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A UNIVERSAL RAPTOR TRAP

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INTRODUCTION

The capture of live raptors has led to the design of many different types of traps. In general the various designs can be categorised as readily transportable or immobile. It is the former category which this report addresses.

Unequivocally, effective and inexpensive live-capture techniques showing consistently high success rates, are favoured by field researchers. As a result of less than satisfactory capture rates for Black-shouldered Kites *Elanus notatus* by Bal-Chatri traps (Berger and Mueller 1959), the development of a more effective design commenced in 1972. Having at this time, observed the hunting behaviour of over 50 Black-shouldered Kites in relation to a live-baited mouse *Mus musculus* Bal-Chatri, it became obvious that capture must coincide with the instant the bird strikes the roof of the trap. Hunting was almost always initiated from a hovering position, generally less than 15 metres above the ground, although about 5% of the attacks were initiated from a perched position. In the latter cases, the bird held its wings in an upright position as it launched itself toward the lure. This behaviour may have been facilitated by the close proximity of the trap to the bird's perching point.

Normally a bird would indicate awareness of the lure by bobbing its head and raising its tail with a flicking motion. Launching itself from a perched position the kite would locate the lure and commence hovering, gently lowering itself until in the last 2 to 3 metres of its descent, the wings are raised straight above the back, and it drops at considerable speed onto its prey. Whether successful or not, the bird quickly becomes airborne and generally returns to a nearby perch. Unlike the Australian Kestrel *Falco cenchroides,* if unsuccessful at the first strike the kite does not continue to attack the live bait with its talons. Unless a nylon noose from the Bal-Chatri encircles the bird's leg upon impact, capture is most unlikely.

To circumvent this event, a spring-loaded mechanism similar to that reported by Parry (1968) for capturing the Laughing Kookaburra *Dacelo novaeguineae* was adapted for use with a live lure.

MATERIALS AND METHODS

The active component of the trap consisted of an eliptical hoop (485 x 540 mm, 10-12 gauge fencing wire, *ca.* 2.7 mm diam.) soldered (Supa Solda Rotafix 1000, or silver solder) to the action bar of a rat trap ("Ezeset" — Supreme). A stabilizing bar (12-14 gauge wire, *ca.* 2.3 mm diam.) was soldered to each side of the action bar (Figure 1a). Black tetron netting, 10 cm mesh, was sewn to the hoop in a manner which allowed a 350 mm deep pocket to form (Figure 1b). The spring-loaded mechanism was then secured to a wooden base with dimensions depicted in Figure 1a.

The lure 'containment' component comprised an enclosed cylinder of dimensions 180 mm x 95 mm (Figure 1b), formed from 1 cm weldmesh (26-28 gauge, *ca.* 0.8 mm diam.). An opening 75 mm x 65 mm in the side of the cylinder allowed removal of the lure. This opening was secured by a piece of weldmesh 120 mm x 95 mm held in position by the spring mechanism of a smaller mouse trap ("Ezeset" — Supreme). A raised moveable platform, formed from weldmesh (18 gauge mesh, *ca.* 1.4 mm diam.), was attached to the top of the cylinder by two wire

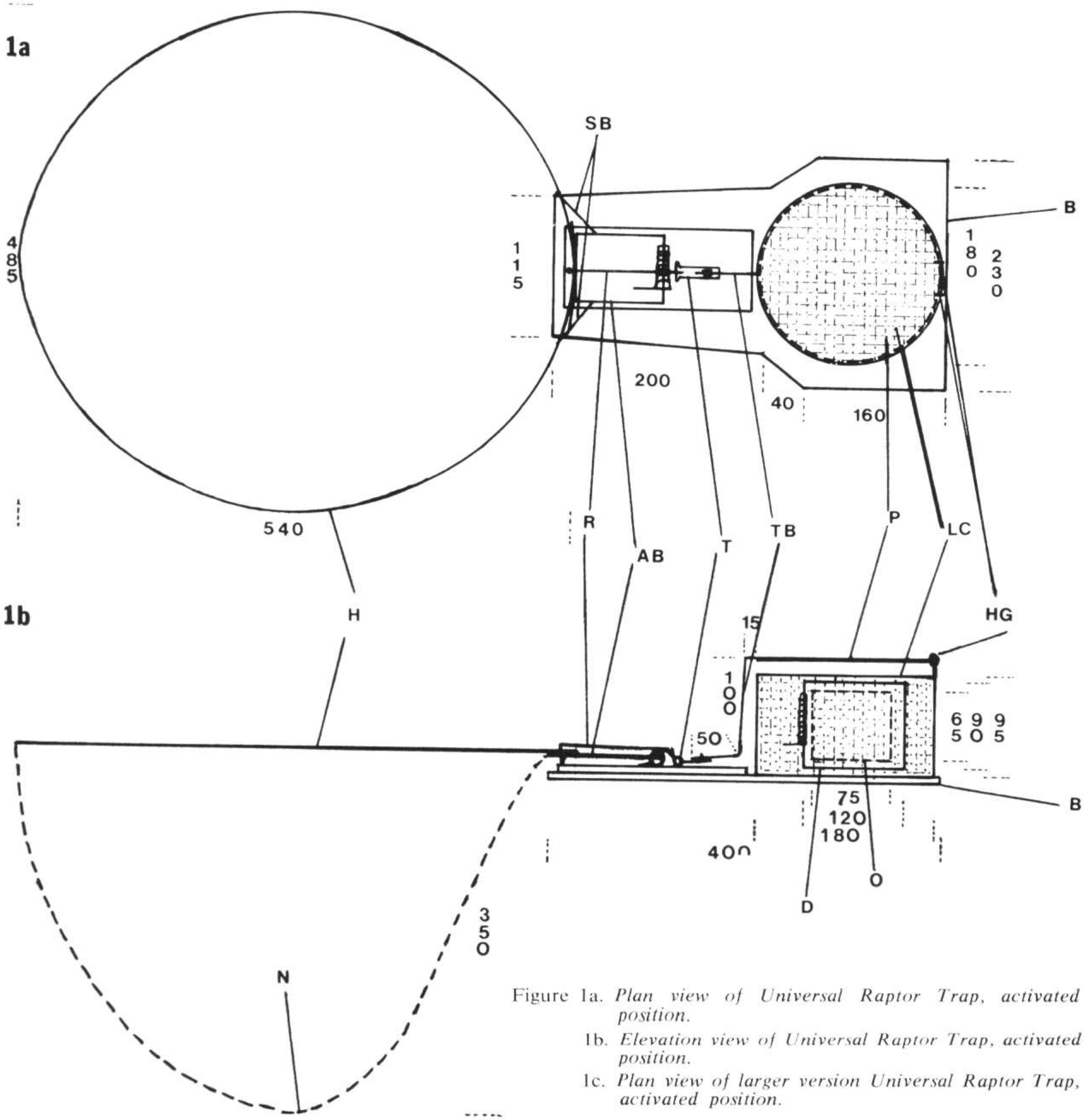


Figure 1a. *Plan view of Universal Raptor Trap, activated position.*

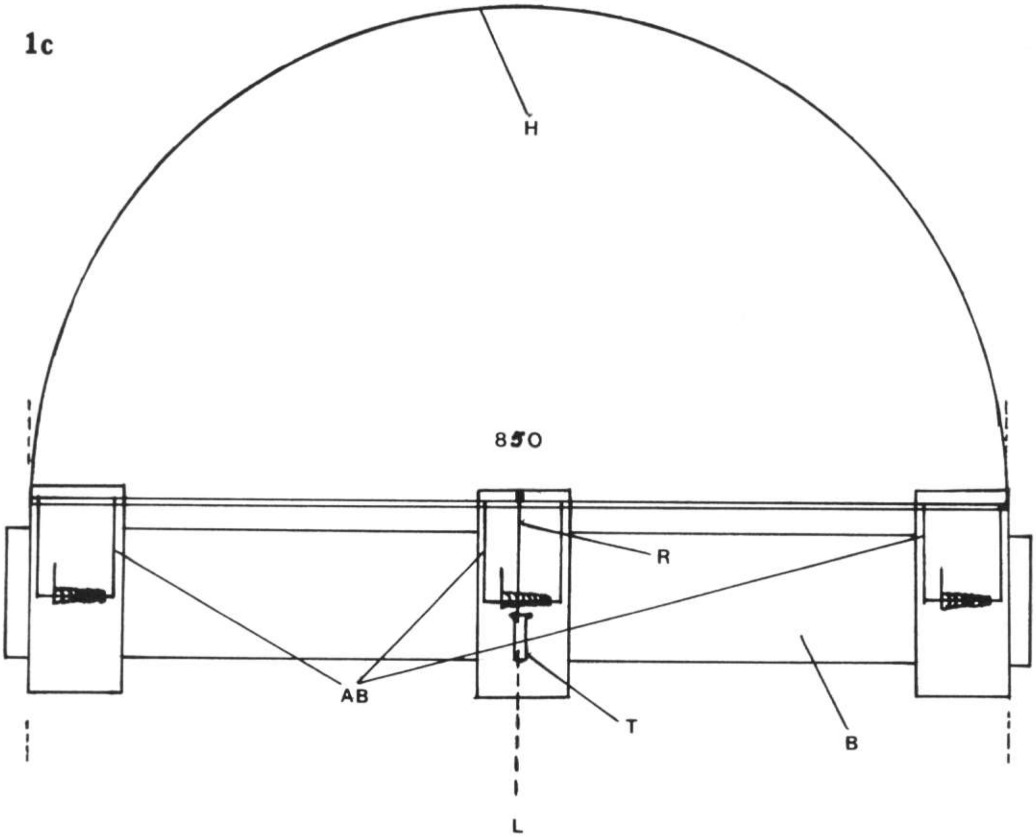
1b. *Elevation view of Universal Raptor Trap, activated position.*

1c. *Plan view of larger version Universal Raptor Trap, activated position.*

Dimensions are in millimetres (mm).

AB = *action bar;* B = *base;* D = *door;* H = *hoop;* HG = *hinge;* L = *lure;* LC = *lure cylinder;* N = *netting;* O = *door opening;* P = *platform;* R = *retainer;* SB = *stabilizer bar;* T = *trigger;* TB = *trigger bar.*

1c



hinges (12-14 gauge). To the opposite side of the platform was soldered a trigger bar (12-14 gauge wire). The wire cylinder was then fastened to the base plate so that the trigger bar rested within the raised lugs of the trigger mechanism.

The entire trap was then coated in a matt green, brown or black paint to facilitate camouflage. The trap was activated by forcing the action bar of the spring-loaded mechanism through 180° and held in position by the retainer and trigger lever. The trigger bar from the lure component rests on the elevated end of the trigger lever. A raptor landing on the lure platform depresses the trigger lever and releases the spring-loaded hoop which enmeshes the bird.

RESULTS AND DISCUSSION

Capture rates for Black-shouldered Kites increased from less than 50% in 1972 to greater than 99% in 1973 and subsequent years. The only cases of trap failure were attributed to binding of the netting on underlying rocks and vegetation thus preventing full travel of the hoop. Care must be taken to ensure that the looseness of the netting rests as close to the base plate as possible at the time of activation and that any potential entanglement of the netting is avoided.

Initially, activated traps were dropped from moving vehicles, triggering of the mechanism being prevented by two small springs inserted between the platform's trigger bar and the top of the cylinder. However, it soon became apparent that such close proximity of the trap to the bird is not necessary and so the springs were eliminated in favour of siting the trap on foot, some 100 to 500 m from the perched bird.

In its twelve years of use many hundreds of raptors have been captured, with the greater percentage being Black-shouldered Kites and Australian Kestrels. Species such as the Australian Kestrel, which are readily caught by Bal-Chatris, are captured more efficiently by this spring-loaded design since the trapping efficiency, calculated from the time spent on top of the lure, is related entirely to the instant the bird strikes the trigger platform. It is significant to note that no deaths or injuries (including breakage of flight feathers) have occurred to any of the raptors trapped by this technique. This is not by coincidence but rather relates to careful calculation of the hoop diameter. The hoop is elliptical since vertical height is more important than width. Where museum specimens are not available for measurement, the total length of a species minus 2/3 the tail length (as published in raptor texts) is an adequate predictor of hoop clearance for that species, when perched on the trigger platform. The dimensions listed in Figure 1a are sufficient to capture raptors as large as the harriers and medium-sized eagles.

In order to capture the Wedge-tailed Eagle *Aquila audax* and the White-bellied Sea Eagle *Haliaeetus leucogaster* a half circular hoop with a diameter of 850 mm and powered by three spring mechanisms, triggered from the centre one (Figure 1c), should be constructed. For species where a tethered fresh kill is desirable, the lure cylinder can be readily removed to accommodate the bait. In this case the bait should rest on the trigger level.

Overall, birds have shown no trap shyness except in high winds when movement of the netting can make some individuals more wary. However, this relates primarily to the larger raptors which are more inclined to land close to the trap and approach the bait on foot.

To date, the diurnal birds of prey which have been captured by this technique include Australian Black-shouldered Kite *Elanus notatus*, Letter-winged Kite *E. scriptus*, Black-breasted Buzzard *Hamirostra melanosternon*, Whistling Kite *Haliastur sphenurus*, Brown Goshawk *Accipiter fasciatus*, Black Falcon *Falco subniger*, Brown Falcon *Falco berigora* and Australian Kestrel *F. cenchroides*. Nocturnal birds of prey include the Boobook Owl *Ninox novaeseelandiae*, Barn Owl *Tyto alba*, Masked Owl *Tyto novaehollandiae* and Tawny Frogmouth *Podargus strigoides*. Other species which have been captured include Australian Magpie *Gymnorhina tibicen*, Grey Butcherbird *Cracticus torquatus*, Pied Butcherbird *Cracticus nigrogularis* and Laughing Kookaburra.

This design offers the advantages of an extremely high capture rate and efficiency, is totally versatile, readily transportable and easy to construct.

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REFERENCES

Berger, D. D. and Mueller, H. C. (1959). The Bal--Chatri: A trap for birds of prey. *Bird Banding* 30: 18-26.

Parry, V. A. (1968). Another method for trapping Kookaburras. *Aust. Bird Bander* 6: 10.