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LAND MANAGEMENT  
WESTERN AUSTRALIAFIELD TECHNIQUES FOR WORKING WITH CHUDITCH (DASYURUS GEOFFROII)

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CHOICE OF TRAPS

In the course of our research, we have trapped chuditch with Elliott folding aluminium traps (largest version), Mascot wire cage traps (treadle type as well as the type triggered by pulling a suspended hook forward), collapsible Tomahawk wire cage traps, and homemade wire cage traps triggered by a pull-cord. Problems that may be anticipated with these various types are as follows:

A. SURVEY WORKElliott Traps.

1. Some chuditch, especially young juveniles, severely abrade their nose and paws in efforts to escape from Elliott traps. The treadle mechanism is often damaged in the process.
2. The traps are cold in winter, and cannot readily be supplied with bedding due to their design. This problem is exacerbated when animals get soaked with condensed moisture from their breath and/or urine.
3. Unless care is taken to ensure that traps are well shaded, trapped animals can lethally overheat on warm, sunny days.
4. A small percentage (5-10%) of chuditch can be expected to evade initial capture in the following ways:
  - a) Forcing a door open past the narrow flanges holding it shut.
  - b) Reaching over the treadle to grab the bait, then backing out of the trap. The frequency with which this occurs can be reduced by tying the bait into a back corner.

### Cage Traps.

1. The rear half of the trap should be enclosed in hessian or similar material, to provide animals with cover and discourage chuditch from stealing bait through the sides or roof. As a bonus, even heavy rain will be wicked away through the fabric, leaving trapped animals dry.
2. Small chuditch (e.g. first year females) may escape from Tomahawk traps by squeezing out between the door and wall. This can be prevented by bending the walls in slightly at the door.

### B. STUDIES INVOLVING RECAPTURE OF ANIMALS

#### Elliott Traps.

1. After having been trapped once or a few times, a large percentage of chuditch will learn to routinely elude capture in the following ways:
  - a) Reaching over the treadle and grabbing the bait without triggering the trap. Again, try tying the bait into a back corner.
  - b) Escaping from a closed trap by pulling a door inward and open with their claws. This can be solved by wiring the back door closed and installing a tab which locks the front door. The tab is an L-shaped piece of sheet metal one cm wide. The metal at the L's angle is pinched upwards forming a narrow groove or channel along which a wire is threaded. The free ends of the wire are then passed through two small holes drilled in the top of the trap, thereby attaching the tab to the ceiling about 3 cm from the front. The long leg of the tab pivots up as the door closes, allowing it free passage, then blocks it from opening inward. Unfortunately, the ease with which Elliott traps are set is lost.

### Cage Traps.

1. Some chuditch learn to bite the bait from the hook of Mascot pull-style traps without triggering the trap. The only remedy is to fasten baits more securely.

2. As with Elliotts, chuditch learn to reach over the treadle of Mascot treadle-style traps, obtaining the bait without getting caught. This problem can be avoided by suspending the bait from a string, the other end of which is fastened to the wire door trigger. The bait should be suspended close to the trap roof, to keep chuditch from chewing through the string without triggering the trap.

3. All trap types are liable to being dragged or rolled over by trap-wise chuditch. The best remedy is to stake traps down securely, or at least stabilize them between rocks, logs, etc.

#### WHERE TO TRAP

Good places to set traps include the edges of paths and dirt roads (at 250-300 m intervals); near bridges (including natural log crossings); saddles between hills; along gullies or stream bottoms; and near campgrounds.

#### WHEN TO TRAP

1. Chuditch seem to be most easily trapped in June/July, when natural food is relatively scarce and males are moving about widely in search of mates. We recommend that trapping NOT be conducted from mid-August through early October, which coincides with the time when juveniles are first deposited in dens, at a very vulnerable (to cold and predators) stage of development.

2. It is our experience that three consecutive nights of trapping usually suffices to trap most (occasionally all) of the females known to be resident in the area intersected by the trap line/grid. Longer trap sessions are inadvisable if animals are being repeatedly trapped, especially in winter, unless very large quantities of bait are provided to maintain their weight.

## BAITS

1. Meat probably constitutes the ideal chuditch bait in terms of palatability. However, meat also tends to attract ants, and decays rapidly in warm weather. We have had very good success with a variant of "universal bait", comprising peanut paste, tinned cat tuna, and enough dried meat (or fish) meal to make the mixture doughy. The attentions of blowflies and ants can be substantially reduced by wrapping each portion of bait in a piece of paper towelling.
2. To increase the distance over which a trap is detected by chuditch, we use liquid scent bait, poured into a small paper cup which is placed near the trap entrance. The scent bait is made by allowing meat to decay in a large container (with water added). Whole dead mice and any kind of viscera are particularly good starting ingredients. This technique is widely used by North American fur trappers to attract a variety of carnivores to trap sets. The faint of heart may wish to substitute other strongly odoriferous substances (e.g. peppermint essence).

## HANDLING

1. Most chuditch are easily convinced to exit a cage trap into a cloth bag by puffing air forcefully at them.
2. A bag made of unbleached calico allows the animal to be more easily manipulated than one made of hessian.
3. To reduce struggling to a minimum, blindfold the chuditch (with a strip of soft cloth) whenever its head is outside the capture bag.
4. Quiet voices do not appear to disturb chuditch. However, snapping twigs and rustling leaves, plastic bags, nylon clothing, etc. often provoke alarm.

## MARKING

1. We have marked chuditch by two methods:
  - a) Very small ear tags (No. 1 monel fingerling tags) placed at the anterior juncture of head and pinna.

- b) Ear tattoos, using black carbon ink and quarter inch livestock dies (one tattoo per ear).

We have found ear tags to have two major drawbacks: they can be torn out (especially true of larger tags), and they can cause considerable irritation of the pinna, sometimes for months after the tag is inserted. By comparison, ear tattoos persist indefinitely, heal rapidly, and thereafter never bother the animal. 2. Pouch young older than six weeks can be marked with tattooed dots of fluorescent pigment in the ears (Soderquist, T.R. & Dickman C.R., A technique for marking marsupial pouch young with fluorescent pigment tattoos. Aust. Wild. Res., in press).

#### ESTIMATING BODY CONDITION

To gauge body fat, we use an index based on the relative thickness of fat deposited on the sides of the caudal vertebrae at the basal 4 cm of the tail:

- a) Category 1. Little or very little fat on the tail. Caudal bones are distinctly felt as a series of unpadding ridges and depressions.
- b) Category 2. Medium fat on the tail. Caudal bones are lightly padded with fat; depressions between vertebrae are moderately well defined to the touch.
- c) Category 3. Much fat on the tail. Caudal bones are well padded with fat, obscuring the definition of ridges and depressions.

With experience, intermediate categories between these major designations can be reliably distinguished. Because of individual (and sex- and age-specific) variation in the size of caudal bones, we consider measurements of tail width or circumference to provide inferior estimates of body condition as compared to the qualitative index.

#### ESTIMATING AGE

To estimate age of adult animals, we primarily rely on an index based on tooth wear. Incisor wear is a more reliable gauge than

canine wear if the two estimates are in conflict. Barring more precise information on the individual chuditch, we assume that jarrah forest animals are born on July 1.

- a) First year animals. Incisors have obvious, angular cusps when viewed from the front. Canines vary in length, but tips are always more or less sharp. All teeth are white.
- b) Two years old. Cusps of incisors are still apparent, but rounded by wear. Canines are worn at the tip and sometimes broken. Teeth are usually white, but some may be greyish or yellow.
- c) More than two years old. Working surfaces of incisors are flat or slightly concave with wear. Some incisors may be missing. Canines are usually very worn, often chipped or broken. Often some teeth are greyish or yellow.

#### WOUNDS

1. When fighting, chuditch simultaneously grapple with their forepaws, rake with their hind claws, and threaten each other with open jaws. Lacerations and abrasions resulting from fighting occur most often on the thigh (especially the anterior surface), rump, lateral shoulder, and muzzle.
2. A copulating male will often grasp a fold of skin just posterior to the female's shoulder blades in his jaws. Among wild females, this often results in minor (occasionally severe) injury to an area typically 1.5-2.5 cm in diameter. More rarely, a copulating male will 'scratch' at a female's thighs with his hind claws, sometimes extensively lacerating her rear and/or inner thighs in the process.

#### LINEAR BODY MEASUREMENTS

With experience, we have come to rely on head length and tibia length as being relatively precise, and easy to measure. Tail length can be misleading, as chuditch often break it, or lose the tip in fights or accidents. Pes length and head-body length both vary relatively more due to measurement error than head and tibia length do.

- a) Tibia. Measured from the most anterior process at the "knee" to the tip of the heel pad, while holding the leg in a natural plane with the heel at right angles to the tibia.
- b) Head. Measured from the middle of the supraoccipital crest (a slight notch at the upper rear skull) to the distal tip of the rhinarium (nose pad). Use of the supraoccipital crest (as opposed to "back of the head") reduces inconsistency due to variation in fat and muscle among individuals and seasons.

### REPRODUCTIVE INFORMATION

1. The pouches of juveniles, post-reproductive adults, and non-parous (young lost at birth or early in pouch life) adults can be reliably distinguished from December (when most juveniles first enter the trappable population) through about April:

- a) Juveniles. Essentially no development of pouch rim. Teats white, 0.3-0.6 mm long.
- b) Post-reproductive adults. Pouch rim recognizable as circular or anteriorly developed fold of skin. Teats dark pink to purple, typically with paler (pink or whitish) tip and base. Total teat length declines from a maximum of 11-13 mm at the end of lactation in December/January to a minimum of 2-4 mm by March/April.
- c) Non-parous adults. Pouch rim recognizable as anteriorly developed fold of skin. Teat colour as in post-reproductive adults. Total teat length reaches a maximum of 1.5-2.5 mm around the time of birth, declining to a minimum of 0.5-1.0 mm by March/April.

2. A reddish secretion appears in both juvenile and adult pouches 3-7 weeks before the onset of oestrus. It is normally present (though sometimes in small amounts) until about two weeks before birth.

3. The age of pouch young can be estimated either by the stage of morphological development (Table 1) or from measurements of crown-rump length and/or head width (Table 2).

4. The size of the scrotum varies over the course of the year due to changes in male reproductive status. We measure its maximum length, with the scrotal stalk extended by supporting the scrotum with two fingers.

Table 1. Schedule of morphological development in Dasyurus geoffroii pouch young. Based on 5 known-age captive litters examined in bright light at intervals of 1-3 days.

<u>Character</u>	<u>Range in age (days) over which character develops</u>	
	<u>First Observed</u>	<u>Seen in All Juveniles</u>
Line of fused eyelids visible as shallow (initially reddish) groove	22	27
Pinnae distally free from head	32	37
Pinnae tips directed cranially (i.e. "up")	34	39
White spots visible on head	39	47
White spots visible on back	44	50
Fine dark hairs occur dorsally to mid-back	49	54
Fine dark hairs cover back to tail base	58	63

Table 2. Size of Dasyurus geoffroii pouch young as a function of age. Based on measurements of 5 known-aged captive litters. Head width measured just anterior to the pinnae.

<u>Age (days)</u>	<u>Crown-Rump L. (mm)</u>	<u>Head Width (mm)</u>
5	7.3	--
10	9.6	--
15	11.8	--
20	14.1	--
25	16.3	--
30	18.6	--
35	20.8	9.5
40	23.1	10.8
45	--	12.1
50	--	13.5
55	--	15.0
60	--	16.6