

PIG004 use of judas pigs

Prepared by Trudy Sharp & Glen Saunders, NSW Department of Primary Industries

Background

Feral pigs (*Sus scrofa*) have a significant impact on the environment and agricultural production and are a potential reservoir and vector of exotic diseases. Control methods include poisoning, trapping, exclusion fencing, ground shooting and shooting from helicopters.

Radio-collared 'Judas' pigs are used to locate groups of feral pigs that are difficult to find by other methods. This technique involves attaching a radio-collar to a feral pig and releasing it with the expectation that it will join up with other pigs. Feral pigs are gregarious, although not to the point of forming large herds as goats do. The nuclear social unit is based around one to several females and their offspring. Other individuals may loosely associate with these groups particularly older adult males when females are in oestrus.

Once their position is established, the feral pigs accompanying the Judas pig are either trapped or destroyed by shooting (refer to PIG001 *Trapping of feral pigs*, PIG002 *Aerial shooting of feral pigs* and PIG003 *Ground shooting of feral pigs* for further details on these methods of control). The Judas pig is usually allowed to escape so that it will search out other groups of feral pigs. Once eradication is achieved the Judas pig is located, then shot and the radio-collar retrieved.

This standard operating procedure (SOP) is a guide only; it does not replace or override the legislation that applies in the relevant State or Territory jurisdiction. The SOP should only be used subject to the applicable legal requirements (including OH&S) operating in the relevant jurisdiction.

Application

- The Judas technique is commonly used to locate remnant individual animals or groups of feral pigs in low density populations.
- It is most effective when used to mop up remnant populations of feral pigs, particularly in rough country, that are proving difficult or costly to control. The technique is not efficient where there are large numbers of feral pigs in the area.
- The Judas technique requires expensive telemetry equipment and skilled operators.

- It is preferable to use local adult sows that are familiar with the area and are already part of the social structure of the target population.
- The use of radio-collared Judas pigs to locate feral herds increases the effectiveness of ground and aerial shooting control operations particularly when eradication is the aim of the program.
- Trained dogs are sometimes used to detect, herd or flush out feral pigs so that they can be captured and used as Judas pigs. It is unacceptable to set a dog onto a pig with the intention of bringing it down, holding or attacking it.

Animal Welfare Considerations

Impact on target animals

- The technique can have negative impacts on the Judas pig through the following:
 - Capture, handling and restraint can cause anxiety and sometimes pain and injury when an animal struggles to escape;
 - Nearby shooting of cohorts – it is possible that pigs may be distressed when cohorts are killed. Also, the sound of gunshots and presence of people is likely to cause further fear and anxiety.
- The collar must be fitted correctly. Ill-fitting collars may cause chafing or constriction. Adverse effects of wearing the collar should be monitored by looking for irritation or hair loss under the collar. Expandable collars should be used where it is necessary to allow for growth in young animals.
- The collar or antenna can occasionally become snagged or entangled in branches/vegetation and impede movement.
- The weight of the collar and transmitter will not normally have a significant impact on the Judas pig, as pigs are relatively large animals. The lightest collar/transmitter available should always be used (< 5% of the body mass of the animal).
- To prevent hyperthermia, it is preferable to avoid capture and restraint of pigs when the weather is hot and/or there is high relative humidity.
- Pigs that sustain injuries during capture/restraint that would compromise their survival in the wild should be euthanased quickly and humanely by a rifle shot to the brain.
- If dogs are used to locate and flush feral pigs out from heavily forested areas, they must be adequately controlled to prevent them from attacking pigs.
- Whenever possible avoid capturing and handling when females are farrowing or have dependent young at foot. This will vary with season and area. Peaks in mating often occur in response to the flush of green vegetation that follows heavy rain or flooding, with farrowing occurring 112–114 days later. For example, in southern NSW, most births occur in summer and autumn, whilst in the monsoonal lowlands of Northern Territory there is a peak in births in the early dry season. Weaning age of piglets varies from 2 to 3 months. At times of farrowing, sows tend to move over less distances and are usually more cryptic which may reduce the effectiveness of any pig control conducted at this time.

Impact on non-target animals

- The use of Judas pigs is target specific and has minimal impact on other species.
- If dogs are used for locating feral pigs they must receive adequate care at all times. This includes food, water, shelter, safe and comfortable transportation, current vaccinations, worming, flea, tick and heartworm prevention, where appropriate. For more details refer to GEN002 *The care and management of dogs used in the control of pest animals*.

Health and Safety Considerations

- Take care to avoid accidental injury when capturing and restraining animals. Feral pigs can react quickly and unpredictably and are capable of causing significant injury. Adult pigs have sharp teeth and strong jaws and can inflict serious injury on the unwary. Boars also have tusks that are used for goring. Sows with litters are aggressive animals and should be approached with caution. They can initiate an attack especially when cornered away from their litter.
- Protective clothing, footwear and gloves may reduce the chances of injury when handling wild animals.
- Care must be taken when handling feral pigs and carcasses as they may carry diseases such as leptospirosis, Q fever, brucellosis, sparganosis, melioidosis and tuberculosis that can affect humans and other animals. Routinely wash hands after handling all pigs and carcasses. Carcasses can be heavy (> 100 kg), so care must be taken when lifting/dragging.
- Most transmitters run on a lithium cell. When lithium is exposed to air, it reacts violently and emits highly toxic fumes. If the lithium cell is accidentally ruptured, e.g. by a bullet when shooting pigs, then the area should be avoided for a few hours to allow the fumes to disperse.
- Firearms are potentially hazardous. All people should stand well behind the shooter when animals are being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.
- Firearms must be securely stored in a compartment that meets State legal requirements. Ammunition must be stored in a locked container separate from firearms.
- Adequate hearing protection should be worn by the shooter and others in the immediate vicinity of the shooter. Repeated exposure to firearm noise can cause irreversible hearing damage.
- Safety glasses are recommended to protect eyes from gases, metal fragments and other particles.

Equipment Required

Transmitting system

- The basic system includes a transmitter, power supply, antenna, material to protect the electronic components and a collar to attach the transmitter to the animal.
- Collars and transmitters should be as light in weight as possible. The total weight (collar, transmitter, battery, aerial and bonding material) should ideally be less than 5% of the animal's bodyweight. Detailed information and advice regarding size and suitability of collars can be obtained from retailers of radiotelemetry equipment.
- Collars should be made of materials which are durable; comfortable and safe for the animal; can withstand extreme environmental conditions; do not absorb moisture; and maintain their flexibility in low temperatures. Common materials used include flat nylon webbing, butyl belting, urethane belting, PVC plastic and tubular materials. The collar is closed with one or two clamps.
- Radio transmitters should always be tested before and after attachment to the animal (before release) to ensure they are functioning correctly.
- Whip antennae should be incorporated into the collar wherever possible to prevent snagging on vegetation
- Reliable radio transmitters with the longest battery life possible (i.e. around 5 years) should be used. It is preferable that they be fitted with mortality sensors.

Receiving system

- The receiving system detects and identifies signals from transmitters. A basic system consists of a battery-powered receiver, a receiving antenna, a recorder (human or mechanical) and accessories such as cables, a speaker or headphones. Although not a complex skill, some training in the interpretation of signal strength and direction is required.

Firearms and ammunition

- If euthanasia of injured animals is required, a smaller calibre rifle such as .22 magnum rimfire with hollow/soft point ammunition is adequate at short range (< 5 metres).
- If shooting animals at a distance, refer to **PIG003 *Ground shooting of feral pigs*** for firearm and ammunition requirements.

Procedures

Capture of pigs

- Animals to be used as Judas pigs should be caught without causing injury and excessive stress.
- It is preferable to capture and release feral pigs from, and to, familiar surroundings.
- Judas pigs are usually selected from a group of pigs that have been captured during trapping, but, sometimes individuals are caught using dogs. If dogs

are used they should only bail the pig up, not bite or attack. Trained working dogs such as kelpies are preferred as they are not usually aggressive. As a precaution, a muzzle can be fitted to the dog to prevent bite injuries. Once the pig is caught, the dogs should be restrained whilst the collar is being attached.

- Adult female pigs are preferred for use as Judas animals. Older adult males are not as effective as females as they may take a lot longer to make contact with other pigs and will only associate with them infrequently. Immature pigs may also be less effective as they are often excluded from family groups and tend to form temporary groups of their own. There appears to be no practical advantage in using the sexual attraction of sows induced into oestrus.
- Heavily pregnant females, females with young at foot, very young, very old or weak/sick/injured animals must not be used as Judas animals.

Fitting of collar and releasing of Judas pig

- At least two people must be present when fitting a collar – one to restrain the animal and one to fit the collar. To prevent injury to the animal and/or the operators it may be necessary to use chemical restraint. Operators performing chemical restraint must be trained and experienced in the techniques and sedative drugs appropriate for use in feral pigs.
- The collar should be fitted snugly on the neck to ensure that no irritating movement or rubbing occurs, but at the same time enough space should be left to allow the animal to behave normally and for it not to experience any discomfort while moving or feeding. As a general guide you should be able to slip two fingers between the animals' neck and the collar.
- To reduce the risk of irritation on the neck, the collar should be fastened at the side and any metal fitting should be covered or as least smoothed on the inside.
- The Judas pigs should be clearly identifiable (e.g. with brightly coloured paint, highly visible collar or ear tags) so that they can be easily distinguished from other pigs in the group.
- Remove magnet (battery stop) or turn on the collar if it is fitted with a magnetic switch and check transmitter frequency before releasing pig.
- Once the collar has been attached and before release, observe the animal for any unusual behaviour that could indicate that the collar may cause a problem (e.g. affecting balance, impeding movement or causing irritation to the skin)
- The Judas pig is then released in the target area. If the animal needs to be translocated to another area it must be appropriately restrained during transportation. Animals should not be restrained for more than one hour and they must be protected from extremes of temperature during transportation.

Location of feral pig groups

- The Judas pigs should be given time to meet up with other feral pigs (around a week or two).
- Radio tracking is commenced and when the position of the feral group is established, the pigs are trapped or destroyed by shooting. Refer to the appropriate SOP for further details:
 - PIG001 *Trapping of feral pigs*
 - PIG002 *Aerial shooting of feral pigs*
 - PIG003 *Ground shooting of feral pigs*
- The process of tracking down individuals or groups of feral pigs and then shooting or mustering, is repeated until only the Judas pigs remain in the area. The Judas pigs are then destroyed by shooting and the collar retrieved.

Further Information

Contact the relevant Commonwealth, State or Territory government agency from the following list of websites:

Commonwealth	Department of Environment and Heritage http://www.deh.gov.au/
ACT	Environment ACT http://www.environment.act.gov.au/
NSW	NSW Department of Primary Industries www.dpi.nsw.gov.au
NT	Parks & Wildlife Commission www.nt.gov.au/ipe/pwcnt/
QLD	Department of Natural Resources and Mines www.nrm.qld.gov.au
SA	Animal & Plant Control Commission http://sustainableresources.pir.sa.gov.au
TAS	Department of Primary Industries, Water & Environment www.dpiwe.tas.gov.au
VIC	Department of Primary Industries, Agriculture & Food www.dpi.vic.gov.au
WA	Agriculture WA www.agric.wa.gov.au

References

- Agriculture and Resource Management Council of Australia and New Zealand (2000). AUSVETPLAN (Australian Veterinary Emergency Plan). Wild Animal Management Manual: Strategic and Operational Guidelines. Edition 2.0 Version 2.1. Document available electronically from the Animal Health Australia website: <http://www.aahc.com.au/ausvetplan/wamfinal.pdf>
- Allen, L. R. (1991). The eradication of feral goats from an island national park. Australian Vertebrate Pest Conference, Adelaide South Australia, April, 1991. South Australian Animal and Plant Control Commission. pp. 22–26.
- American Veterinary Medical Association (2001). 2000 Report of the AVMA Panel on Euthanasia. *Journal of the American Veterinary Medical Association* 218, 669–696.
- Anon. (1998). Guidelines for the Capture, Handling and Care of Mammals. American Society of Mammalogists.
- Choquenot, D., McIlroy, J. & Korn, T. (1996). *Managing vertebrate pests: pigs*. Australian Government Publishing Service, Canberra.
- DOC (2002). Judas Workshop. Proceedings of a workshop on the use of radio telemetry for animal pest control. Department of conservation, Otago Conservancy, Dunedin, NZ. Document available electronically from the Department of Conservation website: <http://www.doc.govt.nz/Conservation/002~Animal-Pests/Judas-Workshop-2002/index.asp>
- Harden, B. and Bayne, P. (1998). Judas goats. Notes from the Vertebrate Pest Unit. 2 (4/98) pp 4–10.
- Henzell, R. P. (undated). Controlling feral goats with the aid of Judas goats. Document available electronically from the Department of Primary Industries and Resources, South Australia website: http://www.pir.sa.gov.au/pages/sus_res/animal_plant/goat1.pdf
- Henzell, R. P. (1987). Methods of controlling feral goats in special situations: A progress report. Australian Vertebrate Pest Control Conference 8: 264–267.
- Keegan, D. R., Coblenz, B. E. and Winchell, C. S. (1994). Feral goat eradication on San Clemente Island, California. *Wildlife Society Bulletin* 22: 56–61.
- Kenward, R. E. (2001). *A manual for wildlife radio tagging*. Academic Press, London.
- Longair, J. A., Finley, G. G., Laniel, M. A., MacKay, C., Mould, K., Olfert, E. D., Roswell H. and Preston, A. (1991). Guidelines for euthanasia of domestic animals by firearms. *Canadian Veterinary Journal* 32: 724–726.
- Mech, L. D. and Barber, S. M. (2002). A critique of wildlife radio-tracking and its use in national parks: A report to the U.S. National Park Service. U.S. Geological Survey, Northern Prairie Wildlife Research Centre, Jamestown, N.D. Document available electronically from the Northern Prairie Wildlife Research Centre website: <http://www.npwrc.usgs.gov/resource/2002/radiotr/radiotr.htm>
- McIlroy J. C. and Gifford, E. J. (1997). The 'Judas' pig technique: a method that could enhance control programmes against feral pigs, *Sus scrofa*. *Wildlife Research* 24: 483–491.
- Samuel, M. D. and Fuller, M. R. (1996). Wildlife radiotelemetry. In: T.A. Bookhout (Ed). Research and management techniques for wildlife and habitats. 5th ed., rev. The Wildlife Society, Bethesda. pp 370–418.

Standing Committee on Agriculture, Animal Health Committee. (1991). Model Code of Practice for the Welfare of Animals: Feral Livestock animals – Destruction or Capture, Handling and Marketing. CSIRO, Australia.

Taylor, D. and Katahira, L. (1988). Radio telemetry as an aid in eradicating remnant feral goats. *Wildlife Society Bulletin* 16: 297–299.



Natural Heritage Trust

Helping Communities Helping Australia

A Commonwealth Government Initiative



**NSW DEPARTMENT OF
PRIMARY INDUSTRIES**

Disclaimer

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Commonwealth and New South Wales Governments or the Commonwealth Minister for the Environment and Heritage and the New South Wales Minister for Primary Industries respectively. While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the Commonwealth and New South Wales do not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.