ballistic are keystones to effective deer management operations.

8.2 Points covered

1. "Situational Awareness" and Ensuring Public Safety.
2. Firearms safety in field situations.
3. Transport and Storage of Firearms.
4. Night operations.
5. Firearm, calibre and ammunition selection.
6. Basic firearms maintenance.
7. The ADA deer management marksmanship qualification.

8.3 "Situational Awareness" and ensuring public safety

Human safety and animal welfare are key priorities of DMP Control Operations. Situational Awareness is maintained by individuals making all effort to understand the tasks required of them in the DMP, and through a detailed understanding the DMP Standard Operating Procedures list the actions required for safe work practices and for public safety during deer control operations.

Operations are only open to ADA members who are:

1. DMP accredited;
2. Financial members of ADA; and
3. Hold a current Firearms licence endorsed for hunting.

Depending on the operational arrangements, treatment / management areas may or may not be signposted and closed to the public. Closing an area cannot be relied upon to guarantee there will not be members of the public in the treatment area. Operations have complex interactions and "situational awareness" is a priority.

Situational awareness of the operational environment includes the following:

1. **Ground and positional awareness.**

   Be aware of your physical location and the location of others in the area of operations. Operators must follow the "flow" of the operation and anticipate what you and other operators may do, deconflicting and raising issues before they occur and adapting to rapidly changing situations.

2. **Taking the shot**

   The shooter must know where the shot will go, and where it will stop, and the projectile must always stop within the boundaries of the treatment area. The projectile path must be clear with a suitable backstop and no ricochet risk. Do not shoot at a sky-lined animal. Your target must always be clearly identified, and there must be no risk to other animals, humans or infrastructure being struck by the projectile should it pass through or miss the target animal.

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3. **Pre-shot risk assessment**

Prior to taking a shot, operators are to ensure that:

i. There are no other deer that may be wounded by the projectile passing through or missing the targeted individual.

ii. There is absolutely no chance of damage to people, property or livestock of the projectile passing through or missing the targeted individual.

8.5 Firearms safety in field situations

Common firearms safety requirements in the DMP are:

1. If the firearm is not in your hands it must be unloaded (no rounds in chamber or magazine, firearm is unable to fire);
2. Firearms are only to be loaded in operational zones;
3. Firearms must be pointed in a safe direction at all times;
4. Do not use your rifle scope to locate/search for animals. Use binoculars or a handheld thermal device for this purpose;
5. Do not leave a firearm or ammunition unattended (out of arms reach);
6. Do not have a loaded firearm in camp or in a vehicle (unless shooting from a vehicle IAW DMP SOP's);
7. When not in use, firearms are to be stored in a locked container;
8. Firearms are to be unloaded when negotiating obstacles; and
9. Wear a blaze orange hat or vest at all times.

8.6 Transport and storage of firearms

Operators must "shown clear" to another person prior to storing firearms. Firearms and ammunition are to be transported and stored in accordance with State firearms law. This usually requires firearms and ammunition being secured separately and out of site in hard plastic or metal cases that are locked and secured to a pillar or similar strong point within the vehicle with a chain or cable and padlock.

For utility vehicles, firearms may also be secured and transported in locked metal toolboxes or draws built into the vehicle tray that are secured to the vehicle tray or chassis and locked with a solid padlock. Rifle bolts should be removed if possible and stored separately from the firearm. If the rifle bolt cannot be removed, a trigger lock or action lock is to be fitted.

Note: It is recommended that hunting and butchering knives are to be similarly stored.

8.7 Night operations

There are significant additional safety and animal welfare risks during night operations, while spotlighting or using night vision devices. Fatigue and restricted vision add significant complexity to the operation, as do unseen obstacles. Operators must be well versed with DMP SOP for night shooting (this includes rehearsing procedures) and also very familiar with the treatment area, before conducting night operations, especially the location of obstacles, safe backstops and the likely escape routes used by animals.

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8.8 Firearm selection

Ethical hunting and the animal welfare aspect of wildlife management by ground shooting requires taking an ethical and killing shot, or taking no shot. Firearms used for DMP's should be well maintained and fully functional as designed by the manufacturer. Firearms must be fitted with an optical sight (telescopic sight, reflex or "red dot" sight, or night vision sight). The benefit of an optical sight is that they give the shooter a magnified view of the target; the risk of using an optical sight is that they restrict the shooter's peripheral vision.

8.9 Calibre choice

The calibre chosen must conform with State Regulations and ADA protocol to ensure it is suitable for the wildlife to be managed. ADA members participating in the program are required to be able to meet the marksmanship proficiency described in this section. Marksmanship is a perishable skill, and requires regular and frequent practice; quite simply, if you cannot find time to practice your marksmanship regularly you will not meet the requirements of the DMP.

8.10 Ammunition selection

The requirement for minimum calibres for deer is based on ballistic capability, or "the combination of calibre and projectile that delivers sufficient energy into the vital systems of an animal under the worst possible conditions to produce a humane kill". Projectile weight and construction are the most reliable indicators of ballistic capability.

For any given calibre, select the heavier bullet weights for hunting. Animal welfare and hunter ethics requires the use of projectiles that expand reliably and deliver sufficient energy to shut down vital systems. Hunters should select quality ammunition with reputable projectiles for hunting. The use of military full metal jacket, "match" or target ammunition, or rapidly expanding shallow penetration "varmint" projectiles is not permitted.

8.11 Firearms maintenance

Firearms must be well maintained and should only be modified by a competent and qualified gunsmith.

The following points will keep your rifle working well.

1. **Pre-operational checks.** Check that the action and scope mounts screws are tight and that your rifle has not changed its point of impact before each operation. Ensure you check the rifle is zeroed (sighted in) to your desired Point of Aim with the ammunition you will use on the operation.
2. **Lubricate sparingly.** Remove excess lubricant out of the barrel and action, it will increase fouling and will send your shots high due to increased chamber pressures. Clean the firearm daily, or more frequently in bad weather, but don't over lubricate. Always shoot a dry bore, and remember too that a film of oil on bolt face will increase chamber pressures and send rounds high.
3. **Check for fouling.** Fouling destroys accuracy. Powder fouling is sooty black and simple to remove with a bronze wire bore brush or cloth patches and gun oil. Copper fouling presents as copper coloured streaks at the muzzle. Copper fouling is removed with cloth patches and a good copper solvent.
4. **Transport firearms in hard cases.** Transport and store your firearms in a metal or injection moulded plastic gun case to protect the firearm and the sighting system from damage.

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5. Check the zero. After a fall or if the firearm is dropped (even in the case), or after a flight, it is good practice to check that rough handling etc has not damaged the firearm, that screws are tight and that the rifle is still zeroed.

8.12 Daily "Firearm Function Test"

Prior to each period of shooting (day / shift) perform the following Firearm Function Test to ensure that the firearm functions as the manufacturer intended, and that the safety catch works:

1. Check that the firearm is unloaded, and that there is no ammunition in the magazine.
2. Point the firearm in a safe direction, cock the action, close the bolt and set the safety catch to "Safe";
3. Squeeze the trigger, nothing should happen; and
4. Set the safety catch to "Fire" and squeeze the trigger. The action should fire.

You have now proved that the safety catch works, and that the firearm is safe to use.

8.13 The ADA deer management standard marksmanship qualification

The ADA deer management standard qualification must be taken with a firearm of the minimum legal calibre permitted under state or territory law for the wildlife being managed. The DMP Marksmanship qualification accreditation course of fire is presented in the table below.

Shooting Proficiency – Rifles

Conditions:

- Participant using their own rifle of suitable calibre for the animal to be managed.
- No supports (i.e. bipods, packs etc) are permitted for prone shooting. Shooting sticks are permitted for standing supported position. Slings are permitted for standing unsupported (offhand) shooting.
- Using a 15cm round target, shoot the following course of fire:
- **At 100m.** Fire 2 shots from a bench (self-supported), and 2 shots using the standing post/tree supported position or prone position.
- **At 75m.** Fire 2 shots from the sitting position or kneeling position or standing post/tree supported position.
- **At 50m.** Fire 2 shots from the standing unsupported (offhand) position (slings permitted).

Pass. A minimum of 7 shots must strike within the diameter of the 15cm target.

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Shooting Proficiency – Shotgun (if required)

Conditions:

- Participant using their own shotgun of suitable calibre and legal configuration (if allowed in the state you are operating in), and using suitable and legal ammunition types for the animal to be managed in the State where the wildlife management program will occur.
- **Solid ammunition.** Using a 15cm round target, shoot the following course of fire:
- **At 50m.** Fire 2 shots from the standing unsupported position.

Pass. A minimum of 2 shots must strike within the diameter of the 15cm target.

- **Multiple projectile ("Buckshot" or "Letter Shot") Ammunition.** Using a 30cm round target, shoot the following course of fire:
- **At 25m.** Fire 2 shots from the standing unsupported position.

Pass. A minimum of 70% of the shot pattern must strike within the diameter of the 30cm target.

9. Zeroing your firearm (sighting in).

9.1 Definitions

Group: a group is a minimum of 3 shots fired at the same Point of Aim.

Aiming Mark: the bullseye or other mark on the target used as a Point of Aim.

9.2 Abbreviations

CZP: Correct Zero Point (the point where you want the bullet to strike at the desired distance)

POI: Point of Impact (of a single shot)

MPI: Mean Point of Impact (the centre of a group of at least 3 shots)

POA: Point of Aim

ES: Extreme Spread (of a series of at least 3 shots e.g. a 3 shot group)

9.3 Reason for learning

Zeroing is the process of aligning the MPI of the group to the CZP on the target. A firearm that is correctly zeroed to the individual + reliable marksmanship = humane wildlife management. Zeroing, or sighting in a firearm allows the shooter to fine tune the firearm and ammunition used, and is a part of a regular marksmanship practice routine. Marksmanship is a perishable skill, and reliable marksmanship is achieved through regular shooting practice.

Before you can begin to zero your scope, check that the scope mounts have been correctly fitted to the rifle and that the mount screws have been torqued to the manufacturer's recommendations. Thread lockers are recommended for bases but not for rings.

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9.4 Table One. Zeroing equipment		
Ser	**You will need:**	**Check**
1	A sturdy shooting bench and chair.	
2	A bench rest or sand bags (front and rear).	
3	Your scoped firearm.	
4	At least 40 rounds of the ammunition you intend to use while hunting.	
5	Several paper targets.	
6	A spotting scope. (optional)	
7	Scope mounting tools.	
8	Hearing and eye protection, and normal range gear.	
9	A ruler.	
10	A bore sighter. (optional)	

9.5 Table Two: Zeroing Steps – Focus the Reticle		
Step	**Action**	**Check**
1	Make sure the rifle is unloaded and pointed in a safe direction.	
2	Turn up the magnification on the scope to the highest setting.	
3	Looking at a neutral background (such as a plain wall or a clear blue sky).	
4	Shoulder the rifle and look through the scope.	
5	Focus the reticle to your eye by turning the eye piece at the rear of the scope clockwise or counter clockwise.	
6	The reticle should be clear.	

9.6 Table Three: Bore Sight the firearm – Traditional Method		
Step	**Action**	**Check**
1	Make sure the rifle is unloaded and pointed in a safe direction.	
2	Place a target 25 metres downrange from your firing position.	
3	Place the rifle in a sturdy rest.	
4	Remove the bolt and magazine from the rifle so that you can see down the bore.	
5	Move the rifle until you can see the target through the bore.	
6	Centre the bore of the rifle onto the target as best you can.	
7	Look through the scope and locate the target aiming mark. If you cannot find the target, adjust the scope mounts.	
8	Once you have located the target aiming mark in the scope, gently adjust the scope windage and elevation turrets to centre the reticle onto the aiming mark.	
9	Look down the bore to confirm the firearm hasn't moved off target. This technique should have your MPI close to the CZP.	

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9.7 Table Four: Bore sight the firearm (Arbor bore sighter)		
Step	**Action**	**Check**
1	Make sure the rifle is unloaded and pointed in a safe direction.	
2	Place the rifle in a sturdy rest.	
3	Select the correct arbor for the calibre of the rifle & attach it to the bore sighter.	
4	Place the bore sighter into the muzzle of your rifle.	
5	Look through the scope as if you are about to shoot.	
6	The scope reticle should be aligned to the grid on the bore sighter.	
7	Looking through the bore sighter, adjust the scope windage and elevation turrets until the scope reticle lines up perfectly with the grid of the bore sighter.	
8	WARNING: To prevent serious damage to the firearm and to the shooter, make sure you have removed the bore sighter and any arbors from the end of the muzzle!	

Zeroing Steps – Live firing on a rifle range		
Step	**Action**	**Check**
1	Make sure the rifle is unloaded and pointed downrange or in a safe direction.	
2	Place out targets at 25m and 100m.	
3	Set yourself up for shooting. Use a sandbag or bench rest to support the front of the firearm and a smaller sandbag to support the rear of the firearm.	
4	Fire a shot into the 25m target. Using your spotting scope, locate your bullet hole on the target. Use the scope windage and elevation turrets to bring the POI to the CZP. If your bullet does not hit the target, you will need to boresight the scope again. Once you have adjusted the MPI onto the CZP at 25m, shift to the 100m target.	
5	Fire a shot into the 100m target. Use your spotting scope to note the "fall of shot" and continue to adjust the POI onto the CZP to meet your requirements.	
6	Fire a 3 round group at the CZP to confirm that the POA and MPI are on the CZP at 100m.	

Practice Questions

Q25. What is meant by "Situational Awareness"?

Q26. What are the key priorities of DMP Control Operations?

H – m _ n s _ _ _ _ y and a _ _ _ _ _ w _ _ _ _ _ _.

Q27. Closing an area will not guarantee there will not be members of the public in the treatment area.

True False

Q28. List 5 of the 7 common firearms safety requirements?

1.

2.

3.

4.

5.

Q29. If the firearm is not in your hand it must be unloaded:

True False

Q30. What are the DMP minimum requirements for transportation of a firearm?

Q31. What safety risks are involved in night operations, above and beyond day time operations?

Q32. What should we consider when selecting ammunition?

Projectile w _ _ _ _ _ and construction. Reliable e _ p _ _ _ _ _ n

Q33. Being a competent marksman requires lots of practice:

True False

Q34. The advantage of optical sights is a better view of the target. The disadvantage of optical sights is reduced peripheral vision:

True False

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Q35. Should rifle bores and bolt faces be wet or dry with oil before firing?

Wet Dry

Q36. Hunters should select quality ammunition with reputable projectiles for hunting. What types of projectiles should never be used for hunting?

1.

2.

Q37. Name 6 of the 10 items of equipment listed for zeroing a firearm?

1.

2.

3.

4.

5.

6.

Q38. In your own words, describe how to focus the scope reticule:

Q39. In your own words, describe how you would bore sight a firearm:

Q40. In your own words, describe the steps required to zero a firearm: