

THE UNIVERSITY OF NEW ENGLAND ANIMAL ETHICS COMMITTEE (AEC)

STANDARD OPERATING PROCEDURES FORM (For Domestic Fowl, Native Fauna/Wildlife, Domestic Livestock & Laboratory Animals)

Shell Marking Technique – W19

Objective:

This marking technique involves making a hole in the marginal scutes of the carapace or plastron in order to create a unique pattern based on a numbering system for future identification.

This technique is only suitable for marine and freshwater turtles where the carapace consists of bony plates covered by epidermal horny scutes.

Permanence of shell marking is relative and must be assessed against the monitoring outcomes of a project. In some species, such as the oblong turtle (*Chelodina colliei*), hole markings tend to grow out after about 12 months, and therefore it is not a useful marking method for studies >12 months. Microchips are a better marking alternative for longer term studies on such species. In comparison, holes on adult western swamp tortoises (*Pseudemys umbrina*) can remain visible for 10-25+ years. Juveniles can be marked but will need to be re-marked with growth. Photo identification can be used in addition to shell hole markings to help identify individuals.

Details of Procedures:

Materials:

The following equipment is needed to undertake shell marking:

- A drill or rotary tool
- Drill bits or cutting wheels
- A bronze wire brush, for cleaning the drill bits
- A vial of 70% ethanol and cigarette lighter or portable blow torch for flaming or sterilising solution
- Cotton wool or disinfectant wipes

Animal handling:

If an animal is seriously injured during handling or marking, seek veterinary care.

Cleaning and sterilizing

All equipment used to cut, file, drill or incise must be cleaned and sterilised between each animal and prior to returning the equipment for storage.

Flaming is the most common method for cleaning and disinfecting equipment. Using 70% isopropyl alcohol medical swabs is a suitable alternative.

Flaming:

1. Use cotton wool to wipe the equipment to be used for drilling, cutting or filing with 70% ethanol to remove dirt and any leftover tissue etc. Note: Ethanol is a highly flammable substance. Care will be taken to not get ethanol on anything other than the equipment needing to be flamed. Ensure a clear workspace and that the ethanol container is in a stable position and unlikely to be knocked over. Clean up any spillages immediately, including any ethanol on hands and clothing, and if required wait until the spilt ethanol has evaporated before continuing with the procedure.
2. Flame the cutting part with a lighter or portable flame torch. Note: the flame from ethanol is not visible in sunlight.
3. Allow the equipment to cool before using it on an animal.
4. DO NOT allow contact with anything else before the next animal is sampled.

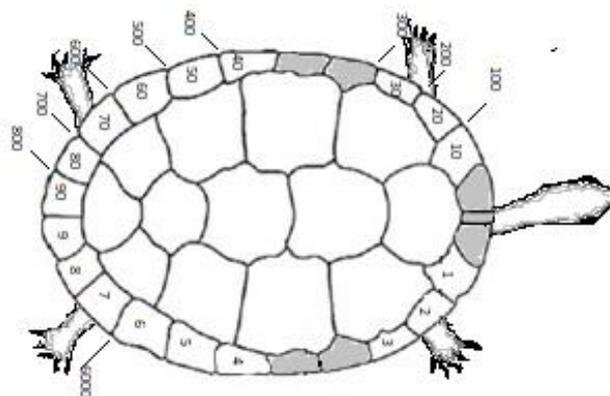


Figure 1. An example of a shell notching numbering system for marking turtles.

Procedure:

1. Turtles will always be held immobile at the bridge between the carapace and the plastron, or held by tail end, palm on plastron and thumb on carapace. Turtles have very sharp and powerful jaws, so keep hands and fingers clear of the head region.
2. The marginal scales will need to be scrubbed, cleaned and swabbed with alcohol prior to drilling, as dirt, bacteria and algae can be pushed into open wounds as the drill moves through the tissue.

3. A. Using the drill bit make a hole in the centre of the scute of the marginal scales. Markings will be predetermined to encode the unique number for individual identification.
B. Alternatively, using the rotary tool and cutting blades, cut a small notch into the edge of the scute. Markings will be predetermined to encode the unique number for individual identification.
4. The size of the drill will depend on the size of the turtle and how long the marking needs to remain visible for.
5. If bleeding occurs, apply pressure with a dry gauze swab until the bleeding stops and rinse the notch with a topical antiseptic.
6. This procedure will take up to 2 minutes.

Cleaning the drill bit

Cleaning drill bit can be difficult as the bone dust impregnates the bit spiral. It is therefore recommended to wash off debris, then use a wire brush (preferably bronze), in combination to the flaming technique to maximize sterility of the bit.

Drug, Chemicals or Biological Agents:

A betadine swab will be used to wipe an area if bleeding occurs.

Care of Animals after the Procedure:

Animals will be returned to the same body of water from which they were captured.

Qualifications, Experience, Skills or Training Necessary to Perform this Procedure:

The ability to use the drill bit appropriately will require some skills to be developed and this will be gained through instruction from an experienced person before the procedure is performed.

Effects of Procedure on Wellbeing of Animals:

The procedure will stress the animals being tested so care will be taken to minimise this effect by handling animals as least as possible and minimising time spent making markings.

References:

Cagle, Fred R. "A system of marking turtles for future identification." *Copeia* 1939.3 (1939): 170-173.

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