



WILDLIFE ETHICS COMMITTEE

Use of microchips for marking wildlife policy

What is a microchip?

Microchips (also known as passive integrated transponders or PITs) are useful long-term identification markers implanted under the skin or into the muscle or body cavity of an animal. They are not easily lost nor removed and do not interfere with an animal's normal functions.

A microchip is a small electronic device about the size of a grain of rice. Each microchip contains a silicon chip that is encoded with an individual number. The components are sealed in biocompatible glass which renders the chip inert when implanted into an animal. To read the number, a scanner is moved over the implanted microchip and a signal passes between the chip and the scanner. The scanner translates the signal and displays it on a screen as a number.

Several different brands of microchips and associated implanting and scanning equipment are in use in Australia. Different brands are only partially compatible so always check that your scanning equipment can read the microchips being implanted.

Identification of wildlife

Animals should only be marked permanently when a project is sufficiently funded, to ensure that efforts can be made to recapture/relocate the marked animal/population. The method chosen to identify individual animals must be that which causes the least distress and interference with the normal functioning of the animal within the context of the scientific purpose and should be the most appropriate for the species and the project. Microchips should only be used if long-term marking of individual animals is required. For short-term marking, less-invasive methods (e.g. fur clipping; application of non-toxic paint or ink to ears or tail) must be used instead.

Microchipped animals are generally identified when they are captured and scanned with a hand-held scanning device. Microchips are placed in various recognised positions of the body, depending on the species being implanted. Be aware that microchips may migrate within the animal, so when checking for an existing microchip, the whole body should be scanned.

In some situations microchips have the potential to generate large amounts of accurate data if remote scanners can be installed to achieve adequate reception and the instrumented animals are likely to move in close proximity to the recorders (e.g. on walkways).

Identification of individual animals requires South Australian animal ethics committee approval if performed for scientific purposes, but not if performed for routine husbandry.

Method of application

Implantation of microchips is an invasive identification procedure and must be performed, or closely supervised, by an experienced practitioner. Investigators and teachers must be aware that the effects of a series of stressors, such as trapping, handling, transportation, sedation, anaesthesia and marking can be cumulative.

A sterile application technique should always be used, making the concurrent administration of antibiotics generally unnecessary. Microchips are available pre-sterilised and individually packaged in a disposable single-use needle and this is the preferred application method. Where a needle is to be re-used, it must be heat sterilised to a surgical standard (autoclaved) between each individual use, and regularly sharpened. Used needles should be disposed of appropriately.

Prior to implantation, the implant site should be swabbed with dilute topical antiseptic (e.g. Betadine or alcohol). Following insertion, manual pressure should be applied to the entry point, which can then be sealed with a suture or a drop of tissue-glue to help prevent loss of the microchip through the wound if deemed necessary.

The size of the administering needle is relatively large and this creates some safety issues when used in smaller animals.

Microchips should not exceed 5% of the body weight of the animal.

The Wildlife Ethics Committee recommends the following taxa specific implant sites and administration methods. Implant sites are consistent with recommendations of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) with variations that take field conditions into account.

BIRDS

Site

The left pectoral muscle is the recommended implant site for most birds as subcutaneous implants can result in migration problems. Small species can be implanted under the skin in the left pectoral region. Larger birds (over 1.5 kg) may be implanted under the loose skin at the base of the neck. For penguins, subcutaneous implantation at the base of the neck or upper back is recommended. Ratites up to four days old are implanted in the pipping muscle, behind the head on the left.

Restraint

Birds above budgerigar size can be microchipped without the use of anaesthesia if the operator is sufficiently experienced. For birds smaller than this, anaesthesia is recommended for the safety of the bird.

Notes

Direct the implanter in a downward direction. Microchips are particularly useful for those species where tarsal or leg bands are not recommended (e.g. penguins).

MAMMALS

Site

Large mammals (sheep, goats, horses) should be implanted under the skin at the base of and behind the left ear, as this site is accessible and has a comparatively low rate of microchip migration or loss. Most other mammals should be implanted between the shoulder blades, left of the midline. When there is insufficient loose skin between the shoulder blades (e.g. bandicoots) microchips may instead be implanted subcutaneously on the lateral side of the animal's rump where insertion can be achieved more easily. Seals and sea-lions are normally implanted along the dorsal midline, a short distance (approximately 1/10th of the body length) from the base of the tail (P. Shaughnessy, pers. comm., 5 November 2009).

Restraint

Where body mass is below 100 grams, general anaesthesia is recommended for the safety of the animal. Chemical restraint is recommended when implanting macropods as this can reduce the risk of capture myopathy.

REPTILES

Site

Lizards over 125 mm snout-vent length should be implanted into the left body side just in front of the hind leg (inguinal region). Small lizards (below 125 mm snout-vent length) should be implanted in the abdominal (coelomic) cavity. Care must be taken to avoid perforation of internal organs. Tortoises (over 100 mm in length) should be implanted in the left hind-leg socket. For snakes, the implant site is the left side, just in front of the vent.

Restraint

Reptiles can be microchipped without anaesthesia where their weight exceeds 100 grams. Smaller animals will require local and/or general anaesthesia.

Notes

The wound should be sealed with tissue glue in all reptiles. Reptiles should be implanted several weeks before the end of their active season, in order to allow recovery before cooler weather slows the healing process.

FISH

Site

Microchips may be inserted in the left side at the anterior base of the dorsal fin, or for fish under 300 mm in length, into the abdominal (coelomic) cavity. If human consumption of the research animals is potentially possible, tags should be implanted into the shoulder region of the fish, as close to the head as possible (to minimise risk of ingestion if the fish is subsequently recaptured and filleted) and tags should be encapsulated in food safe plastic.

Restraint

Anaesthesia is recommended for the safety of the fish as struggling during handling can result in injury.

Notes

Implantation into the gut cavity can be problematic as it can damage internal organs. If implanting into the flesh, the tag should be inserted as close to the interface between the skin and muscle as possible (i.e. very shallow). This is necessary because regular muscular contractions are known to dislodge tags in some species.

AMPHIBIANS

The abdominal (coelomic) cavity is suitable. The lymphatic cavity has been used but microchips reportedly tend to migrate. Implanting subcutaneously in the hind leg is an alternative.

Notes

Tissue glue should be used to seal the insertion site. Local and/or general anaesthesia is recommended due to the size of the needle.

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